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Enhancing resilience to negative information in consumer-brand interaction: The mediating role of brand knowledge and involvement

Abstract

Purpose- This study examines the relationships between the online communities' characteristics and resilience to negative information. It also examines the relationships between the online communities' characteristics and both brand knowledge and brand involvement. Finally, it examines the mediation role of brand knowledge and brand involvement in the relationships between the online communities' characteristics and resilience to negative information.

Design/methodology/approach- We adapted the stimulus-organism-response(S-O-R) framework in current research that information quality, rewards, and virtual interactivity drive resilience to negative information (RNI) and indirectly through brand knowledge and brand involvement. A survey of 326 Facebook page followers was conducted, representing followers of fashion clothing brands in Egypt's social media platforms. We have used AMOS to check the constructs' validity and reliability and Hayes's PROCESS macro test the mediation.

Findings- The findings show that (1) rewards, brand knowledge and brand involvement help explain why consumers are resilient to negative information of specific brands; (2) brand knowledge and brand involvement fully mediate the relationships between both information quality and virtual interactivity and resilience to negative information, but partially mediate the relationships between rewards and resilience to negative information.

Originality- little attention has been made to examine the resilience to negative information and linking it with brand knowledge and brand involvement in online communities' context; thus, the current research is conducted.

Implications- insights are provided to inform marketers of brand communities about the factors that enhance brand knowledge, brand involvement, and consumers' resilience to negative information.

Keywords: Resilience to negative information, Brand knowledge, Brand involvement, information quality, Rewards, Virtual interactivity.

Paper type: Research paper

Introduction

There is slight doubt that social media have gained growing acceptance among consumers that brands occupy these media as digital platforms (e.g. Qin, 2020; Vander Schee, et al., 2020). Online brand communities, as a social media type, strengthen consumer–brand bonds and improve the brand performance (Liao, and Wang, 2020). On these communities, consumers review products and services, recommend them to others or provide complaints in which spread fast, and influence a large base of consumers (Brodie et al., 2013). Any statement, whether positive or negative, made by potential or existing consumers about a brand or its product(s) is made available to a multitude of people and institutions via the internet (Hennig-Thurau et al., 2004). However, consumers tend to assess negative information more highly, known as negativity bias (Kim, et al., 2020). Negative publicity often leads to a sharp decline in sales, and/or switching to another brand; thus, there is an urgent need for brands to develop various activities to help their consumers not be affected by any negative information about these brands (Torres and Augusto, 2019). Therefore, as consumer access to new media is increasing with the presence of negative statements, addressing the resilience to negative information has become imperative.

Scholars addressed resilience to negative information (RNI) that can help brands avoid negative consequences due to the existence of loyal consumers who have a higher tendency to stay resilient

to any negative information (e.g. Torres, and Augusto, 2019; Cleeren et al., 2013; Koll and Von Wallpach, 2014). Resilience to negative information (RNI), refers to the extent to which consumers do not allow negative information to diminish their general view of a brand—thus may indicate the strength of a consumer-brand relationship (Eisingerich et al. 2011). It happens when a brand has a very large and wide base of loyal consumers who are more likely to ignore and omit any brand shortcomings. Hence, those consumers are more likely to tolerate the brand even if this brand does not provide the expected brand experience (Aaker, 2012; Keller and Lehmann, 2006).

In today's business environment, information and news about brands are promptly distributed among consumers and influence their behaviours, especially the negative news (Elbedweihy, et al., 2016). Resilience to negative information is prone to protect the brand from any negative outcomes such as the experience of a sharp decline in sales, bad impact on reputation, significant losses in the market share (Cleeren et al., 2013; Koll and Von Wallpach, 2014). It is also considered as an extra-role behaviour (Elbedweihy, et al., 2016), which refers to the consumers' tendency to prioritize the brand's benefits over their self-interest (O'Reilly and Charman, 1986). RNI is a strong indicator of brand strength as the consumers face any misfortune or threat about their favourite brand and stay committed to its products (e.g. Aaker, 2012; Cleeren et al., 2013).

Numerous studies have discussed the importance of the RNI concept in the marketing domain, especially social media platforms. Taking a study conducted by Torres and Augusto (2019) in the banking industry, marketing managers have less control over consumers' information because consumers are mainly the co-creators of value; thus, building resilience to negative information is a must. They found that in digital environments, where products are highly exposed to negative information, a product is highly forgiven for its mistakes when consumers perceive it as having an attractive brand personality and tend to create a positive attitude and engage in positive talks about

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brands. Augusto, et al. (2019), also asserted that there is limited research on resilience to negative information, which is considered a crucial outcome because today's' industries are more subject to new challenges the appearance and widespread of social media. Moreover, consumers who perceive brands as more highly unique and prestigious than other brands with no such qualities result in more loyal consumers and more resilient to negative information (Zarei, et al., 2020).

Based on reviewing the literature, the relationships between online brand communities' characteristics and brand involvement received considerable attention. However, examining brand involvement as a driver to better understand consumer-brand relationships received little attention, and understanding the process that leads to resilience to negative information is imperative (Torres and Augusto, 2019; Zarei, et al., 2020). In other words, research efforts related to investigating the role of interaction in building online brand community relationships, are still limited (Wang, et al., 2020). In addition to the interactional perspective, one of the main users' goals or motivations is to get the needed information about the brand from the online brand communities (e.g. Qin, 2020). Although the informational influence is also an important determinant of consumers' online behaviors (e.g. RNI), little attention was paid to understand how consumers process information posted on brand platforms and then form beliefs and attitudes (e.g. brand involvement) should be extended (Bao, and Wang, 2021). To the best of the authors' knowledge, brand knowledge, as a construct and its impact, is mainly based on the degree of the information availability, and has not been examined on resilience to negative information yet. Finally, few scholars have focused on examining the relationship between brand involvement and RNI.

