

Factors influencing customer satisfaction: The case of Facebook Chabot Vietnam

Xuan Hung Nguyen^a, Hai Ly Tran^b, Hue Anh Phan^b and Thi Thu Hien Phan^{c*}

^aNational Economics University, Vietnam

^bForeign Trade University, Vietnam

^cUniversity of Economics - Technology for Industries, Vietnam

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ABSTRACT

This research is intended to systematize the theoretical background of chatbots and assess the factors affecting customer satisfaction when they use Facebook chatbot. The study provides an insightful analysis for planners and field workers who are involved in the promotion of Facebook chatbot for online stores in Vietnam. It suggests different recommendations and solutions for individuals and organizations providing chatbot services on Facebook platform, in order to improve service quality and operational efficiency. An analysis of 271 customers who used chatbot services pointed out and evaluated the positive and negative relationships around customer satisfaction.

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1. Introduction

Nowadays, with technological advances, chatbot or “e-service agents” is becoming a trendy marketing tool to enhance customer experiences and fulfill expectations through real-time interactions (Hagberg, Sundstrom, and Egels-Zandén, 2016). The rapid growth of digital services and digital marketing channels has given brands new opportunities to satisfy customers (Calantone et al., 2018; Correa et al., 2010; Perrey & Spillecke, 2011) by providing 24-hour customer service that is automatically operated through an online chat system (Dhaoui, 2014; Godey et al., 2016; Ko et al., 2016). Especially with the social media chatbot’s individualization, an active relationship between the user and brand is formed, which not only boosts the performance of the brand but also provides the user better social, information and economic benefits (Coulter et al., 2012). They can also generate conversations depends on the user’s specific location or clickstreams, and therefore the automatic responses will be sent to answer the customer’s exact requirements (Howlett, 2017). E-service agents are now an essential part of marketing

* Corresponding author.

E-mail address: pthien.kt@uneti.edu.vn (T.T.H. Phan)

plans that have a real influence on the decision-making processes of users (Crosby & Johnson, 2002; Gautam & Sharma, 2017). Facebook is encouraging chatbot developers and it is reported that there are more than 300,000 active chatbots on Facebook's Messenger (Nealon, 2018). In the context of Vietnamese society, Facebook and Facebook Messenger are high-awareness social networking service with the number of customers alternately accounted for 95% and 79% of the internet users (Hootsuite, 2019). In addition, Facebook survey shows that about 53% of customers say that they prefer to shop with a business that they can connect with via chat (Nealon, 2018). With these figures, it seems Facebook chatbot, which works on Facebook Messenger platform has been making entrance into the Vietnamese market and getting familiar to the social community. Therefore, it is important for Vietnamese market to analyze the factors that influence the user satisfaction of Facebook chatbot and study how to maximize its capabilities. The objectives of the study are to identify and assess the influence of factors affecting customer satisfaction in the Vietnamese market. So far, there has been no research in Vietnam assessing about customers satisfaction using smart chatbot and its influencing factors, especially in the case of Facebook chatbot. The addition of behavioral studies in this innovative field of science will be a milestone in examining process of consumer trends in a more general and objective direction, which helps the service providers to make appropriate and effective market strategies.

2. Literature review

2.1. Automatic chatbot on online platform

According to Khan and Das (2018), chatbot is an artificially intelligent conversational agent that conducts conversations and gives meaningful answers to human users' questions via auditory or textual methods. Through the online messaging channel, marketers can program the chatbot to provide customer service, update content, run advertise as well as to sell products (Chi, 2017). E-service agents are used in dialog systems for different reasons including representing the brand (Balmer et al., 2006), strengthen customer/brand relationships (Fionda and Moore, 2009), providing customer service, information acquisition, and gave customers enjoyable experience (Serban et al., 2017; Kim et al., 2018). With the help of new technology, companies are capable to meet customer expectations, accomplish company goals, and create value (Choi et al., 2016; Woodside & Ko, 2013). The correct and immediate response is all what customers needed (Ubisend, 2017). As a result, online agents are believed to be performing better than offline services (Escobar, 2016).

