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Success factors of customer e-loyalty for self-service banking technologies using analytical hierarchical process: A study on kingdom of Saudi Arabia

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ABSTRACT

The purpose of this paper is to identify the key success factors of customer loyalty for self-service banking technology. Further, these factors are ranked and classified into three broad categories using the analytical hierarchical process (AHP). Customer satisfaction, customer trust, and brand image emerged as the top three criteria of customer loyalty in Self Service Technologies. Some important factors of customer loyalty have been identified in this study. This will help the bankers in shaping their marketing strategies and developing e-loyalty programs.

1. Introduction

Online banking channels not only minimize the cost but have now become a platform for product convenience, choice, and marketability. The technology-based delivery channels have come forth as a complementary channel of banking rather than a supplementary channel to traditional banking (Foo et al., 2008). Gopalakrishnan et al. (2003) reported that the cost of a transaction conducted via traditional banking is fifty-four times higher than online transactions. Self-service technologies are comprised of channels that enable banking through self-service kiosks (SSK), internet-based self-service, and mobile commerce (Kumar and Kashyap, 2018). These banking technologies ensure financial control for the customer (Shin et al., 2019). There is immense competition amongst public banks, private banks, international banks, and FinTech service providers and the ease to switch between these service providers is what creates a threat to existence. As a result, banks shall focus on nurturing existing customers along with acquiring new customers. Hence, customer loyalty is crucial in the strategic priorities of banks as the impact of the share of wallet, profitability, and word-of-mouth is so exponential that organizations nowadays seek brand ambassadors (Kumar et al., 2013; Kandampully, 2015).

2. Review of literature

Meuter et al. (2000) established self-service technologies (SST) as "technological interfaces that enable customers to produce a service independent of direct employee involvement." In the context of banking services, self-service technologies have empowered customers to carry out their transactions through internet-enabled devices (Reinders et al., 2015). SST has been widely represented in banking literature in the form of digital services channels representing internet banking and mobile banking (Garzaro et al., 2020).

Customer Loyalty is a "deeply held commitment to rebuy or patronize a preferred product or service consistently in the future, despite situational influences and marketing efforts having the potential to cause switching behavior" (Oliver, 1997). Customer loyalty has two dimensions: behavioral and attitudinal (Oliver, 1999). Behavioral dimensions are focused on observation and repurchasing behavior (Fathollahzadeh et al., 2011) while attitudinal dimensions are focused on relationship sustenance (Morgan and Hunt, 1994). Literature suggests that customer loyalty embarks four phases i.e., affective, connotative, cognitive, and attitudinal (Garzaro et al., 2020), and leads to repurchase, recommendation, and extended purchases (Liang and Ching, 2015).

Customer loyalty is always preceded by customer satisfaction (Oliver, 1993). This result has been successfully tested by researchers in the banking

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context. For example in UK digital banking (Mbama and Ezepue, 2018; Keisidou et al., 2013), in Greece banking (Liang and Ching, 2015), in Taiwan internet banking (Al-Wugayan, 2019), in Kuwait banking (Levy and Hino, 2016), in Israeli banking (Amin, 2016), and in Malaysian online banking environment. Garzaro et al. (2020) reinforced that the relationship between customer experience and customer loyalty is mediated by customer satisfaction. While Mbama and Ezepue (2018) found a positive relationship between service quality, customer experience, satisfaction, and loyalty in UK digital banking services. Hau and Thuy (2012) empirically established the relationship between service value with customer loyalty in three service industries viz. banking, airline, and healthcare in Vietnam. Customer satisfaction and customer loyalty are widely dependent on the quality of service perceived by the customers which is the outcome of employee engagement and satisfaction with their work (Chi and Gursoy, 2009). Banking literature based on self-service technology has prioritized the role of trust with banks. For example, the adoption of telebanking largely depends on the trustworthiness of the customer with the bank (Alalwan et al., 2016). Banking literature based on self-service technology has prioritized the role of trust with banks. Customers perceive a positive value in the organization and build long-term relationships when complaints are handled efficiently (Fathollahzadeh et al., 2011).

