Examining emotions linked to live chat services: The role of e-service quality and impact on word of mouth

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Abstract

The purpose of this article is twofold: (1) to investigate the emotions experienced by banking customers when using live chat services and their impact on positive word-of-mouth intentions; and, (2) to identify which dimensions of e-service quality (*accessibility, customer service and support, perceived security/privacy* and *design*) impact these emotions. A survey was conducted with 682 members of a Web-based panel. Findings demonstrate that emotions, both positive and negative, significantly impact word of mouth. Results further reveal that *customer service and support* followed by *design* of live chat services mostly influence consumer emotions. On a practical level, the recommendations provided will improve consumer experience and encourage consumers to use live chat services. This is all the more important since such services are now part of the promotion and contribution of a sustainable mode of consumption that is accessible to all.

Keywords Live chat services · Emotions · Word of mouth · e-service quality · Banking services · Live support system, real-time communication

Introduction

Financial institutions invest in Web strategies to foster stronger, more personalized relationships with their customer base and to elicit positive consumer behaviour such as loyalty and word of mouth (Boateng and Narteh, 2016; Liang and Chen, 2009). Accordingly, most banking websites today incorporate online customer service tools such as e-mail, e-forms, help menus and/or sections detailing frequently asked questions (FAQs). While these increasingly standardized tools can help answer basic consumer queries, they do not enable financial institutions to differentiate themselves from their sectoral counterparts. Their functionalities do not operate in real time and may lack in

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retroactivity (Elmorshidy, 2013). How then, using virtual settings intended to take convenience and connectivity to an entirely new level (e.g. users able to access information at any time, from any location), can the banking industry capitalize fully on the different opportunities fostered by technological advancement?

Luo et al. (2011) point to interaction as one of the characteristics of the online virtual experience that most promotes behavioural intentions to visit websites and make purchases while building customer loyalty. Accordingly, businesses, including financial institutions (Elmorshidy et al., 2015), have adopted online social interaction functionalities such as online agents, both human and computerized (Shank, 2014). More precisely, *live chat services* differ from *chatbot services* in that the former represent human-to-human interactions through instant messaging and that the latter are computer-mediated communications which transfer automated responses to the consumer. Live chat services which provide for real-time synchronized communications between customers and customer service representatives (McLean and Osei-Frimpong, 2017) constitute invaluable customer service tools in Web-based environments. They enable customers to obtain answers more quickly than via e-mail and to receive more personalized responses and content than would be available through a frequently asked questions (FAQs)

segment or even chatbot inquiries. This type of technology is even more important in a post-pandemic context, where banking consumers are urgently seeking easy and fast access to online customer service and support when they need it as they are prone to be anxious about their personal finances (Mehta 2020), hence the need to better understand the impact of live chat service use on consumer responses and behaviours.

The majority of research into human–technology interaction focuses on information processing and consumer cognitive responses (e.g. satisfaction in Chung et al. (2020), Lew et al. (2018); Mero (2018)). In choosing to concentrate on the cognitive aspects of chatbot use and evaluation, researchers leave behind other important concepts such as emotions (Jokinen, 2015). Indeed, while emotions and affective state are shown to play a dominant role in online customer experience (e.g. Rose et al., 2012), only few researchers have investigated the affective state of customers in live chat service settings (e.g. Chen et al. (2018) who examine emoticons) or examined the importance of emotions in a utilitarian context such as online banking (Rychalski and Hudson, 2017). Research to date nonetheless substantiates the study of emotions as crucial to understanding consumer behaviour (Bagozzi et al., 1999; Das and Varshneya, 2017) since humans are not purely rational beings. Customers have emotional needs and seek, through consumption, a combination of emotional and utilitarian benefits (Das and Varshneya, 2017).

Understanding emotions and the factors that impact them in environments such as live chat services commands growing attention given the ever increasing use of technology by financial institutions. Indeed, eliciting positive emotions in consumers is critical given notable consumer impact on technology use (Hibbeln et al., 2017), product/service evaluation (Kim and Gupta 2012), satisfaction (Dubé-Rioux, 1990; Oliver 1993; Westbrook, 1987), purchase intentions (Koo and Ju 2010), loyalty (Hibbeln et al., 2017), impulse purchases (Ozen and Engizek 2014) and word of mouth (Ladhari, 2007; Schnebelen and Bruhn 2018; Sweeney et al. 2012). In this study, an examination of the latter could prove of interest in the light of business investment in interactive functionalities such as live chat services and the adoption of new technology to enhance positive word of mouth (Tsai and Compeau, 2010). The first objective of this study is therefore to investigate the impact of positive and negative emotions on customer positive word-of-mouth intentions respecting live chat services in the financial sector.

Several other important issues relating to emotions elicited during live chat services also deserve to be addressed. For example, in a live chat services context, which elements of the service environment contribute most to foster positive emotions? Which elements help most to avoid negative emotions? Information of the like could help financial

institutions ensure the best design, development and implementation of live chat service tools intended to generate optimal emotional experiences. The service environment indeed assuredly plays a vital role in service delivery in the light of an evident capacity to foster pleasurable emotional reactions, while strengthening customer perceptions and retention (Baker et al., 2002; Bitner, 1992; Lin and Liang, 2011; Sherman et al., 1997). To comprehend more fully the impact of the service environment in the context of live chat services, we use an extensively investigated concept in the service literature, namely e-service quality. In consumer behaviour research, consumer-assessed e-service quality has rapidly developed into a driver of online consumer satisfaction (Bressolles and Nantel 2008; Parasuraman et al., 2005; Sharma and Lijuan, 2015) including in the financial industry (Amin, 2016). E-service quality is also identified as key for enhancing website effectiveness (Bressolles 2006), facilitating the online customer conversion process and loyalty (Dai et al. (2011); Shankar and Jebarajakirthy (2019), in banking). Hence, the second objective of this research is to identify which dimensions of e-service quality (accessibility, customer service and support, perceived security/privacy and design) impact positive and negative customer emotions respecting live chat services in the financial industry.