Based on the above motivations, this study examines the impact of online brand community characteristics (e.g., information quality, rewards, and virtual interactivity), brand knowledge, brand involvement, and resilience to negative information. It also examines the impact of both

brand knowledge, and brand involvement on consumers' resilience to negative information. Based on the suggested paths, it is expected that both brand knowledge and brand involvement play a mediating role between the online brand communities' characteristics and RNI.

The present study contributes to the literature in three respects. First, the relationship between the brand knowledge and brand resilience to negative information has not been examined yet. We contribute to the literature by revealing the key role of brand knowledge in interpreting consumer's behaviours (RNI). Consumers with high brand knowledge are more resilient to negative information. Second, although considerable research has demonstrated the relationships between online brand communities' characteristics and brand involvement, brand involvement and the role of interaction in building online brand community relationships, are still limited. This study adds to the emerging literature by demonstrating that brand involvement directly increase the resilience to negative information. Third, this study provides insights into how each of brand knowledge and brand involvement fully mediate the relationships between each of information quality and virtual interactivity and RNI, and partially mediate the relationship between rewards and RNI.

Conceptual framework and hypothesis development

The conceptual framework (Fig.1) explains potential antecedents of resilience to negative information. The research model is drawn on the stimulus-organism-response (S-O-R) framework (Mehrabian and Russell, 1974). Scholars have employed the S-O-R model to examine how website features affect consumers' behaviour (e.g. Duong, et al., 2020; Wang, et al., 2020). The model hypothesizes that the stimuli, which are the online brand community characteristics (represented by information quality, rewards, and virtual interactivity), influences the organism (i.e., brand knowledge and brand involvement), which act as mediators between the stimuli and consumers' response. The response is the outcome (resilience to negative information).
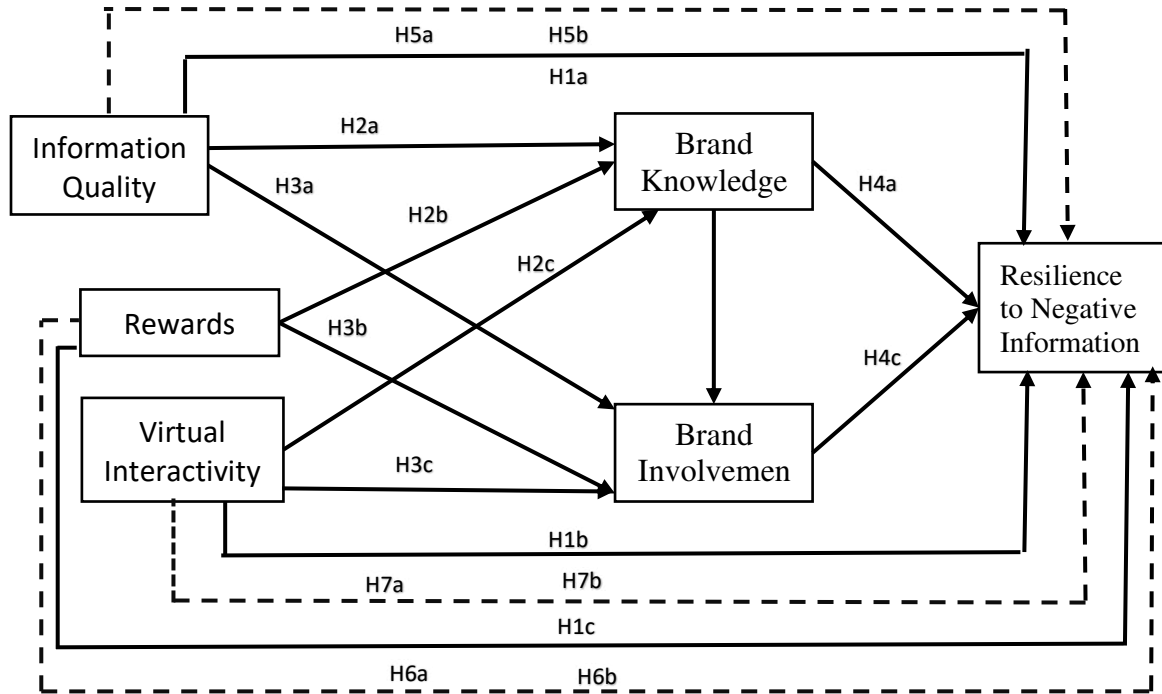
Regarding H5, 6, and 7, "a" represents brand knowledge, and "b" represents brand involvement as a mediator.

Figure 1 Research framework

Information quality, rewards, and virtual interactivity effects on resilience to negative information (RNI)

In the contemporary world, the consumers are continuously looking for more information about the different brands because today's world is full of imperfect information; consumers have become keen and observant to any piece of information that makes them distinguish between these brands to satisfy their needs better; the more information the consumers have, the smarter their choices (Atika et al., 2016; Brucks, 1984; Wu and Wang, 2011). The quality of received information plays an important role in choosing a specific brand. It refers to the overall level of consumers' judgment and evaluation of the information quality based on certain attributes such as accuracy, relevancy, and timeliness of the information presented by the brand (Atika et al., 2016; Cheung and Lee, 2008; Kim and Niehm, 2009).

Consumers tend to react negatively towards any brand they like or admire if the negative information they know about this brand is major and has a bad influence on their lives such as health and safety problems (e.g. Haas-Kotzegger and Schlegelmilch, 2013). These negative reactions and attitudes towards the brand can refuse the different brand's products and engage in negative word of mouth, thus, consumers do not defend the brand against its wrongdoings because they lost their interest in these brands (Youn et al., 2012). Perceived information quality positively influences to what extent the consumers are more likely to defend the brand against any negative messages/news (e.g. Li, Daugherty and Biocca 2001; Finn et al., 2009). Thus,

H1a: Information quality positively influences RNI.