A number of research studies have empirically analyzed consumer loyalty and attitudes in various countries toward self-service technologies. Nevertheless, empirical research on e-loyalty in Arab countries is generally limited. In Saudi Arabia, this has been found that customer trust and satisfaction is the key influencer on e-loyalty (Abumalloh et al., 2020).

Further research on e-loyalty in the Saudi context, has established the role of e-service quality, hedonic and utilitarian values, satisfaction, and subjective norms in enhancing customer loyalty towards digital banking. The results of the studies have empirically tested the influence of e-service quality on hedonic and utilitarian values, which, leads to customer satisfaction. Moreover, satisfaction and subjective norms are positively influencing e-loyalty

There are many studies that have identified factors related to Self Service banking technologies that have a direct impact on customer e-loyalty. These are empirical studies based on primary data collected through structured questionnaires. These studies have established relationships among various factors of Self Service banking technologies. This study is an attempt to prioritize the factors based on their relative weights in influencing customer loyalty. For this purpose, the relative weight of each factor is calculated using qualitative modeling. This study employs primary data collected on a well-structured list is questions.

This study is an attempt to understand what factors of customer e-loyalty are crucial with self-service technologies in the banking industry. Through an in-depth literature survey and qualitative modeling; this study seeks a working model of various factors of customer E-loyalty in the context of self-service banking technologies.

There are two primary objectives of this study. The first is to identify factors that impact customer loyalty in the context of self-service banking technologies. The second is to prioritize critical success factors according to their relative weights in impacting customer loyalty.

2.1. Hypothesis of the study

This study utilized a qualitative modeling technique which doesn't need any hypothesis for testing. However, this study includes two prepositions.

H1: Service quality, customer compliments, and commitment lead to customer satisfaction, trust, and brand image.
H2: Customer engagement, employee engagement, and perceived value lead to customer satisfaction, trust, and brand image.

3. Research methodology

The sample is selected from the batch of executive MBA programs offered by Saudi Electronic University. A) Sample Selection: A sample of 50 executive MBA students working in a senior position in a business organization is selected and their responses are collected on a structured questionnaire designed to capture the response in the desired format. B) Sources of Data: The data is both primary and secondary. Primary data is collected through a Google doc form shared with a sample of students studying the final year of the executive MBA course. Secondary data is based on industry reports downloaded from organizational websites. C) Period of the study: The data is collected from October 15, 2021, till November 15, 2021. D) Tools used for the study: Analytical Hierarchy Process (AHP) as proposed by Saaty (1980), is a method used to find a solution to multi-criteria decision making problems. This method focuses on breaking down problems into criteria and sub-criteria (Garg et al., 2012).

4. Results

The AHP is applied to calculate the ranking of each variable discussed above. AHP is a decision-making technique to provide the measure of judgment with consistency, by deriving the priority among the variables. It is a three-step process. In the first step, the variables are compared in pair using the criteria suggested by Saaty (1980) on a scale of 1 to 9 wherein 1 represent equal importance and 9

reveals the extreme importance of one variable as compared to other. The results of the pairwise comparison are presented in Table 1. Table 1 depicts the relative importance of each variable from V1 to V9 by using a scale of 1 to 9 as described above.

Table 1: Pairwise comparison of all variables

Variables	V1	V2	V3	V4	V5	V6	V7	V8	V9
V1	1.00	7.00	8.00	8.00	0.33	9.00	0.33	9.00	9.00
V2	0.14	1.00	2.00	2.00	0.33	3.00	0.33	3.00	3.00
V3	0.13	0.50	1.00	1.00	0.20	2.00	0.20	2.00	2.00
V4	0.13	0.50	1.00	1.00	0.50	2.00	0.33	2.00	2.00
V5	3.00	3.00	5.00	2.00	1.00	9.00	1.00	7.00	7.00
V6	0.11	0.33	0.50	0.50	0.22	1.00	0.14	1.00	1.00
V7	3.00	3.00	5.00	3.00	1.00	7.00	1.00	7.00	7.00
V8	0.11	0.33	0.50	0.50	0.14	1.00	0.14	1.00	1.00
V9	0.11	0.33	0.50	0.50	0.14	1.00	0.14	1.00	1.00