All things considered, an examination of these two research objectives in an online live chat services context should yield interesting results, while contributing to the literature in the field and providing sound direction for practitioners. In the upcoming section, we present a literature review and develop a series of hypotheses, then follows an outline of research methodology, data analysis procedures and findings. The concluding section proposes a discussion of findings, as well as study limitations and directions for future research.

Literature review and hypotheses development

Live chat services

Live chat services enable consumers to ask questions and receive information from human representatives (McLean and Osei-Frimpong, 2017) and address concerns and complaints in a Web-based environment (Elmorshidy et al., 2015). More specifically, through instant messaging (i.e. instantaneous transmission of text-based messages) between senders and receivers (Elmorshidy, 2013; Elmorshidy et al., 2015; Xu, 2016), live chat services provide an opportunity for customers and service employees/experts to interact. These services bypass more traditional methods such as e-mail and e-forms, with questions and concerns answered on the spot in real time (Elmorshidy et al., 2015).

They also allow for more personalized interaction than that obtained using chatbot capability which generates automated responses through artificial intelligence (McLean and Osei-Frimpong, 2019). Although reactions of human and computerized agents may be similar, obvious differences readily detected by consumers alter sensory perceptions and physical cues (Shank, 2014).

Live chat services continue to gain in popularity because they are viewed as cost-effective customer service tools which provide immediate responses, increase social interaction, enhance personalization and promote consumer trust, while reducing perceptions of risk associated with online purchases (Elmorshidy, 2013; Elmorshidy et al., 2015). Live chat services also constitute an effective service recovery tool (McLean, 2017). For customers, they are not only more and more prevalent but also useful. When asked which channels US customers prefer when communicating with companies, 44% of respondents cite live chat services (eMarketer, 2019a). Ranking at the same level as e-mails but behind the telephone (eMarketer, 2019b), these services fulfil a growing need and enable Web users to collaborate, communicate and connect in online social settings (Elmorshidy et al., 2015; McLean, 2017). Chattaraman et al. (2012) highlight search support, decision support and navigational/procedural support as three key uses of live chat service technology. Customers expect and seek out the same type of service online as they receive offline (McLean and Osei-Frimpong, 2019). For example, 'those who have an unsuccessful search expect to be able to seek online support from a company representative the same way as they would do in the offline environment' (McLean, 2017; p. 657). The study by the latter author evidences the fact that website searches are often abandoned by customers who would appreciate online support but cannot locate it, underscoring the importance of Web-based customer support. In an era in which differentiation is challenging and competition fierce, live chat services are essential as they attract more consumers to websites (Kim et al., 2007), enhance customer experience (McLean and Osei-Frimpong, 2017) and improve customer relationships (McLean and Osei-Frimpong, 2019). Prior research probes the impact of live chat service use, intent to return to a website (Xu, 2016) and patronage intentions in relation to virtual agents (Etemad-Sajadi, 2014). However, further research is warranted to understand more properly the affective state of consumers when using such services, especially given consistent research-based demonstration of the importance of emotions in comprehending consumer behaviour.

Emotions

Holbrook and Hirschman (1982) were the first to include emotions as a determining variable of consumer behaviour.

Since then, several other authors (e.g. Bagozzi et al., 1999; Ladhari, 2007; Mattila and Enz, 2002; Richins, 1997; Westbrook and Oliver 1991; Wu and Wang, 2017) have manifested an interest in emotions as a predictive element of consumer behaviour (purchase and word-of-mouth intentions). To enhance consumer behavioural intentions, previous research underscores the importance of companies prioritizing and strengthening the affective components of service as the latter exercise greater influence than their cognitive component counterparts (Chiu and Wu, 2002). Fernandes and Proença (2013, p. 49) demonstrate that the satisfaction of consumer emotional motivations leads to 'higher forms of dedication to the provider' than does the satisfaction of cognitive motivations. Similarly, Magids et al. (2015) find that customers emotionally connected to a brand are more valuable than those reported to be very satisfied. More recently, emotions have been shown to play an essential role in rational thinking and reasoning systems, thereby sparking the interest of researchers in neuroscience and cognitive psychology (Lee et al., 2019).

For the purpose of this study, the definition of 'emotion' advocated by Bagozzi et al. (1999, p. 184) is retained:

> A mental state of readiness that arises from cognitive appraisals of events or thoughts, has a phenomenological tone, is accompanied by physiological processes, is often expressed physically (e.g. in gestures, posture and facial features), and may result in specific actions to affirm or cope with the emotion, depending on its nature and meaning for the person having it.

Emotions, conscious or unconscious (Bagozzi et al., 1999) and linked to affect-laden judgments or beliefs (Rousi and Renko, 2020), are deemed central to action taken by consumers (Bagozzi et al., 1999; Gaur et al., 2014; Huang, 2001; Lin and Liang, 2011). These emotions are short-term sentiments of positive or negative valence (Bagozzi et al., 1999; Erevelles, 1998; Haavisto and Sandberg, 2015; Richins, 1997). Positive emotions include happiness and joy, whereas negative emotions can extend to fear and anger (Izard 1977; Plutchik 1980; Roseman, 1991). Some authors (e.g. Haavisto and Sandberg, 2015) observe negative emotions to be stronger and more readily present than positive emotions in certain instances (e.g. discussion forums). The valence approach, which entails measuring both positive and negative emotions (Laros and Steenkamp, 2005), is widely used to assess consumer emotional responses to service experiences (Jang and Namkung, 2009; Lo and Wu, 2014; Ou and Verhoef, 2017; Peng et al., 2017; Ribeiro and Prayag, 2018).