2.2. Facebook chatbot

Basically, a chatbot is an automated messaging application scripted to interact with users. Bots are designed to acknowledge questions, give answers, and perform tasks. From 2016, all programmers and businesses will be capable of building bots for Messenger, and pass them for review. Facebook bots are capable of automatically posting content into groups, give appropriate responses to questions with some information or take action when mentioned in comments on a post.

2.3. Customer satisfaction

According to Oliver (1997), satisfaction is defined as consumers' fulfillment response, it is an assessment of a product or service feature; or from psychological point of view, it can be understood as customers emotion based on their expectations and consumption experience (Oliver, 1981). Customer satisfaction has become a vital concern for companies and organizations in their efforts to improve product and service quality as well as maintain customer loyalty within a highly competitive marketplace (O'Loughlin & Germà, 2002). From 2016 to 2018, chatbots were popularly and strongly applied in all fields, creating a new technological trend in the 4.0 industrial revolution especially in the online marketing and sales sectors platforms, e-commerce and customer services (Topbots, 2017). According to Gartner and Tech Emergence's research, more than 85% of customer interactions will not relate to any human interference

in 2020, and chatbot will be the top AI application for consumers in the next 5 years (Gartner, 2018). Facebook has more than 300,000 active chatbots on Facebook's Messenger and over 100,000 business messenger bots across a range of industries, with 2 billion messages shared between consumers and businesses (both humans and bots) each month (Nealon, 2018). For the ecosystem of chatbot in Vietnam, in the period from 2016 to 2017, there were more than 30,000 new chatbot types and 6,000 voice activation applications were created (Shriftman, 2017). In addition, Facebook and Facebook Messenger in Vietnam have become the high-awareness social networking service with the number of users alternately accounted for 95% and 79% of the internet users (Hootsuite, 2019).

3. Research model and methodology

3.1. Research model and hypothesis

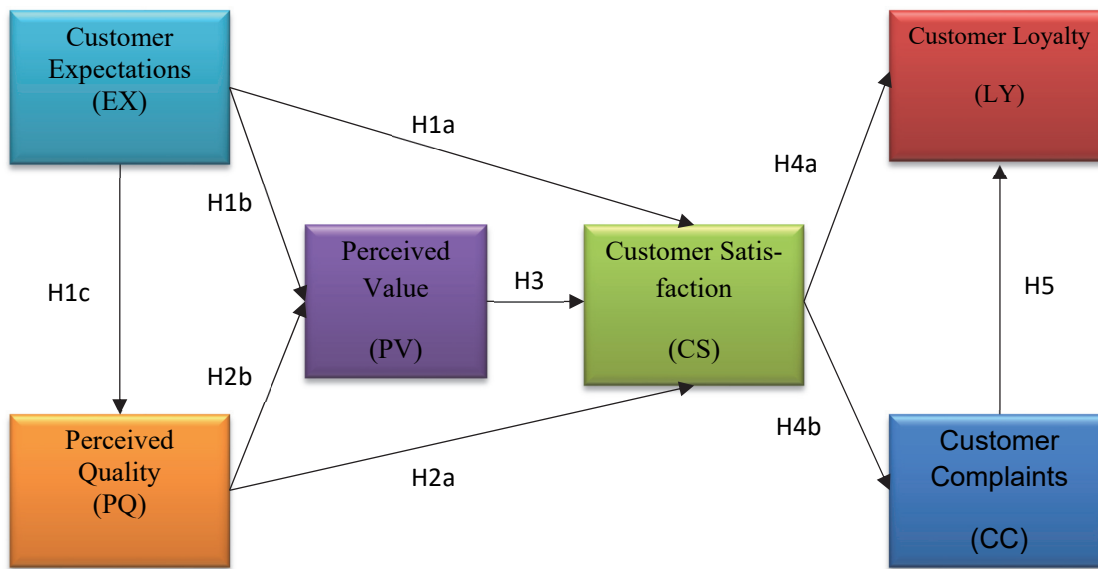


Fig. 1. Research model

To measure the research subject, this study adopts the American Customer Satisfaction Index (ACSI) methodology for two reasons: (1) The ACSI model offers many key antecedents and consequences of customer satisfaction and (2) this methodology is robust, and it was successfully adopted to various studies all over the world (Anderson & Fornell, 2000, Gerpott et al., 2001; Oliver & Anderson, 1994).