In the second step, the normalized eigenvector is calculated using matrix operation. This process is repeated until we get consistency in the results of normalized eigenvectors. Tables 2, 3, and 4 depict the results of normalized eigenvector calculation. Tables 3 and 4 depict the consistency in normalized eigenvectors. The results of the normalized eigenvector in Table 4, provide the measure of the priority of each variable in terms of fractional value. The higher the value of normalized eigenvector indicates the higher ranking of that variable. Based on the values of the normalized eigenvector, the ranking of each variable is presented in Table 5. The variables like customer satisfaction, customer trust, and brand image ranked high as compared to service quality, complaint handling, and commitment.

Table 2: Calculation of normalized eigenvector: Iteration 1

Variables	V1	V2	V3	V4	V5	V6	V7	V8	V9	Eigenvector	Normalized eigenvector
V1	9.00	33.00	54.83	53.17	13.50	94.33	11.46	93.67	93.67	456.63	0.26
V2	3.79	9.00	14.98	13.31	3.97	26.62	3.40	25.95	25.95	126.97	0.07
V3	2.31	5.58	9.00	8.00	2.32	15.83	2.00	15.43	15.43	75.89	0.04
V4	3.61	6.88	11.17	9.00	2.76	19.46	2.43	18.46	18.46	92.22	0.05
V5	12.86	41.17	58.50	53.50	10.00	89.00	8.95	87.00	87.00	447.98	0.25
V6	1.71	3.71	5.88	4.93	1.37	10.00	1.21	9.56	9.56	47.92	0.03
V7	12.76	41.00	58.50	53.50	10.06	89.00	9.00	87.00	87.00	447.82	0.25
V8	1.47	3.47	5.48	4.77	1.29	9.29	1.13	9.00	9.00	44.90	0.03
V9	1.47	3.47	5.48	4.77	1.29	9.29	1.13	9.00	9.00	44.90	0.03

Table 3: Calculation of normalized eigenvector: Iteration 2

Variables	V1	V2	V3	V4	V5	V6	V7	V8	V9	Eigenvector	Normalized eigenvector
V1	1282.43	3290.26	5117.31	4528.82	1148.25	8534.17	1003.76	8285.69	8285.69	4147.38	0.25
V2	367.43	962.49	1498.20	1333.80	335.83	2496.89	293.21	2427.66	2427.66	12143.18	0.07
V3	219.62	574.96	895.81	797.61	201.25	1494.16	175.66	1452.81	1452.81	7264.67	0.04
V4	271.13	718.63	1122.57	1003.57	253.27	1874.94	220.75	1824.91	1824.19	9114.67	0.06
V5	1251.94	3200.86	5031.90	4463.63	1157.47	8468.12	1008.46	8228.03	8228.03	41038.44	0.25
V6	139.20	365.87	571.89	510.22	129.37	956.20	112.78	930.24	930.24	4646.02	0.03
V7	1251.76	3200.39	5030.11	4461.77	1156.53	8463.70	1007.70	8223.57	8223.57	41019.10	0.25
V8	129.77	339.55	530.34	472.48	119.84	886.45	104.52	862.08	862.08	4307.10	0.03
V9	129.77	339.55	530.34	472.48	119.84	886.45	104.52	862.08	862.08	4307.10	0.03