Rewards refer to the degree of monetary or psychological appreciation given to several highly participative consumers in the online platforms (Jang et al. 2008). Consumers tend to change their behaviour and buy more frequently after receiving rewards because they feel that the brand value them and appreciate their money (e.g. Dorotic et al., 2014). Receiving rewards also empower consumers to share their positive experiences online about the brand (e.g. Ba et al., 2001; Lou et al., 2013), encourages them to recommend this brand to others (Schmitt et al., 2011), and increase consumers' attitudes and behaviors, especially in social media (e.g. Gerrath and Usrey, 2020; Rohm et al., 2013). Many brands depend on various rewarding systems such as loyalty programs to create a strong bond between the consumers and the brand (Dorotic et al., 2012; Meyer-Waarden and Benavent, 2009). Rewards programs lead to higher brand resilience that protects the brand against any decline in sales or profit due to the appearance of any negative information (Rossiter and Bellman, 2012). Thus,

H1b: Rewards positively influence RNI.

Interactivity refers to the degree of users' participation in adjusting the form and content of a mediated environment in real-time (Steuer, 1992). Virtual interactivity is defined as "the degree to

which two or more communicating parties can act on each other, on the communication medium, and on the message and the degree to which such influences are synchronized." (Liu and Shrum, 2002, P.54). It represents the specialized, non-geographically bound, online community, social communities, and relationships among community consumers, in which online interaction between people occurs (De Valck et al., 2009; Duong, et al., 2020; Liu, et al., 2020). In the last decade, every organization ensured its existence online on various social networking websites through creating a particular brand website or page to inform and acknowledge the consumers about its recent products and services, its locations as well as to persuade the consumers that this brand is better than the competitors either because it offers a better product or it makes the products tailored to the consumers' special needs (e.g., Macias, 2003). To build successful virtual interactivity, brands must assure that the existence of interesting content is a vital aspect to build a strong relationship with the consumers through allowing a two-way communication process (reciprocal communication) and enable them freely adding their feedback about the products (Coyle and Thorson, 2001; Hoffman and Novak, 1996). Increasing the virtual interactivity enhances the interaction and communication between consumers and brand, consequently, the consumers will have a higher resilience to negative information towards the brand (Ghose and Dou, 1998). The better relationship between brands and consumers, the higher resilience to negative information towards the brand (e.g. Cleeren et al., 2013). Thus,

H1c: Virtual interactivity positively influences RNI.

Information quality, rewards, and virtual interactivity effects on brand knowledge

Consumer's knowledge refers to the extent to which an individual perceives him/herself to be knowledgeable, competent, trained, and experienced in a particular domain (e.g Dellaert and Stremersch 2005). This knowledge about the brand is shaped after consumer's personal experiences, and that knowledge helps consumers become acquainted with the brand (Ha and

Perks, 2005). Comprehensiveness and relevance, integral parts of information quality, affect the consumers' tendency to acquire the brand and impact their intentions and actions (Cheung and Lee 2008). Information quality contributes to building consumer brand perceptions as there is a direct and positive link between perceived information quality and consumers' perceptions (Atika et al., 2016; Wu and Wang2011). In online shopping context, the quality of information used as an indicator to determine the quality of the product and services because the consumers are prone to check the brand's website and evaluate the products and the services based on the information presented on the website (Szymanski and Hise 2000; Wang and Strong, 1996). Previous studies indicate that the perceived information quality is positively correlated with the brand knowledge (e.g., Blackwell et al., 2001 cited in Kang et al., 2017). Thus,

H2a: Information quality positively influences brand knowledge.

Online communities users' are encouraged to participate when they expect that they will have benefits or incentives in return (Zheng et al. 2015). Rewards help members to exchange information with other members and communicate together (Bonner, 2005). Besides, preceding studies found that rewards were positively related to brand recognition, brand recall, and awareness (e.g. Dobele et al., 2005). Loyalty programs, offered via online communities, result in high levels of consumers' brand awareness (Cliford, 2010). Preceding research measured brand knowledge brand awareness and brand image (e.g., Agarwal and Rao, 1996; Cheung, et al., 2020). Therefore,

H2b: Rewards positively influence brand knowledge.

Interactivity facilitates the interaction and urges active participation between the brand and the consumer as it helps increase brand recognition and recall (Madhavaram et al., 2005). It helps to create a strong bond between the two parties (Dowling and Uncles, 1997). In online communities, consumers usually interact with products as fans and exchange knowledge while expressing interest in a brand or product category (Coker, et al., 2014). Previous studies found that

virtual interactivity, as a way for reach to a wide base of the target audience, is considered a win-win situation as it is beneficial to the brand because it allows the brand to have a clear understanding of the consumers' wants and needs and the brand will become knowledgeable about all the kinds of stuff which concerned the target audience thus, allow the companies to make targeted marketing campaigns (e.g. Bendapudi and Leone, 2003; Odekerken-Schröder et al., 2003). Moreover, virtual interactivity is crucial to the consumers because it gives them the needed information to make a smarter purchase decision with minimal economic loss (Kim and McMillan, 2009). When some buyers hear or know about negative information about the brand, they break any connection or link between them and the brand because they feel that this negative information jeopardizes their social status (Khandeparkar and Motiani, 2018). Accordingly,

H2c: Virtual interactivity positively influences brand knowledge.