Customer Expectations

Customers form their expectations from their past experience and marketers' information and promises (Kotler, 2000). The expected of the customers is critical to their overall satisfaction (Fornell et al., 1996), when the products or services meet or exceed the customer positive expectations, the customers will find their satisfaction (Chiou & Droge, 2006; Santini et al., 2018). Wong and Dioko (2013) suggested that customer expectations moderate the relationship between customer satisfaction and its antecedents (perceived quality and perceived value). The study proposes following hypotheses:

H_{1a}: Customer expectations has a positive effect on customer satisfaction.

H_{1b}: Customer expectations has a positive effect on perceived value.

H_{1c}: Customer expectations has a positive effect on perceived quality.

Perceived quality

Perceived quality is defined as the subjective consumer judgment regarding overall product superiority, which is considered to be different from objective quality (Zeithaml, 1988). Previous studies have pointed out that the service quality has positive effect on the customer satisfaction (Cronin et al., 2000; Kristensen, Martensen & Gronholdt, 2000), and its influence is proved to be significant. Perceived quality is a part of and directly links to perceived value (Johnson et al., 2001). The study proposes following hypotheses:

H_{2a}: Perceived quality has a positive effect on customer satisfaction.

H_{2b}: Perceived quality has a positive effect on perceived value.

Perceived Value

Perceived value is defined as “the consumer’s overall assessment of the utility of a product (or service) based on perceptions of what is received and what is given” (Zeithaml, 1988; Parasuraman, et al., 1988; Hsu, 2006). Perceived value is an antecedent and have much influence on satisfaction and behavioral intentions (Cronin et al., 2000; Dodds et al., 1991; McDougall & Levesque, 2000). In most case, perceived value is proved to positively affect customer satisfaction (Cronin et al., 2000; Eggert & Ulaga, 2002). Researches from different countries in variety of field also have concluded the same in the studies of online shopping websites and e-commerce (Hsu, 2006; Peterson, 1994). The research hypothesis is stated as follows:

H₃: Perceived value has a positive effect on customer satisfaction.

Customer Satisfaction

Numerous studies have pointed out the positive relationship between customer satisfaction and customer loyalty is as: by increasing customer satisfaction is crucial for ensuring loyalty (Barsky, 1992; Smith & Bolton, 1998; Hallowell, 1996). In addition, positive change in customer satisfaction would immediately result in a decrease in complaining behavior (Fornell et al., 1996). With similar conclusion, according to the exit voice theory of Hirschman (1970), an increase the customer satisfaction will significantly reduce customer complaints (Hirschman, 1970). The study proposes following hypotheses:

H_{4a}: Customer satisfaction has a positive effect on customer loyalty.

H_{4b}: Customer satisfaction has a negative effect on customer complaints.

Customer Loyalty

Customer loyalty is defined as commitment and repeat of purchasing behavior from a provider, showing positive attitude toward that supplier when there is a need (Gremler & Brown, 1999). Besides having repeat purchases, loyal customers also represent provide favorable word-of-mouth advertising (Fornell, 1992; Zeithaml et al., 1996). The loyalty has been viewed as a specific desire to have a lasting relationship with the service supplier (Czepiel & Gilmore, 1987).

Customer Complaints

When there is dissatisfaction, customer complaints are formed and generally considered to comprise a set of responses to show that (Kogut & Singh, 1988; Singh, 1998). With flexible manipulation, the manager recovery and encourage positive word-of-mouth advertising (Maxham & Netemeyer, 2002) by transforming a complaining customer into a loyal one and vice versa, the bad situation can even become worse (Fornell, 1992). Therefore, the study proposes the following hypotheses:

H₅: Customer complaints influences customer loyalty.