Emotions are typically elicited by events, objects or individuals through the likes of service encounters or interaction with service personnel, salespersons and in-store features (Ladhari et al., 2017), thereby substantiating that

the environment plays a vital role in an individual's affective state. Indeed, based on the Environmental Psychology Theory which focuses on the interplay between individuals and their surrounding,[1] Mehrabian and Russel (1974) figure amongst the first to examine how atmospheric cues impact emotional arousal and responses. In their S–O–R (stimulus–organism–response) framework, they establish that the stimulus (environment) influences the organism (individual's internal state, such as emotions) which evokes a response (behaviour). Donovan and Rossiter (1982), who demonstrate that the paradigm may be applied to the retail sector, have inspired many marketing researchers to use their theory in subsequent studies such as the one by Loureiro and Roschk (2014) who find that cues can be impactful in both offline and online environments.

A number of authors investigate consumer emotions in an e-commerce context (e.g. Balaji et al., 2017; Bui and Kemp, 2013; Éthier et al., 2008; Haavisto and Sandberg, 2015; Kafetsios et al., 2017; Rose et al., 2012) and substantiate beyond a doubt that individuals do experience emotions as they browse websites (Balaji et al, 2017; Éthier et al., 2008). Emotions experienced by browsers are deemed similar to those experienced in a physical context (Éthier et al., 2008).

Given that some previous studies assess the effect of service quality on positive and negative emotions (Chen et al., 2015; Peng et al., 2017; Ribeiro and Prayag, 2018), an exploration of the impact of e-service quality on emotions in a live chat services environment appears opportune.

Word of mouth (WOM)

Word of mouth has proved a leading research topic in the marketing literature (Martin and Lueg, 2013), with the advent of technology (e.g. Internet, social media) significantly impacting the concept (Chen et al., 2014; Ismagilova et al., 2020; Luonila et al., 2016). Omnipresent and widespread, eWOM enhances the power of peer-to-peer communications among consumers (Dellarocas et al., 2007; Kasabov, 2016).

Word of mouth is defined as 'an informal verbal communication occurring in person, by telephone, e-mail, mailing list or any other means of communication with regard to a good or service' (Goyette et al., 2010, p. 9). A recommendation source may be either personal or impersonal and deemed independent of commercial influence (Litvin et al., 2008). People proffer positive or negative opinions about a company product or service (Goyette et al., 2010), hence the terms positive or negative word of mouth. Accordingly, some authors (e.g. Goyette et al., 2010; Packard and Berger, 2017) define positive word of mouth as the action of

recommending a company's services to others. The approach chosen for the study at hand is consistent with the foregoing definition.

Positive word of mouth constitutes a valued ally. Consumers use it to fulfil a need for information and reduce the perceived risk and uncertainty surrounding a consumption decision (Mangold et al., 1999; Murray 1991). Word of mouth represents a leading resource for sustaining brand image, market position and customer relations (Luonila et al., 2016). Word of mouth can also exert an influence greater than either advertising or salespersons (Hennig-Thurau et al., 2004; Packard et al., 2016; Steffes and Burgee, 2009). Positive word of mouth further helps businesses reduce marketing costs, boost sales and profits, and attract and retain customers (Lin and Lu, 2010; Trusov et al., 2009). Lastly, following interaction with service staff, the study by Wang (2009) demonstrates that the development of positive emotions leads to greater customer patronage intentions (e.g. intentions to recommend, purchase or continue shopping) given increased satisfaction and a more positive attitude towards the brand.

In the e-commerce literature, emotions are shown to influence behavioural intentions, including the prospective use of online stores and formulation of recommendations to others (Koo and Ju, 2010).

It is interesting to consider the valence of emotions (Laros and Steenkamp, 2005; Phillips and Baumgartner, 2002). The combination of positive and negative emotions more accurately reflects a person's attitude and represents the most popular conceptualization of emotions (Laros and Steenkamp, 2005). Indeed, positive and negative emotions are independent variables activated by different stimuli and may lead to different cognitive and behavioural responses (Lee et al., 2011; Ou and Verhoef, 2017), hence the necessity of treating them as two independent constructs, rather than two opposite ends of a continuum of the same dimension (Lee et al., 2011; Zhao et al., 2018). To the best of our knowledge, positive and negative emotions have never been studied together in the context of live chat services. From a managerial perspective, and given the independent nature of these variables, studying emotion valence will allow managers to understand which variables prompt positive emotions and which variables avoid or at least mitigate negative emotions (Ou and Verhoef, 2017).

When using products or services such as live chat services, consumers who experience stronger positive emotional responses would be more inclined to share information regarding these products or services (Alhidari et al., 2015; Ismagilova et al., 2020). Hence, our first hypothesis:

H1 *Positive emotions* linked to live chat services positively impact *positive word of mouth*.

Consumers who experience negative emotions such as frustration or anxiety may sense that they risk losing out by using live chat services. Such emotions understandably diminish consumer intentions, behaviours and inclination to purchase/talk about products or services, especially in an online context (Gemar et al. 2019). Accordingly, the following hypothesis is proposed:

H2 *Negative emotions* linked to live chat services negatively impact *positive word of mouth*.