Table 4: Calculation of normalized eigenvector: Iteration 3

Variables	V1	V2	V3	V4	V5	V6	V7	V8	V9	Eigenvector	Normalized eigenvector
V1	11237841.46	29220140.72	45656090.72	40610928.10	10334249.30	76366297.16	9014496.18	74239583.23	74239583.23	370919210.10	0.25
V2	3280651.43	8530718.88	13329298.64	11856599.44	3017142.63	22295281.26	2631815.67	21674491.38	21674491.38	108290490.72	0.07
V3	1962788.38	5103830.97	7974794.40	7093687.80	1805144.39	13339102.42	1574603.44	12967687.44	12967687.44	64789326.69	0.04
V4	2458445.16	6392843.50	9989047.98	8885495.27	2261156.44	16708449.58	1972364.41	16243267.71	16243267.71	81154337.76	0.05
V5	11122731.61	28919065.97	45187561.18	40194016.33	10229265.29	75585538.91	8922822.63	73480564.94	73480564.94	367122131.79	0.25
V6	1254561.65	3262219.45	5097330.75	4534160.50	1153852.19	8526196.80	1006485.25	8288802.09	8288802.09	41412410.77	0.03
V7	11117529.32	28905567.48	45166431.79	40175222.18	10224461.52	75550139.37	8918634.38	73446150.09	73446150.09	366950286.23	0.25
V8	1163769.19	3026102.30	4728366.47	4205942.87	1070321.47	7909011.78	933624.78	7688792.24	7688792.24	38414722.79	0.03
V9	1163769.19	3026102.30	4728366.47	4205942.87	1070321.47	7909011.78	933624.78	7688792.24	7688792.24	38414722.79	0.03

Table 5: Final ranking of the factors

	Variables	Ranking
V1	Customer Satisfaction	1
V2	Customer Trust	2
V3	Brand Image	3
V4	Customer Experience	4
V5	Employee Engagement	5
V6	Customer Perceived Value	6
V7	Service Quality	7
V8	Complaint Handling	8
V9	Commitment	8

In the third step, the consistency check of the result in the matrix is performed with additional steps by calculating the consistency ratio (CR) of the matrix. For consistency in results, the value of CR should be less than 0.10. The calculation steps of CR are presented in Eqs. 1 and 2 followed by Tables 6 and 7. The value of CR calculated is 0.06 which shows the consistency in results.

Table 6: Calculate the weighted average for each row in the matrix

Variables	CI
V1	2.44
V2	0.71
V3	0.43
V4	0.53
V5	2.42
V6	0.27
V7	2.41
V8	0.25
V9	0.25

Table 7: Approximation of lambda

Variables	Lambda (max)
V1	9.72
V2	9.72
V3	9.72
V4	9.72
V5	9.72
V6	9.72
V7	9.72
V8	9.72
V9	9.72
Average	9.72

The calculation of the consistency index is as follows:

$$CI = \frac{(\lambda_{max} - n)}{(n-1)} \quad (1)$$

where, $\lambda_{max} = 9.72$ from Table 7 and n=9 (number of variables) and CI=0.09

The calculation of the consistency ratio is as follows:

$$CR = \frac{CI}{R(n)} \quad (2)$$

where, $R(n)$ is the Alonso Lambda constant for the number of variables. Here, the number of variables is 9, therefore $R(n) = 1.4499$ and $CR = 0.06$ which is ≤ 0.10.

Since the CR is less than 0.10, which shows that our results are consistent in nature.

5. Findings

The present study is developed to explore customer loyalty when banks are taking switch their delivery channels from traditional banking to self-service banking which requires customers to conduct their transactions themselves. The critical success factors which influence customer loyalty are evaluated with the help of banking literature followed by the application of the AHP method to rank those factors in order of their influence on customers. Table 1 presents a pairwise comparison of all the variables.

- The results of the ranking of the variables, calculated in Table 5, are presented in form of a loyalty pyramid and shown in Fig. 1. Finally, three sections of the pyramid are presented.
- The bottom section of the pyramid represents the foundation of values creation of any organization to achieve a good position in the market through Service quality, customer complaints handling and commitment towards banks which are ranked at 7th, 8th and 9th position.
- The middle section of the pyramid represents the persuasion of the specific brand to the customer, through customer experience of service and product, employee engagement in resolving the issues, and customer perceived values. These variables are ranked in 4th, 5th, and 6th place.
- Finally, the top section of the pyramid represents the values of the organization which are the utmost priority to any organization to achieve customer satisfaction, generate trust among the stakeholder, and brand image necessary to generate more opportunities in the market and placed at 1st, 2nd, and 3rd respectively.