3.2. Sample and analysis method

With the scope of the study, a sample size of 271 is accessible and suitable for the model: There are totally 20 observed variables and 6 latent variables, satisfy both the multiplication principle for EFA (Hair et al. 2010), and the multivariate regression analysis (Tabachnick & Fidell, 2006). After data collecting, research data is encoded and cleansed, conducted with SPSS and Amos.

4. Research results

Research results show that most of the survey participants are from 18-35 years old (97,05%). Subjects of the survey are mainly students and office staff (nearly 96%) and most of them have education level from College / University (nearly 100%). The proportion of students and staff shows compatibility with statistical results about age categorize, which also reflects the high demand for experiencing new products and services, especially Facebook chatbot. According to Facebook usage frequency statistics results, the proportion of customers using Facebook over 2 hours/ day is nearly 95%. This result corresponds to the rate of 90% are regular Messenger users.

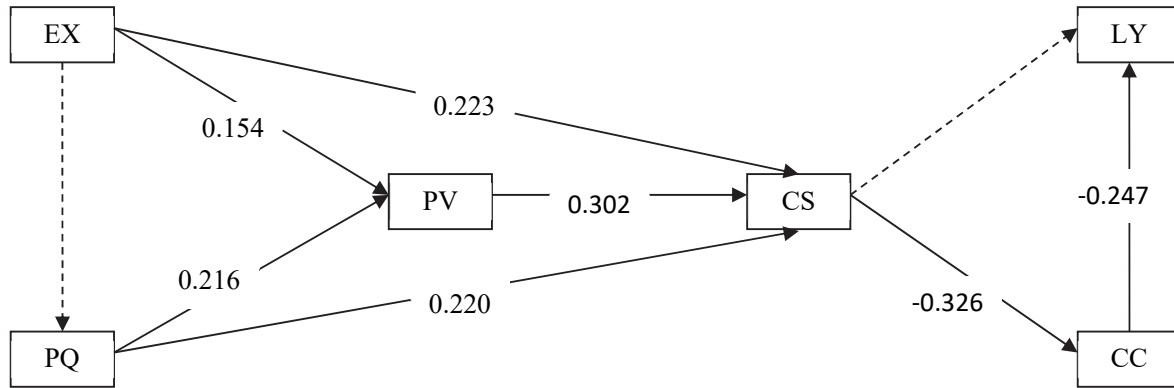
All factors have Cronbach Alpha > 0.6 and item-total correlation of observed variables > 0,3, which assert internal consistency and reliability (Hair et al, 2010, Suanders et al., 2007). The EFA shows that KMO > 0,5; Bartlett testing are statistically significant with p-value < 0,05; TVE > 50%; factor loadings > 0,5 (Hair et al., 2010). Therefore, all factors are reliable and unidimensional.

Table 1

Summary of results

Factors	Cronbach Alpha	The smallest Corrected Item-Total Correlation	KMO	p-value	TVE (%)	The smallest Factor loading
Customer expectations	0.791	0.553	0.666	0.000	70.755%	0.784
Perceived quality	0.855	0.716	0.730	0.000	78.035%	0.873
Perceived value	0.725	0.497	0.670	0.000	64.607%	0.763
Customer satisfaction	0.722	0.444	0.717	0.000	54.981%	0.667
Customer loyalty	0.803	0.520	0.777	0.000	62.970%	0.712
Customer complaints	0.766	0.541	0.664	0.000	68.818%	0.782