E-service quality and impact on emotions

Service quality is a useful strategic management tool (Hemmasi et al., 1994) since it exerts an impact on business profits and market shares (Parasuraman et al., 1991). Furthermore, a number of authors demonstrate the importance of service quality in a Web-based context (e.g. Barnes and Vidgen, 2003; Bressolles 2006; Kao and Lin, 2016; Lien et al., 2017; Parasuraman et al., 2005; Wolfinbarger and Gilly, 2003; Yoo and Donthu, 2001) and in e-banking (e.g. Amin, 2016; Ladhari and Leclerc, 2013; Raza et al., 2020). In an environment in which the means of interacting and conducting transactions continue to evolve, e-service quality, which is to say the 'quality of service customers experience in online channels', is critical (Blut et al., 2015) given the impact on consumer trust (Al-Nasser et al., 2013; Kao and Lin, 2016), satisfaction (Collier and Bienstock, 2006; Dai et al., 2011; Kao and Lin, 2016; Kim and Kim, 2020) and loyalty (Dai et al., 2011; Kim and Kim, 2020; Shankar and Jebarajakirthy, 2019).

To understand more fully customer emotions—positive and negative—in a live chat services context, the impact of four dimensions of e-service quality derived from the topical literature is examined, namely *accessibility, customer service and support, perceived security/privacy* and *design*. Albeit there exists no consensus respecting the number and nature of dimensions of e-service quality (Ladhari, 2010), the dimensions retained for this study are those which recur most readily in the literature (Blut, 2016; Jun et al., 2004; as well as Shankar and Jebarajakirthy, 2019 in the financial industry). (Please see Table 1.) These dimensions accurately capture the essence of online chat services and acknowledge the latter as a technology-based tool (hence the importance of *accessibility*, *perceived security/privacy* and *design*) with a strong human presence given that communication takes place with an agent (hence the interest of including *customer service and support*).

Furthermore, Kim and Lennon (2013) present service quality as an antecedent of the emotions experienced online by consumers. Also, Hart and Sutcliffe (2019) point to a link between service quality in relation to interactive products (iPads) and emotions (positive and negative). It is therefore interesting to investigate whether these elements of online service quality are also important in the relatively recent online live chat services context.

The following paragraphs present the hypotheses and identify the potential impact of each dimension of e-service quality on consumer emotions.

The notion of *accessibility* refers to ease of use, convenience and adaptability (Giraud et al., 2018; Rodríguez et al., 2017). Drawing inspiration from the conceptualization of accessibility in a Web-based context as suggested by Martins et al. (2017), accessible live chat services refer to services that are easy to locate, easy to use, easy to understand and readily compatible with different technological devices. Ease of use has been shown to impact a virtual agent's hedonic value (Etemad-Sajadi, 2014). Several authors also argue that ease of use enhances satisfaction in e-banking (Casaló Ariño et al., 2008; Liao and Cheung, 2008), a notion closely allied with emotions (Rychalski and Hudson, 2017). Hence, the following hypotheses:

H3 Accessibility linked to live chat services impacts emotions.

H3a *Accessibility* linked to live chat services positively impacts *positive emotions*.

Conversely, some authors claim that a lack of accessibility leads to negative emotions. For example, Lee et al. (2011) evidence that sellers who are inaccessible or who ignore their customers induce negative emotions in the latter such as frustration, dissatisfaction and annoyance. Habib and Qayyum (2018) demonstrate that ease of navigation, organization and availability of requisite information on an e-commerce website contribute to the development of positive emotional responses (e.g. pleasantness of mood and arousal), whereas a website that is difficult to use leads to an unfavourable emotional response. Thus, the next hypothesis is presented:

H3b *Accessibility* linked to live chat services negatively impacts *negative emotions*.

Customer service and support relate to services offered to customers to fulfil their needs and ensure timely responses to their questions, returns or complaints (Blut et al., 2015). These services notably require the input of competent, caring individuals capable of responding quickly to customer requests in the banking sector (Shankar and Jebarajakirthy 2019). Personalized online services are equally essential (Verhagen et al., 2014). In interactions with service agents, consumers generally expect agents to exhibit certain characteristics (e.g. benevolence, competence and courtesy). According to emotional contagion theory, positive emotion

Table 1 Dimensions of e-service quality

	Fulfilment	Competence and efficiency	Reliability	Security/ privacy	Content and information	Aestheticism and design	Accessibility/ ease of use	Customer service/ personalization/ interaction
Yoo and Donthu (2001)				X		X	X	
Trocchia and Janda (2003)		X		X	X	X	X	
Cai and Jun (2003)			X	X		X		X
Santos (2003)		X	X	X	X	X	X	
Iwaarden et al. (2003)			X	X		X		X
Barnes and Vidgen (2003)					X	X		X
Jun et al. (2004)			X	X	X		X	X
Webb and Webb (2004)			X	X			X	X
Parasuraman et al. (2005)	X	X		X			X	
Bauer et al. (2006)	X		X			X		X
Bressolles (2006)			X	X	X	X	X	X
Collier and Bienstock (2006)	X	X		X	X		X	
Piercy (2014)	X			X		X		
Ladhari and Leclerc (2013)*					X	X	X	X
Yapp et al. (2014)			X	X	X			X
Blut et al. (2015)	X			X		X		X
Zemblyté (2015)	X			X			X	X
Blut (2016)	X			X		X	X	X
Kao et Lin (2016)		X	X		X		X	
Amin (2016)*				X	X		X	X
Lien et al. (2017)			X				X	X
Goutam and Gopalakrishnab (2018)	X	X		X			X	
Shafiee and Bazargan (2018)				X			X	
Shankar and Jebarajakirthy (2019)*			X	X		X		X
Raza et al. (2020)*			X	X		X	X	X
TOTAL	8	6	12	20	10	14	17	16

*Studies in a banking context

displayed by an employee can be positively associated with positive emotion elicited in a customer (Lin and Liang, 2011). Manifestations of positive staff emotions such as a greeting, an open-ended question like 'How are you today?' or a thank you at the end of a conversation correlate with positive client emotions (Wang, 2009). A cultivated sense of salesperson empathy similarly generates positive emotions such as warmth, fulfilment and happiness (Lee et al., 2011). Indeed, when customer expectations are met, customers develop positive affection reactions towards agents (Cohen-Charash and Spector, 2001; Turel and Connelly, 2013). Accordingly, we propose that:

H4 Customer service and support linked to live chat services impact emotions.