6. Suggestions

The results of AHP reveal that management needs to prioritize the following three factors in this digital era: Satisfaction, trust, and the image of the banking organization. A satisfied customer remains loyal to the organization, in view of this banks are required to develop a targeted marketing program to ensure the satisfaction of their customers. Trust in online channels about data privacy, security and efficiency also plays a very important role in keeping a banking customer loyal. Banks need to enhance their security features with advanced data protection technology. Brand image is also measured as a crucial element for bank loyalty (Keisidou et al., 2013), therefore, brand-building exercises are the need of the hour.

7. Conclusion

The major contribution of this study to bank marketing literature is the customer loyalty pyramid developed based on the application of the AHP approach. This approach is applied to the ranking critical success of customer loyalty in the Indian banking system. Nine factors are identified based on the review of banking literature. Further, AHP is applied to rank order the determining factors of customer loyalty in the context of self-service banking technologies. The analysis reveals customer satisfaction is the most significant variable of all the variables.

The study is confined to a sample of executive MBA students; therefore they may not present a complete picture of the population. As responses are taken on a specified scale, there is no mechanism to overcome the biasness in the responses. Due care is taken to maintain the independence among the factors of the study; However, dependence among factors cannot be overruled.

In order to develop more meaningful results, factors can be divided into sub-factors, and then pairwise comparison can be done using AHP. Mostly, there is a strong dependence on the factors of customer loyalty and satisfaction, therefore Analytic Network Approach (ANP) is a better choice.

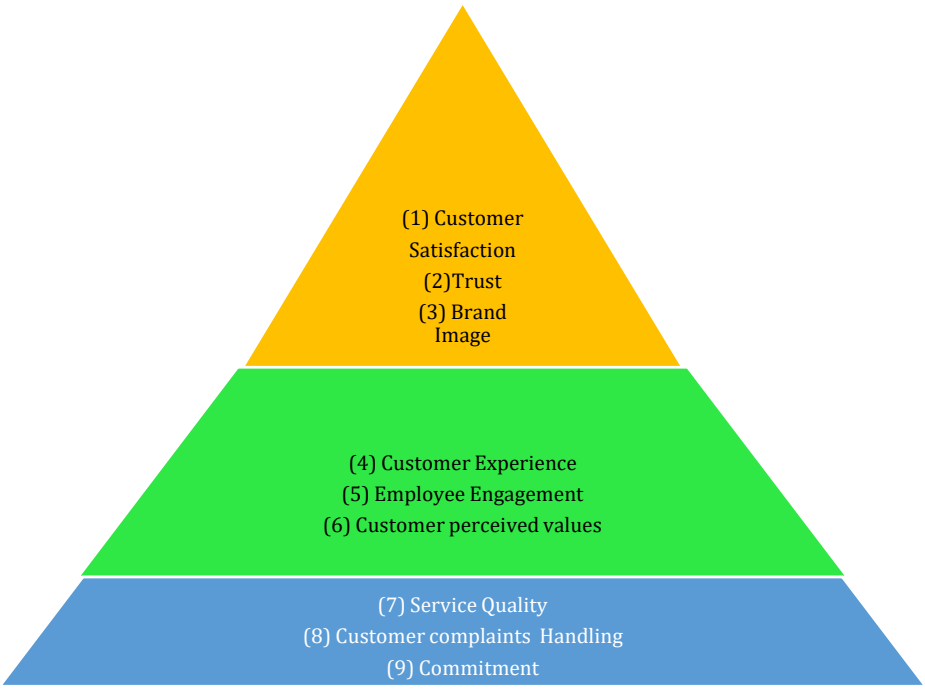

Fig. 1: Customer loyalty pyramid

Compliance with ethical standards

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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