Analysis results from the research data for the model have shown that Chi-square/df = 1.398 < 3, CFI = 0.965, GFI = 0.926 and TLI = 0.957 are greater than 0.9, and RMSEA = 0.038 < 0.08. Therefore, the model is consistent with the nature of that construct, data collected fit the proposed model. The standardized regression weights of each observed variable are greater than 0.5, so it can be concluded that the model reaches convergence value (Hair et al., 2010; Kline, 2015). All observed variables have regression weights more than 0.5, showing that the scale of factors reach convergent value. The composite reliability (CR) coefficients of factors are above 0.6 and the average variance extracted (AVE) are greater than 0.4. In conclusion, the scales in the model achieve the required reliability and convergence. To evaluate the discriminant value, the study uses correlation coefficient testing factors. The bias-corrected percentile and percentile method are used by testing the 95% confidence interval of correlation coefficients with bootstrap (n=2000). The analysis results show that all the correlation coefficients do not contain value 1, which indicates that the factors are discriminant. SEM analysis results showed that Chi-square/df = 1.691 < 3, CFI = 0.936, GFI = 0.911 and TLI = 0.925 are greater than 0.9, and RMSEA = 0.051 < 0,08. Therefore, the model is consistent with the nature of that construct, in other word, the data collected fit the proposed hypothesized measurement model.



Chi-square/df = 1.691; CFI = 0.936; GFI = 0.911; TLI = 0.925; RMSEA = 0.051

Fig. 2. SEM analysis results

EX: Customer Expectations, PQ: Perceived Quality, PV: Perceived Value, CS: Customer Satisfaction, LY: Customer Loyalty, CC: Customer Complaints.

Results of regression weights of the factor relations in the model show that most relationships have statistical meaning at 5% with p-value less than 0.05. Therefore, *hypotheses H1a, H1b, H2a, H2b, H3, H4b and H5 are accepted; and hypotheses H1c and H4a are rejected.* The study used bootstrap test with n=2000 bootstrap sample to assess the stability of the model. The analyze results show that the bias of the original Beta coefficients and the average of Beta coefficients from bootstrap analysis is very small (maximum of 0,007). In conclusion, the research model is stable and reliable to be interpreted for overall population. The customer satisfaction is directly affected by three factors, including: customer expectations, perceived quality and perceived value. All these antecedents have positive effects on customer satisfaction. The perceived quality is evaluated to have equivalent influence on satisfaction as customer expectations factor. By delivering a feeling of useful and informative, chatbot can easily become a close e-assistant with humanlike sensibility. Perceived value is also analyzed to have positive influence on customer satisfaction, which is approved by many researchers (Cronin et al., 2000; McDougall & Levesque, 2000; Cronin et al., 2000; Eggert & Ulaga, 2002). Especially, perceived valued showed that it is the factor with the most out-standing impact on customer satisfaction – which means by improvement in value delivered to users, Facebook chatbot can bring about higher satisfaction.

In addition to making impacts on customer satisfaction, the results show that customer expectations and perceived quality also positively influence perceived value, as the market data match with the hypothesis and previous research conclusion (Wong & Dioko, 2013; Brady & Cronin, 2001). From this perspective, perceived value also plays a role as aggregating channel of the indirect impacts of expectation and perceived quality to customer satisfaction. The results show the direct negative outcomes from satisfaction to customer complaints and prove that the positive impact toward customer loyalty is insignificant, according to the data collected. In addition, negative relationship between customer satisfaction to customer complaints is significant. Finally, the relationship of customer complaints and loyalty is estimated to be negative. However, in this research's context, the outcomes show that with more complaints, the customer loyalty tends to decrease, which means the handling has managed to make the bad situation worse. Therefore, Facebook chatbot managers should take this as a lesson to invest more effort in treating these feedbacks.

5. Conclusion and recommendations

5.1. Conclusions

The research also has significant contributions in terms of both science and in practical. From the scientific view, the study has established and evaluated the research model to be appropriate to assess customer

satisfaction as it based on the ACSI model. Through analyzing data collected, the research has assessed the different influence of each antecedent on customer satisfaction from the group of three factors (1) customer expectations, (2) perceived quality, (3) perceived value, and its consequences (1) customer loyalty and (2) customer complaints. Finally, this study can be a good reference for future researchers for the Vietnamese market. Specifically, based on what was achieved, there are the solutions to improve chatbot operation efficacy including (1) increase investment for chatbot research and design, (2) improve the perceived value of chatbot, (3) add creative features to encourage customer perceived quality, (4) improve social interaction with customers and (5) maintain and enhance existing chatbot service activities. In addition, the study also suggests four steps for Vietnam online stores on Facebook based on the industry context: (1) Identify the targets, goals and strategies for the chatbot, (2) Research the market: external and internal analysis, (3) Formulate and implement the strategies for the chatbot and (4) Evaluate the chatbot performance.