H4a *Customer service and support* linked to live chat services positively impact *positive emotions*.

Conversely, when customer expectations are not met (e.g. agents found to be incompetent or not customer-focused), negative emotions such as anger can manifest (Harris, 2013). For Zhao et al. (2018), employees who successfully deliver their in-role behaviour (e.g. performance consistent with customer expectations) generate positive emotions in customers and mitigate any negative emotions. More recent findings from in-travel context research suggest that the dimension of interactional justice (e.g. positive employee attitudes and behaviours, empathy and apologies) generates positive emotions greater than those generated by monetary compensation, while mitigating

negative emotions (Xu et al., 2019). We therefore hypothesize as follows:

H4b *Customer service and support* linked to live chat services negatively impact *negative emotions*.

Security issues in e-commerce relate to the capacity of e-businesses to safeguard their online transaction systems. Security threats include the destruction, disclosure and modification of data, denial of service, and/or fraud and abuse (Kalakota and Whinston, 1996). Goodwin (1991) defines perceived privacy as 'the customer's perception of exercising control over the following: (1) the presence of other people in the environment during a market transaction or consumption behaviour; and, (2) the dissemination of information related to or provided during such transactions or behaviours to those who were not present' (p. 152). Privacy and security are that much more important in the banking sector as customers associate a certain degree of vulnerability and risk with financial services (Moin et al., 2015). This study considers privacy and security concerns to be a single construct in the sense advocated by McCole et al. (2010) as well as Jahangir and Begum (2007) in the financial industry. Indeed, given the undeniable link between privacy and security, Web-based consumers are seldom able to differentiate between the two (McCole et al., 2010). Chung and Shin (2010) find perceived security to impact satisfaction. In addition to generating satisfaction, the perceived security and privacy of a financial website, or any other type of website, positively influence user trust (e.g. Al-Sharafi et al., 2018; Carlos Roca et al., 2009; Damghanian et al., 2016; Flavián and Guinalíu 2006). Lee et al. (2011) further find that that when the seller is perceived as trustworthy, customers feel safe, content, comfortable and pleased. Hence, the following hypotheses:

H5 Perceived security/privacy linked to live chat services impacts emotions.

H5a *Perceived security/privacy* linked to live chat services positively impacts *positive emotions*.

Conversely, whenever customers perceive a salesperson or website to be untrustworthy, they may feel unhappy, frustrated and angry (Lee et al., 2011). Since perceptions of privacy and security relate closely to trust (Flavián and Guinalíu 2006), we hypothesize as follows:

H5b *Perceived security/privacy* linked to live chat services negatively impacts *negative emotions*.

Design and aesthetics have been shown to be of utmost importance regarding human–computer interaction, in some cases even more so than usability (Lin, 2013). The present study focuses on design linked to live chat services. The concept of design refers to the richness of the environment's representation which is determined by characteristics of form, notably graphics, images, animation, videos and so on (Stremtan and Muntean 2008). These elements combine to create a virtual atmosphere, attract consumer attention and elicit favourable attitudes (Moore et al., 2005). Applying the S–O–R paradigm (Mehrabian and Russel 1974) to online stores, website stimuli are found to influence consumer emotions such as pleasure and arousal. Web cues, including background and text colour, animated logos and image interactivity play on mood and emotions as consumers browse (Eroglu et al., 2003; Fiore et al., 2005; Park et al., 2008; Wu et al., 2008; Young and Lennon, 2010). Some studies on human–computer interaction (HCI) (e.g. Koo and Ju, 2010; Sheng and Joginapelly 2012) evidence that website atmospherics, including graphics, colours and links, influence emotions. Etemad-Sajadi (2014) demonstrates that the aesthetic aspect of virtual agents impacts hedonic value, more specifically enjoyment. Therefore:

H6 Design linked to live chat services impacts emotions.

H6a *Design* linked to live chat services positively impacts *positive emotions*

Whenever the design quality of a product or service is poor and features fail to live up to customer needs, desires and expectations, customers may experience negative emotions (Meirovich and Bahnan, 2008). For example, Foroughi et al. (2019) demonstrate that poor peripheral services in a stadium, specifically facilities (e.g. seating comfort, stadium quality) and electronic devices (e.g. stadium lighting, screen size), contribute to a rise in unpleasant emotions in spectators. According to Wong (2004), a negative in-store experience reinforces negative emotional states, the assessment of the experience being based on elements of in-store atmosphere, such as lighting and layout or other. Transposing these findings to the context of virtual stores, we hypothesize as follows:

H6b *Design* linked to live chat services negatively impacts *negative emotions*.

Methodology

A self-administered Web questionnaire was distributed by a recognized Canadian research firm and answered by 682 panellists before the COVID-19 pandemic (autumn 2019). To be eligible to participate, respondents were required to be Canadian citizens over 18 years of age and must have used a

financial institution's live chat services within the previous 12 months. Survey respondents were asked to think about their last use of their financial institution's live chat services. The sample comprised women in a proportion of 52.9% and men in a proportion of 47.1%, with the median age situated between 35 and 44 years. More than 30% of respondents had an undergraduate degree and reported median personal income before taxes of between $60,000 and $79,999.