Information quality, rewards, and virtual interactivity effects on brand involvement

High brand involvement refers to consumers have a highly positive feeling about the brand (Duong, et al., 2020). Consumers who receive positive information are more likely to react and create attitudes toward the brand that accept the different brand's products and engage in positive word of mouth (Youn et al., 2012). This is because the consumers increase their trust, belief (faith), reliability, and credibility in their favourite brand. Besides, perceived information quality positively influences the degree to which the consumers are involved with this brand (e.g., Drossos, et al., 2015). There is also a positive relationship between the website's quality of the website's information and the degree of consumers' participation in online brand communities (Kim and Niehm, 2009). Thus, we offer the following hypothesis:

H3a: Information quality positively influences brand involvement.

Rewards programs are crucial to business because non-monetary rewards are useful, as this type of programs increases the consumers' involvement with the brand (Park et al. 2013; Youjae

and Hoseong, 2003). In contrast, monetary rewards are beneficial, especially when the consumers are not completely loyal to the brand and have high switching power and low involvement orientation (Youjae and Hoseong, 2003). Rewards are also crucial for having highly engaged, loyal, and life-time consumers (Kumar et al., 2010). Hence:

H3b: Rewards positively influence brand involvement.

Virtual interactivity spurs the two-way communication and increase the possibility of creating reciprocal communication as it boosts the online flow experience (Van Noort et al., 2012). It can result in creating more favourable affective and behavioural response towards brand because it fosters the online persuasion (e.g. Hoffman and Novak, 2009). Virtual interactivity has pivotal role in making consumers more engaged with brands as it drives curiosity, and improve the consumers-brands interaction (Hoffman and Novak, 2009). Previous studies found significant and positive relationships between virtual interactivity and brand involvement (e.g. Hollebeek et al. 2014; Ting et al., 2020). Thus,

H3c: Virtual interactivity positively influences brand involvement.

Brand knowledge and brand involvement effects on resilience to negative information

Brand knowledge is a cognitive recognition and a mental representation of the brand in the consumers' minds or memory (e.g., Keller, 2003; Nguyen, et al., 2019). All the descriptive and evaluative brand-related information is stored in consumer memory (e.g. Keller, 2003; Nguyen, et al., 2019). Brand normally evokes the consumers' minds, and it has a great influence on their personality, lifestyles, presence, and values (e.g. Aaker, 1991). Brand knowledge facilitates and simplifies the buying process as it has become easier for the consumers to decide what to buy (e.g. Rowley, 2004). Preceding research argued that brand knowledge was measured through brand awareness and brand image (e.g., Agarwal and Rao, 1996; Cheung, et al., 2020). For any consumer

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who has good brand experiences, s/he must-have brand awareness to create a unique image towards this brand (e.g., Keller, 2003). Brand knowledge affects the consumers' choices and makes them prefer a certain brand over others (Schuiling and Kapferer, 2004). When consumers recognize everything about the brand and possess the information that is considered crucial in making a purchase decision, it normally leads to extra-role consumer behaviours contributing in resilience to negative information creation (e.g., Bhattacharya and Sen, 2003). Thus,

H4a: brand knowledge positively influences RNI.

Brand involvement is considered as a construct, which is commonly accepted as a key antecedent to brand performance and consumer behaviours (Bian, and Haque, 2020). It refers to the amount of interest or the emotional attachment that the consumers experienced in a particular brand of interest (Martin, 1998). It is considered a drive that motivates the consumers to acquire a particular brand, make them prefer one brand over others, and tend to have a higher level of brand resilience towards any negative information (e.g. Kapferer and Laurent, 1985; Park and Lee, 2008). Previous studies assured that high-involvement consumers are more prone to focus on the brand's strengths such as the quality of its products and services, eager to create a positive image of their favourite brand on various media platforms (e.g., Park et al., 2007), and more likely to have higher resilience to negative information compared to the low-involvement consumers (Bolkan et al., 2012; Rossiter and Bellman, 2012). Hence,

H4b: Brand involvement positively influences RNI.

Lastly, the current study, based on the above hypotheses development and as shown in Fig. 1, each antecedent (information quality, rewards, and virtual interactivity) positively influences brand knowledge and brand involvement. Each of brand knowledge and brand involvement is positively related to resilience to negative information. These paths suggest mediation. Thus, the current

study examines each of information quality, rewards, and virtual interactivity as distal antecedents

of resilience to negative information through brand knowledge and brand involvement.

H5a: Brand knowledge mediates the positive influence of information quality on RNI.
H5b: Brand involvement mediates the positive influence of information quality on RNI.
H6a: Brand knowledge mediates the positive influence of rewards on RNI.
H6b: Brand involvement mediates the positive influence of rewards on RNI.
H7a: Brand knowledge mediates the positive influence of virtual interactivity on RNI.
H7b: Brand involvement mediates the positive influence of virtual interactivity on RNI.

Method
Pre-test study

Academics conducted a pre-test (3 marketing professors) and followers of fashion clothing brands

(30 followers) to check the questionnaire's face validity, resulting in minimal design and wording

changes. Based on the pre-test, some statements were rephrased to fit the study context and

safeguard simple and clear wording, besides adding some examples to some scale items to improve

these items' clarity. The questionnaire's core concepts, such as online communities and resilience

to negative information, were defined so that all participants had a clear view of the questionnaire.

Sampling and actual data collection

The research population comprises all the followers of online brand communities, including

Facebook, and Instagram, particularly specialized in fashion apparel brands. Since there is no

frame, a convenience non-probability sample was chosen for this study (Saunders et al., 2009).

According to Hair et al. (2010) guidelines, the model with seven or fewer constructs requires at

least 300 observations. Since the current research model includes six constructs, the minimum

sample size was determined to be 300 respondents. Three hundred twenty-six completed

questionnaires were collected. The questionnaires have been collected offline and distributed in

various places such as shopping malls and social clubs as a large number of people being there.