5.2. Limitations and suggestions for future research

The study has achieved the goal of assessing the customer satisfaction and its antecedents as well as the consequences. However, there are still certain limitations. The survey area has focused mainly on universities in Hanoi. As a result, the statistics will have certain deficiency when the research survey was not accessible to the rural area. Furthermore, for the same reason, the survey participants were relatively young (mainly from 18-35 years old), who have the ability to access new technologies. In fact there was a shortage in time of the survey period with a relatively small sample size and lack of comparison over the years as well as comparative analysis of each stage. Therefore, in the future, the studies need more specification and diversity, conducting interviews and surveys with larger sample sizes from participant, in different periods and longer time of the assessment. From which, more comprehensive and complete conclusions can be interpreted for the status of Vietnamese users using Facebook chatbot application in general.

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Appendix

Observed factors and variables in the model

Item Code	Survey questionnaires	References
I Customer Expectations		
EX1	Before my experience with the Facebook chatbot, I had good overall expectation about the service performance.	Fornell et al., (1996); Song et al., (2012)
EX2	Before my experience with the Facebook chatbot, I expected that it would have ability to perform the promised service reliably and accurately.	
EX3	Before experience with the Facebook chatbot, I expected that it would have ability to meet my personal needs.	
II Perceived Quality		
PQ1	Facebook chatbot is customized to meet my needs.	Cronin et al., (2000)
PQ2	Facebook chatbot's offering is same as what is promised.	
PQ3	My overall perception of Facebook chatbot service quality is satisfactory	
III Perceived Value		
PV1	I feel I am getting good customer services using Facebook chatbot.	Cronin et al. (2000); Wang et al. (2004)
PV2	Using the chatbot provided by Facebook is worth for me to sacrifice some time and efforts.	
PV3	Compared with other platforms' chatbot, it is wise to choose Facebook chatbot.	
IV Customer Satisfaction		
CS1	I strongly recommend Facebook chatbot to others.	Lee and Chung, 2009
CS2	I think that I made the correct decision to use Facebook chatbot.	
CS3	I am satisfied with the way that Facebook chatbot has carried out the tasks.	
CS4	Overall, I was satisfied with Facebook chatbot.	
V Customer Loyalty		
LY1	I will share positive things about the Facebook chatbot to other people.	Parasuraman et al., 2005
LY2	I will encourage my friends and others to do business with Facebook chatbot.	
LY3	I will consider Facebook chatbot to be my first choice for future usage.	
LY4	In the coming months, I will keep using the Facebook chatbot.	
VI Customer Complaints		
CC1	If any problems occur, I intend to complain about the Facebook chatbot to the page owning that chatbot or supervisors of Facebook.	Fornell et al., 1996; Song et al., 2012
CC2	If any problems occur, I intend to complain about the Facebook chatbot to other people.	
CC3	Overall, I have intention have to complain about the Facebook chatbot because of its bad quality of service/product.	

Source: Author's summary

Reliability and convergence values test results

Factor	Items	Regression Weights (Distribution range)	AVE	CR
Customer expectations	3	0,604 – 0,935	0,582	0,802
Perceived quality	3	0,786 – 0,863	0,672	0,860
Perceived value	3	0,587 – 0,735	0,474	0,728
Customer satisfaction	4	0,520 – 0,726	0,405	0,728
Customer loyalty	4	0,574 – 0,796	0,511	0,805
Customer complaints	3	0,629 – 0,862	0,55	0,783

Source: AMOS analysis results



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