To measure the constructs, different scales were used. *Accessibility* was evaluated using the Bressolles scale (2006) to test for ease of use. Two items were developed and added to better examine the concept in a live chat services context. The *customer service and support* construct was adapted from scales validated in the literature (Shankar and Jebarajakirthy, 2019; Srinivasan et al., 2002). *Perceived security/privacy* was measured using a scale by Chen and Barnes (2007) and *design* with a scale by Bressolles (2006). *Emotions* (*positive*—happy, amused and delighted, and *negative*—frustrated, angry, anxious and confused) were adapted from Ribeiro and Prayag (2018). Lastly, positive word of mouth was evaluated using the Yi and Gong scale (2013). All items are measured using a 7-point Likert scale.

To ensure data quality and detect inattentive or fraudulent respondents (Gao et al., 2016), validity or 'red herring' questions were included in the questionnaire (i.e. if you read this question, please answer 2), and respondents showing repetitive patterns in their answers were deleted from the final sample.

A confirmatory factor analysis (CFA) was conducted, and the theoretical framework was tested using structural equation modelling (EQS 6.2).

Results

Reliability and validity

Results show the reliability indices (alphas and composite reliability indices) to be very good (greater than 0.70 for all constructs). (Please see Table 2.)

Convergent validity was confirmed since all factor loadings were greater than or close to 0.70 (except for positive emotion—amused at 0.64) and average variance extracted (AVE) was greater than 0.50 (ranges from 0.60 (positive emotions) to 0.89 (word of mouth)) (Fornell and Larcker, 1981). Discriminant validity was also achieved since no squared correlation between each pair of constructs exceeded the AVE per construct indicator. (Please see Table 3.)

Measurement model

The measurement model fits the data extremely well. More specifically, the χ^2 value is 706.73 with 329 degrees of freedom. The χ^2/df ratio is 2.15 (lower than 3), showing the model to be good. Model indicators are also good and exhibit excellent fit (NNFI = 0.99; CFI = 0.99; SRMR = 0.05; RMSEA = 0.05; 90% confidence interval of RMSEA = 0.043–0.053).

Since the survey technique involves self-declared data, there exists a risk of common method variance. Two procedures were carried out to address the issue. Firstly, a singlefactor Harman test was conducted (Podsakoff and Organ 1986). Test findings suggest the presence of five factors (not just one), indicating that the effects of the common method do not impact the findings observed in the study. Further, as recommended by Podsakoff et al. (2003), the multifactor measurement model was tested with an additional method factor. Overall, the model presents good indices (CFI at 0.98 and RMSEA at 0.05). All factor loadings remain significant and of similar amplitude which cannot therefore be explained by a systematic error associated with the method (Grégoire et al. 2010). The outcome of these tests suggests that common method variance is not a pervasive issue in this study.

Structural model

Figure 1 shows that H1 and H2 are each confirmed since 45.8% of the variance in *positive word of mouth* is explained by *emotions*, both positive and negative, the former exerting a slightly greater impact ($\gamma = 0.44$ vs -0.39 for negative emotions). Regarding live chat services in the banking sector, *customer service and support* proves the most important factor impacting *positive emotions* ($\gamma = 0.52$) and *negative emotions* ($\gamma = 0.55$). In the latter case, it alone accounts for 32.7% of the variance. Live chat service *design* influences only *positive emotions* ($\gamma = 0.38$) which together with *customer service and support* explain 38.7% of total variance. Interestingly, in this model neither *accessibility* nor *perceived security/privacy* emerges as influencing consumer *emotions*. Therefore, H4 (*customer service and support*) is confirmed but H6 (*design*) only partially confirmed, while H3 (*accessibility*) and H5 (*perceived security/privacy*) must be rejected.

Discussion

The twofold purpose of this study was to investigate the impact of positive and negative emotions on customer positive word-of-mouth intentions respecting live chat services and to identify which dimensions of e-service quality impact the emotions experienced by banking customers when using live chat services.

Results reveal that the emotions, both positive and negative, experienced when using live chat services significantly

Table 2 Results for the measurement model

Construct	Factor loadings	Average variance extracted (rvc)	Alphas/comp. rel
Positive emotions		**0.60**	**0.82/ 0.82**
Recalling the emotions experienced during your last use of the live chat services of the financial institution, please indicate your level of agreement with each of the following emotions			
Happy	0.79		
Amused	0.64		
Delighted	0.88		
Negative emotions		**0.64**	**0.87/ 0.87**
Frustrated	0.89		
Angry	0.88		
Anxious	0.69		
Confused	0.71		
Positive Wom		**0.89**	**0.96/0.96**
I would say positive things about this live chat service to others	0.92		
I would recommend this live chat service to others	0.97		
I would encourage friends and relatives to use this live chat service	0.94		
E-Service quality			
Accessibility		**0.65**	**0.87/0.88**
It was easy to locate the live chat service on the financial institution's website or mobile application	0.76		
The live chat service was easy to use	0.82		
The live chat service was available when I needed it	0.77		
The live chat service was appropriately adapted to the platform used (e.g. mobile telephone, tablet)	0.86		
Customer service and support		**0.69**	**0.94/0.95**
The live chat service agent offered me personalized products and services based on my needs	0.68		
The live chat service agent easily adapted to me	0.83		
The live chat service agent's answers were personalized and based on my needs	0.83		
The live chat service agent was competent in his/her field	0.87		
The live chat service agent kept his/her promises and commitments	0.88		
The live chat service agent acted based on my interests	0.87		
The live chat service agent answered my questions promptly	0.82		
The live chat service agent adequately answered all my questions	0.86		
Perceived security/privacy		**0.87**	**0.94/0.95**
I believe that anypersonal information provided during my last use of the live chat service was well protected	0.91		
I believe that the transactions carried out during my last use of the live chat service were secure	0.95		
I believe that the confidentiality and privacy of my personal information were assured during my last use of the live chat service	0.93		
Design		**0.78**	**0.91/0.91**
I found the design of the live chat service to be creative	0.83		
I found the live chat service visually appealing	0.90		
I liked the design of the live chat service platform	0.91		

impact positive word of mouth. These results are consistent with those appearing in the literature in other contexts such as when using social media, attending a music festival (Hudson et al., 2015), viewing a film in a movie theatre (Ladhari, 2007) or evaluating a university (White, 2010). Accepting that word of mouth plays an important role in