The questionnaire starts with a filtering question to ensure that whether the respondent belongs to

the target sample (Malhotra, 2015). The filtering question was followed by a question regarding

the online community platform they follow. Afterward, the survey has adopted existing scales for the constructs chosen from the existing literature. Finally, the survey was ended with socio-demographic information. Of the sample followers, 46 % were male, and 54% female; 12.6 % were younger than 21 years old, 76.3% were 21 to 34, 7.1 % were 35 to 44, and 4% were older than 44.

Research Context

The fashion context was chosen. Much previous research (e.g., Islam and Rahman, 2016) recommended the apparel brands context to be studied. This is because of consumers' rising attitudes towards branded apparel clothes, particularly when considering different social media platforms. The description of fashion has become a demanding factor of social media platforms. Online brand communities also permit fashion consumers to communicate with each other without any limits of time and place. Preceding studies stressed on the ubiquity of visual representation of fashion clothing brands within online communities. They mainly focus on visual content, such as Instagram, have become vital marketing channels for brands and a powerful approach to reflecting the brands' desired image (e.g., Casaló et al., 2017).

Construct Measures

Information quality was measured using a seven-item adopted from Ahn et al. (2007). Rewards were measured using three items developed by Jang et al. (2008). Virtual interactivity was measured using three items adapted from Jang et al. (2008). Brand knowledge was measured using three items developed by Algesheimer et al. (2005). Brand involvement was measured using six items developed by O'Cass (2000). Finally, RNI was measured using six items following Bhattacharya and Sen (2003) and Eisingerich et al. (2011).

Table I. Means, standard deviations, standardized factor loadings, t-values Cronbach's alpha, CR, and AVE.

Constructs and items	Mean	Standard deviations	Standzd loadings	t-value	Cronbach's alpha	AVE	CR[1]
Information quality	3.44	.79			.64	0.489	0.740
1) Online brand community has sufficient content where I expect to find needed information.			.660				
2) Online brand community provides complete information.			.782	9.587			
3) Online brand community provides accurate information.			.648	9.005			
Rewards	2.59	.95			.67	0.524	0.688
1) Online brand community offers psychological (emotional) rewards (e.g., choosing the best member of the month-entertainment).			.741				
2) My status in the online brand community can be (upgraded/ downgraded) based on my degree of activity in the community			.707	5.754			
Virtual interactivity	3.23	.84			.66	0.489	0.652
1) I can usually get quick responses to any question I bring up in the online brand community.			.792				
2) I can usually exchange information with the host (admin) and other online brand community members.			.592	5.925			
Brand knowledge	3.28	.86			.60	0.593	0.812
1) When compared to other people, I know a lot about this brand.			.650	11.527			
2) My friends consider me an expert regarding this brand.			.847	14.719			
3) I consider myself very experienced with this brand.			.799				
Brand involvement	3.36	.85		11.973	.59	0.588	0.809
1) This brand means a lot to me.			.822	11.829			
2) This brand is significant for me.			.804				
3) I am interested in this specific brand.			.664				
RNI	2.85	.97			.67	0.632	0.757
1) Negative information about this brand does not change my general view of the brand.			1	4.520			
2) Negative information about this brand does not affect me.			.512				

(1) Composite reliability

Data analysis and results

Instrument validation

Table I shows the results of standard deviations, means, and Cronbach's alphas for all research variables. Cronbach's alphas were equal or greater than 0.6, as still acceptable (Ebrahimi and Banaeifard, 2018) for all constructs, except brand involvement construct. However, it was very close (.59) to the accepted level. The constructs were also assessed for convergent and discriminant validity through the CFA using AMOS. We checked the unidimensionality of each construct and the measurement model (see table I for the remaining items), according to Janssens et al. (2008), had a good fit ($\chi2$ (75) =125.15 p =.000; GFI =0.95; AGFI =0.92; NFI =0.924; CFI =0.97; TLI= 0.96; RMSEA =0.045; SRMR =.0411). Following Fornell and Larcker's (1981) and Janssens et al.'s (2008), four criteria were used to evaluate the convergent validity of constructs' items. As shown in table I, all factor loadings.' estimates were above .5. All of t-values > 1.96 (loadings ranged from 4.520 to 14.719 (p <.001)). As table I indicates, all composite reliability (CRs) were above the recommended level of 0.7 except for the virtual interactivity and rewards constructs. However, they were very close (0.65 and 0.69 respectively) to the accepted level. All AVE estimates were above the recommended level of 0.5, except information quality and virtual interactivity constructs. However, they were very close (.49) to the accepted level. All four criteria provided support of the constructs' convergent validity. Discriminant validity was also assessed. Table II shows that all square root of AVE estimates on the diagonal were greater than the construct correlations with another factor, providing evidence of discriminant validity for all these constructs.

Table II. Correlations and the square root of the average variance extracted

	Information quality	Rewards	Virtual interactivity	Brand knowledge	Brand involvement	RNI
Information quality	**0.699**					

Rewards	0.227	**0.724**				
Virtual interactivity	0.450	0.388	**0.699**			
Brand knowledge	0.379	0.289	0.381	**0.770**		
Brand involvement	0.521	0.277	0.298	0.748	**0.767**	
RNI	0.118	0.285	0.098	0.372	0.388	**0.795**

Direct effects

Direct effects with resilience to negative information construct

Empirical results in table III show that while rewards construct influences resilience to negative information (β =0.199, p <0.001), both information quality, and virtual interactivity do not influence resilience to negative information, (β =0.044, p >0.001) and (β =0.008, p >0.001) respectively. Thus, both hypotheses 1a and 1c are not supported and hypothesis 1b is supported

Direct effects with both brand knowledge and brand involvement constructs. Empirical results (see table III) show that information quality influences brand knowledge (β =0.332, p <0.001) and brand involvement (β =0.460, p <0.001). Rewards influence brand knowledge (β =0.183, p <0.001) and brand involvement (β =0.184, p <0.001). Regarding virtual interactivity, it also influences brand knowledge (β = 0.302, p <0.001), and brand involvement (β = 0.212, p <0.001). These results provide support for hypotheses 2a-c and 3a-c that brand communities (information quality, rewards, and virtual interactivity) enhance both brand knowledge and brand involvement.