Table 3 Discriminant validity[a]

CONSTRUCTS	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Positive emotions (1)	**0.60**						
Negative emotions (2)	0.23	**0.64**					
Positive WOM (3)	0.30	0.30	**0.89**				
Accessibility (4)	0.13	0.16	0.39	**0.65**			
Customer service and support (5)	0.26	0.29	0.56	0.61	**0.69**		
Perceived security/privacy (6)	0.16	0.19	0.46	0.44	0.64	**0.87**	
Design (7)	0.27	0.18	0.49	0.41	0.53	0.48	**0.78**

Average variance extracted (AVE) on-diagonal and squared correlations among constructs off-diagonal

Fig. 1 Structural model results
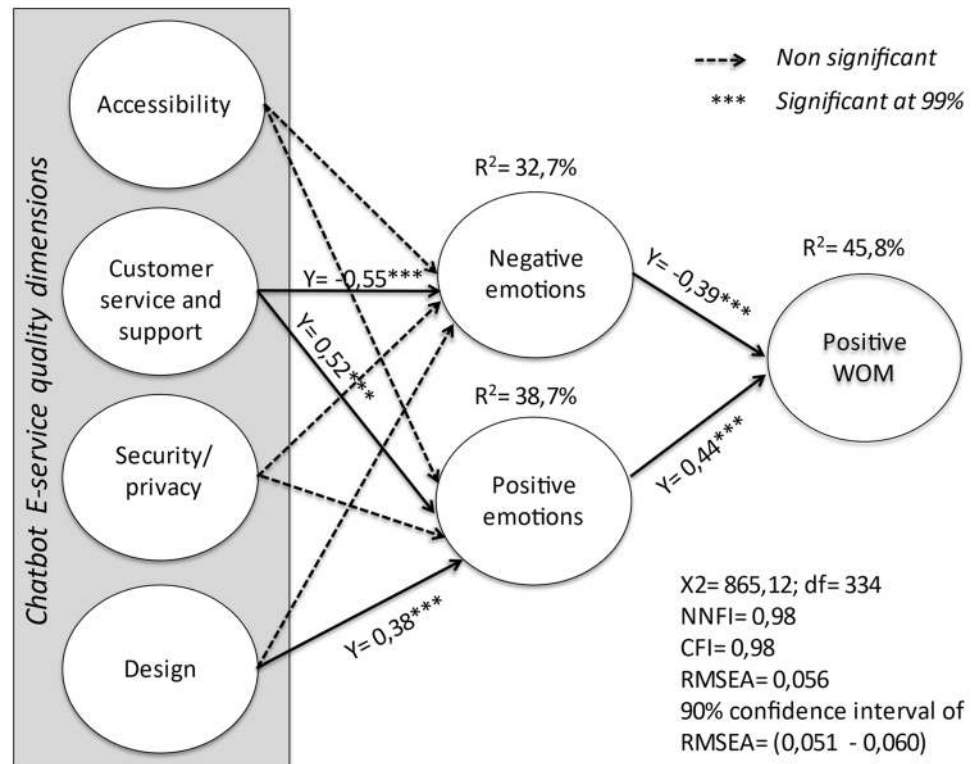
technology adoption (Tsai and Compeau, 2010), study findings substantiate the importance of prioritizing emotions in the case of live chat services, especially given the ever increasing popularity of these services as detailed earlier.

Consideration of the valence of emotions is also apropos since consumer reactions to technology can spawn both positive and negative emotions (Parasuraman et al., 2005). Whereas some studies point to the predominance of negative emotions in the context of discussion forums (Haavisto and Sandberg, 2015), this study, despite demonstrating the influence of both categories of emotions, finds positive emotions to exert a greater impact ($\gamma = 0.44$ vs -0.39). Individuals amused by or happy and delighted with live chat services are more likely to recommend and say positive things about these services to others, or encourage friends and relatives to use them. This result is interesting because in the context of the study, the mean of positive emotions was relatively low (3.78/7), leaving room for improvement.

Regarding the dimensions of e-service quality, results show that *accessibility* and *perceived security/privacy* do not affect emotions, either positive or negative. One plausible explanation is that customers might consider these two dimensions of e-service quality as prerequisites during chat sessions. In fact, in terms of security, approximately three out of four Internet users trust the websites of financial institutions more than other transactional websites (Centre facilitant la recherche et l'innovation dans les organisations [CEFRIO], 2019). Moreover, in this study, these two dimensions exhibit the highest means (accessibility 5.81/7, security/privacy 5.59/7 compared with customer service and support 5.49/7 and design 4.93/7). One might therefore tend

to postulate that differentiation takes place with the aid of the other two dimensions.

Customer service and support together with *design* are nonetheless the dimensions which stand out in the model. The live chat service agent plays an important role given that customer service and support impact emotions both positive and negative, as Ribeiro and Prayag (2018) evidence in their study of restaurant service experience. Indeed, as individuals rely more and more on technology, they favour seeking out needed information themselves. The role of the agent has therefore evolved over time (Evanschitzky et al., 2012). Customers are increasingly demanding of service personnel, if and when they decide to engage with the latter (Beatty et al., 2016). Chat services therefore represent a support tool perfectly suited to new customer needs and behaviours.