Direct effects of each brand knowledge and brand involvement constructs on resilience to negative information. Empirical results (see table III) show that brand knowledge and brand involvement influence RNI, (β = 0.327, p <0.001), and (β = 0.332, p <0.001) respectively. These results provide support for hypotheses 4a and b that both brand knowledge and brand involvement enhance the resilience to negative information.

Table III. Summary of hypotheses testing results

Hypotheses	Path coefficient	t-value	Hypothesis result
(H1a) Information quality→RNI	0.044	(0.609)[†]	Not supported

(H1b) Rewards→RNI	0.199	(3.672)***	Supported
(H1c) Virtual interactivity→RNI	0.008	(0.122)†	Not supported
(H2a) Information quality→Brand knowledge	0.332	(5.677)***	Supported
(H2b) Rewards→Brand knowledge	0.183	(3.670)***	Supported
(H2c) Virtual interactivity→Brand knowledge	0.302	(5.440)***	Supported
(H3a) Information quality→Brand involvement	0.460	(8.546)***	Supported
(H3b) Rewards→Brand involvement	0.184	(3.780)***	Supported
(H3c) Virtual interactivity→Brand involvement	0.212	(3.841)***	Supported
(H4a) Brand knowledge→RNI	0.327	(2.594)***	Supported
(H4b) Brand involvement→RNI	0.332	(2.431)***	Supported
R^2 Brand knowledge Brand involvement RNI	 0.091 0.184 0.121		

∗∗∗ p<0.01.   ∗∗ p<0.05.   ∗ p<0.10.   † Not significant.

Mediating effects

This study includes three mediating hypotheses (H5, H6, and H7). To test the mediation, we followed Hayes's PROCESS macro (model4) instructions (Hayes, 2017). Table IV shows the statistical significance of the direct and indirect effects. The results were generated with the bootstrap procedure (5000 bootstraps) and the confidence interval (95%). For hypotheses 5a, and b, as shown in table IV, the bootstrap procedure generated (0.046 and 0.160), and (0.073 and 0.230) respectively did not include zero for the indirect effect of (H5a) information quality on RNI through brand knowledge, and (H5b) information quality on RNI through brand involvement. Thus, both hypotheses are supported. However, after taking brand knowledge or brand involvement into account, the direct relationship between information quality and RNI became insignificant; the bootstrap procedure generated (-0.043 and 0.225) and (-0.098 and 0.186) respectively included zero, showing the full mediation existence. Similarly, for hypotheses 6a, and b, as shown in table IV, the bootstrap procedure generated did not include zero for the indirect effect of (H6a) rewards on RNI through brand knowledge (0.018 and 0.093), and (H6b) rewards on RNI through brand involvement (0.019 and 0.095). After taking brand knowledge or brand involvement into account, the direct relationship between rewards and RNI still became

significant; the bootstrap procedure generated (0.092 and 0.306), and (0.091 and 0.304) respectively did not include zero, showing the partial mediation existence.

Table IV. Summary of hypotheses testing results (mediating effect)

Hypotheses	Direct effects	Bootstrap		Indirect effects	Bootstrap		Hypothesis result
		LLCI	ULCI		LLCI	ULCI	
(H5a) Information quality→Brand knowledge→RNI	0.091†	-0.043	0.125	0.098**	0.046	0.160	Full mediation
(H5b) Information quality →Brand involvement→RNI	0.044†	-0.098	0.168	0.145**	0.073	0.230	Full mediation
(H6a) Rewards→Brand knowledge →RNI	0.199**	0.092	0.306	0.051**	0.018	0.093	Partial mediation
(H6b) Rewards→Brand involvement→RNI	0.197**	0.091	0.304	0.053**	0.019	0.095	Partial mediation
(H7a) Virtual interactivity →Brand knowledge→RNI	-0.021†	-0.147	0.106	0.099**	0.050	0.156	Full mediation
(H7b) Virtual interactivity→Brand involvement→RNI	0.008†	-0.116	0.132	0.070**	0.027	0.122	Full mediation

For hypotheses 7a, and b as shown in table IV, the bootstrap procedure generated did not include zero for the indirect effect of (H7a) virtual interactivity on RNI through brand Knowledge (0.050 and 0.156), and (H7b) virtual interactivity on RNI through brand involvement (0.027 and 0.122). After taking brand knowledge or brand involvement, the direct relationship between virtual interactivity and RNI became insignificant as the bootstrap procedure generated (-0.147 and 0.106) and (-0.116 and 0.132) respectively, showing the full mediation existence. Figure 2 summarizes the direct and indirect effect results.

Discussion

This paper shows that information quality, rewards, and virtual interactivity enhance brand knowledge and brand involvement, ultimately leading to RNI. Virtual interactivity also plays an important role in boosting brand knowledge and brand involvement leading eventually to RNI.
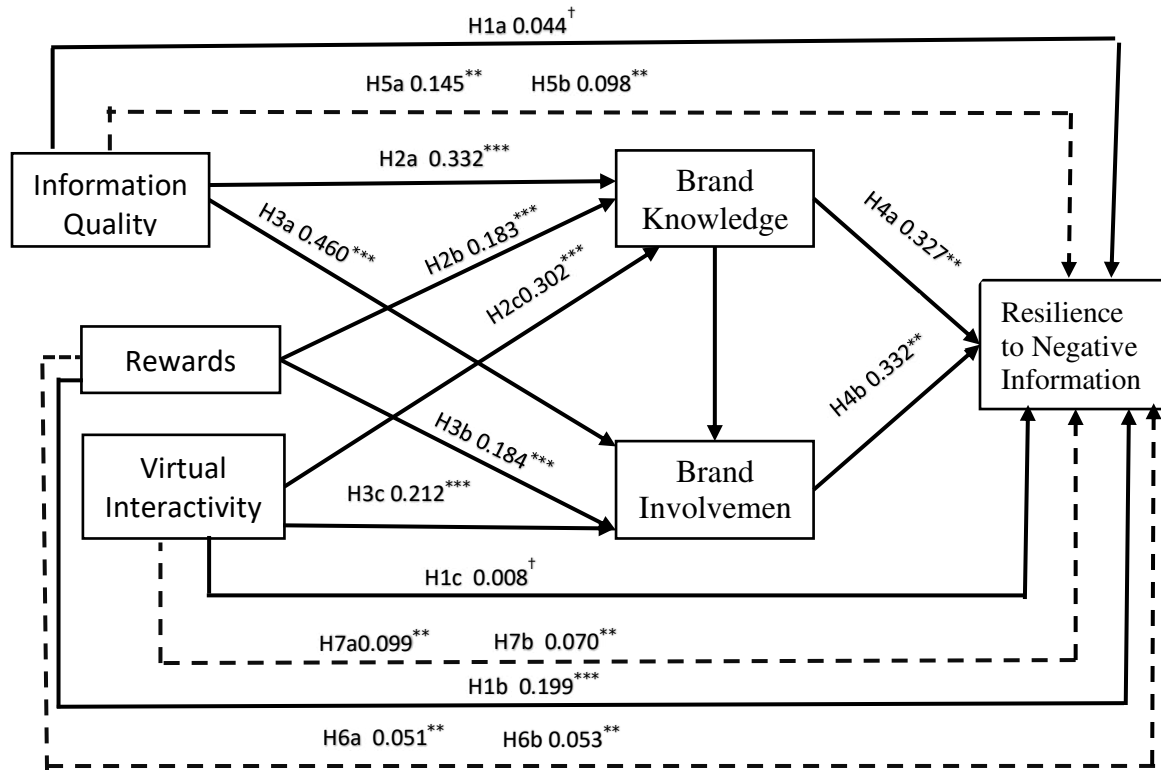
Figure 2: The direct and indirect effect results

The results indicate that information quality play different but positively significant roles in influencing brand knowledge and brand involvement. However, the information quality highly interprets brand involvement than brand knowledge. These results are in line with the study of Gorla et al. (2010) that shows the influence of information quality in terms of information on the organizational impact (market information support), a construct similar to brand knowledge. The results of Drossos et al. (2015) study confirmed that information quality was positively significant to brand involvement. Similarly, our results show that virtual interactivity plays an important direct role in increasing consumers' knowledge about the brand and getting them involved. It also highly interprets brand knowledge than brand involvement. The impact of virtual interactivity on brand knowledge is consistent with Coker et al., (2014).

In contrast, the results show that the rewards play an important role in increasing RNI, consumers' knowledge about the brand, and getting them involved. The rewards also highly

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interpret brand involvement than brand knowledge. The impact of rewards on brand knowledge is consistent with the prior studies (e.g., Dorotic et al., 2014) that consumers, after receiving rewards from brands, feel appreciation from these brands. Hence, the consumers are probably becoming interested in these brands. Receiving a reward also empower the consumers to share their positive experience online (Ba et al., 2001; Lou et al., 2013). Contests have been also verified as an effective tool in driving consumers' positive brand knowledge (Chan and Guillet, 2011). The results are in line with Drossos et al. (2015) and Kumar et al. (2010) studies that support the crucial role of the rewards for having highly engaged consumers.

The direct influence of brand knowledge on RNI is confirmed. When consumers establish their knowledge about brands (e.g., policies, beliefs, values, reputation, and product quality), these brands are more likely to get support or endorsement from them. In other words, without such knowledge, it will be hard for brands to sustain control. Besides, the direct influence of brand involvement on RNI is also confirmed. This result is in line with previous research (e.g., Bolkan et al., 2012). Although brand knowledge and brand involvement influence the RNI, the results show that brand involvement highly interprets the RNI compared to the brand knowledge.

We find that information quality is a distinguished predictor of brand knowledge and brand involvement compared to rewards and virtual interactivity. Previous research may explain that results. For example, Nisha et al. (2016) identify certain aspects of service qualities (like information quality) that play an important role in capturing users' knowledge of mobile health services. Given that consumers perceive high information quality, their association with particular brands is significantly affected, particularly their social media pages. Yet, the brand's social media content had a greater influence on a consumer's involvement with the social media page (McClure

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and Seock, 2020), which may explain why the quality of social media content has an influential position.

We also intended to extend understanding of the mediating role of brand knowledge and brand involvement in satisfying the relationships between each of the three online brand communities' characteristics and RNI. The results show the full mediation existence of brand knowledge or brand involvement in the influence of (1) information quality on RNI through brand knowledge or brand involvement. This means that to achieve the RNI, the consumers must be knowledgeable or/ and involved with the brand. Similarly, the results show the full mediation existence of brand knowledge or brand involvement in the influence of virtual interactivity on RNI. This means the resilience occurs due to the information exchange among community members and the community's host if the consumers are knowledgeable and involved with the brand. When consumers learn about brands and build strong knowledge, they interconnect the new knowledge with present knowledge in memory, they are often highly involved with that brand (Srivastava and Kamdar, 2009). However, the RNI might happen due to the rewards, not brand knowledge or brand involvement a must. In other words, brand knowledge or brand involvement partially mediate the relationship between rewards and RNI.