This study substantiates that design engenders positive emotions. Several authors (e.g. Koo and Ju, 2010; Sheng and Joginapelly 2012) have previously demonstrated that the ambience created by site design has the power to generate positive emotions. Consistent with environmental psychology theory (Mehrabian and Russel 1974), the study by Uhrich and Benkenstein (2012) demonstrates that a favourable perception of 'design cues' positively influences emotional responses of customers. Moreover, of all the environmental factors (i.e. ambience, design and social factors), design is the dimension that exercises the most powerful impact on affective responses. In the same study, these affective responses are in turn shown to positively relate to positive word of mouth. In the case of live chat services, this dimension clearly fosters positive emotions such as delight, pleasure and fun even though the banking sector is generally characterized as more utilitarian in nature.

This research presents some key theoretical implications. First, findings complement the few studies (e.g. Hudson et al., 2015; Ladhari, 2007; White, 2010) having examined the impact of various emotions (positive and negative) on WOM. Moreover, to our knowledge, this paper is the first to respond to the research pathway extended by Ismagilova et al. (2020) who suggest that these links be examined in an online context. This study indeed fills the gap by considering the use of live chat services.

Moreover, this study ranks among the few (e.g. Herington and Weaven, 2007) that examine emotions in a utilitarian context such as banking. Interestingly, even though some authors (e.g. Herington and Weaven, 2007; Loureiro and Roschk, 2014) state that emotions are of little relevance in such a context, our findings demonstrate that they are indeed important since both types of emotions impact WOM and explain a good variance of the latter (over 45%).

Lastly, online banking studies have, to date, investigated the impact of service quality on relationships (trust, Ladhari and Leclerc, 2013; Shankar and Jebarajakirthy, 2019; satisfaction, Ladhari and Leclerc, 2013; Raza et al., 2020)

and loyalty/WOM (Amin, 2016; Shankar and Jebarajakirthy, 2019). Our research adds to this theoretical body of work with its first-time focus on live chat service quality as opposed to banking website service quality in general.

The results of this study have important practical implications. Chat services provide added value by fulfilling trending customer needs for personalized help whenever they need it. To integrate this type of service successfully, one must optimize the dimensions of the chat service that are likely to convey positive emotions, in particular and as shown in this research, support function and design.

Firstly, regarding support function, the front-office employees shape a large part of the service offer. Chat agents must therefore be able to respond adequately to questions, complaints or problems and have the necessary skill set to do so, hence the importance of recruiting and training high-quality online customer service agents. To resolve problems or concerns effectively and quickly, it is equally important to give these agents sufficient leeway and decision-making accountability (employee empowerment) as well as access to abundant customer data. For example, HelpCrunch, a deeply integrated customer communication platform, offers corporate clients live chat software that provides detailed real-time data respecting visitor profiles, geographic locations and website-based actions. Lastly, in addition to having the 'know-how' and 'hard skills' (technical abilities), agents must also possess 'soft skills' (interpersonal or people skills). They must exhibit the human qualities or character traits such as politeness, benevolence, empathy, attention and courtesy. Agents must also learn how to detect negative user emotions (e.g. expression of anger, disappointment) and turn the situation around to promote positive word of mouth. In short, customers must sense that the service agents understand their needs, that they will do everything possible to meet these needs adequately, and that they are honest and dependable.

Secondly, good support service should be combined with the development of a creative, attractively designed chat window in keeping with target customer needs and tastes. For example, professional photographs of agents can be inserted to lend a human, aesthetically pleasing touch to websites. Chat buttons and windows created in keeping with website style and design also help deliver consistency while enhancing the overall browser experience. The Live Chat Company (a live chat application solution for businesses) for example allows users to define the theme, colours and position of the chat window. All things considered, the chat window must be functional, ergonomic, user-friendly, aesthetic and, at its finest, customizable. To achieve this, businesses must be able to intervene on various virtual atmospheric cues (e.g. text font, background, logo, emoticon, image, aesthetic representation of the agent, animation, colour, chat button/window graphics, speed of execution).

Conclusion

The findings herein complement those of other researchers (e.g. Koo and Ju, 2010; Rose et al., 2012; Sheng and Joginapelly, 2012; Young and Lennon 2010) who examine the impact of certain characteristics on emotions experienced online. This study is, however, the first to investigate these characteristics in a live chat services context and presents the advantage of considering the two valences of emotions. Moreover, the work at hand substantiates the importance of emotions given that the latter impact word of mouth in the relatively recent context of live chat services.

This study enriches the theoretical body of knowledge relating to live chat services and online emotions. It contributes in important ways to the e-service literature as live chat services constitute a hybrid form of e-service that combines offline with online. The topic will gain importance as live chat services gain in prominence, especially after the COVID-19 pandemic. Indeed, the pandemic has considerably disrupted many sectors of commercial endeavour (Donthu and Gustafsson, 2020). This crisis has also prompted consumers to adopt new technologies and applications out of necessity (Sheth, 2020), paving the way for added research in the field.

The study is not, however, devoid of certain limitations. Although this research examines the impact of emotions on positive word of mouth, others might wish to consider the addition of the impact on negative word of mouth (Goyette et al., 2010) or no word of mouth at all. A future study based on experimentation could also be undertaken. For example, the two important constructs in this study (customer service and support and design) could be manipulated to examine their impact on customer emotions. The latter could also be evaluated using implicit measures (i.e. analysis of facial expressions via the FaceeReader software). Also, while some studies (e.g. Hill et al. 2015) examine differences between live chat services (human-to-human communications) and chatbot services (computer-mediated communications), to our knowledge, none have to date explored whether or not there exist differences in the emotions experienced in each of these contexts. Recent research has even shown that the humanness of online agents or avatars may affect consumer behaviour (Ng et al., 2020; Wiese and Weis 2020), opening the door to more in-depth investigations regarding affect in this field.

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