Theoretical contributions

The current study enhances the insight of consumer–brand associations in three main ways:

First, we clarify why consumers are resilient to negative information about some specific brands by applying the brand knowledge and brand involvement. The results fill a research gap, which brand involvement plays as a driver to consumers' resilience to negative information (Torres and Augusto, 2019; Zarei, et al., 2020). These results might explain brand knowledge's critical role that the gained knowledge will boost consumer-brand-related outcomes (Fritz et al., 2017). Therefore, this knowledge is a reason for the consumers' involvement with the brand and their

resilience to negative information. The current study also sheds light on the findings of Boukis et al.'s (2017) study. It shows that brand knowledge is the essential contributor to employees' brand-consistent behavior (e.g., enacting brand promises). Therefore, the consumers' behaviors toward brands, such as RNI, are primarily shaped based on their knowledge.

Second, we add to the consumer-brand relationship research stream by empirically examining relatively under-explored relationships. Investigating these relationships shed light on how to shape consumer–brand associations through brand knowledge and involvement. The results underline the importance of the online communities' characteristics as effective antecedents that enhance consumers' knowledge about the brand and improve their involvement. Thus, this study supplements preceding research on brand knowledge and involvement by introducing information quality, rewards, and virtual interactivity as drivers of brand knowledge and involvement. More importantly, the study results support Boukis et al. (2017) study that quality information exchange between partners (brand and consumers) demonstrates valuable, as they produce higher consumers' knowledge of the brand and reinforce their emotional attachment with the brand. These results fill the gaps and provide insights to explain the central roles of virtual interactivity and sharing high quality information that play a role in growing knowledge about the brand (Bao, and Wang, 2021; García-de-Frutos, and Estrella-Ramón, 2021). Third, this study is the first to investigate the mediating role of brand knowledge and brand involvement in the linkage between each of the online communities' characteristics and RNI. The study also extends understanding of the relationship between RNI and its antecedents. In other words, these mediators enhances the understanding of consumer-brand relationships (e.g. Torres and Augusto, 2019; Zarei et al. 2020).

Managerial implications

Several managerial insights can be drawn from this research's findings, which will inform marketers of brand communities about the factors that enhance consumers' resilience to negative

information. First, as online brand communities facilitate the phenomenon of consumer brand advocacy (Bhati, and Verma, 2020), brands should increase their efforts toward the virtual interactivity on their brand communities. Marketers should enhance virtual interactivity to increase brand knowledge, brand involvement, and boost resilience to negative information. This may be possible by designing the online community that presents and highlights topics based on consumer preferences and past browsing behaviour, by organizing the online community's content from a consumer perspective to facilitate reading, commenting, and following the discussions on specific topics of interest. In other words, brands can follow the user generated content strategy, by providing topics of consumers' interests and opening discussions with their consumers, to increase the virtual interactivity, brand knowledge and involvement. Marketing managers can also invite social media influencers on their online brand communities to interact with consumers and increase their knowledge about these brands.

Second, based on our results, brand managers are advised to develop strategic and tactical initiatives that encourage and strengthen brand involvement. This may require that marketers employ brand relationship activities to increase consumer interaction in online communities (e.g. Jamie, et al., 2021). Our results show that the quality of information consumers receive plays a critical role in increasing consumers' knowledge about the brand and getting them involved. Therefore, marketers are advised to publish valuable content that focuses on brand values and making all content congruent with brand values to enhance consumer involvement (Bowden and Mirzaei, 2021; Shazly and Mahrous, 2020). Also, content must be related to consumer's needs and wants (Jamie et al., 2021). Besides, online communities must focus on co-creation activities that allow consumers to review items online and determine the product features that need improving.

Third, the results provide a base on which marketers can increase consumers' knowledge and involvement, thus, improve the likelihood of experiencing extra-role behavior (i.e., RNI) from consumers. Managers should explore how to build the greatest possible consumers' knowledge and involvement with the brand. Marketing should focus on activities related to high information quality that could build the brand knowledge and involvement of consumers such as: (1) curating accurate and relevant content on the online communities of the brand (e.g., sharing the information of the new products of the brand; providing information of any modifications of the existing products or promotion activities), (2) taking initiatives to make the community more informative to consumers to enhance their knowledge, and (3) providing detailed and accurate information about the organized events and inviting members where they can personally interact.

Finally, online brand communities must develop distinctive tangible and intangible rewards programs such as loyalty programs, special offers, and referrals to enhance consumers' contributions (Hollebeek, et al., 2021). Given the difficulty of building continuing relationships with consumers, executives should develop the rewards programs considering the consumer segments to ensure that consumers are more receptive to these programs, thereby shaping meaningful associations with brands.

Limitations and further research

This research reports central outcomes on having consumers who are resilient to negative information, though several limitations exist. First, although the chosen research approach to testing the hypotheses supports achieving the research objectives, such different methods would enhance the findings' validity. Moreover, the use of snapshot data in time can be essential in considering directional associations between variables. Still, they do not permit for causal interpretations that could be established via the longitudinal design. Second, we selected clothes to represent consumed products in general. However, the results might provide a confounded

interpretation since the chosen online brand communities reflect different clothes categories such as women's clothes, men's clothes, luxury clothes, etc. Thus, the research could employ specific categories or conduct a comparative study to outline the differences. Measuring consumers' perceptions of how the clothes categories are could be insightful. Third, we chose a convenience sample, and this might affect the ability to generalize the findings. Finally, repeating the research framework on different types of brands for, particularly, high-involvement products such as (e.g., automobile, smartphones) and service brands (e.g., telecommunications) could help to more generalization the results.

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