

The influence of website quality on brand trust and satisfaction of students: A case study of universities in Vietnam

Luu Thanh Duc Hai^a and Quoc Nghi Nguyen^{a*}

^aCan Tho University, Vietnam

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ABSTRACT

Website is a helpful interactive tool between universities and students. Innovating and improving the website quality creates students' brand trust and satisfaction with the university. This study demonstrates the relationship between a university's website quality, brand trust, and student satisfaction. The research data are collected by quota sampling with 402 senior students studying at universities in Vietnam. Using the structural equation modeling (SEM), the research result shows that the university's website quality positively affects brand trust and student satisfaction. Besides, brand trust positively impacts on student satisfaction with the university.

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1. Introduction

Companies have to utilize their customer-approaching methods to improve customers' perception of service quality in the competitive market. The website has become an important communication channel between service providers and customers. Website plays a decisive role in improving customer satisfaction and perception of the service quality (Madu & Madu, 2002; Kim & Lee, 2005; Ali, 2016). If customers find the convenience, high-quality information, good interaction, and safety, their brand trust will be improved (Madu & Madu, 2002; Al-Debei et al., 2015; Sastika et al., 2016; Nilashi et al., 2016; Agag & El-Masry, 2017), thereby enhancing customer satisfaction for online transactions (Szymanski & Hise, 2000). Enterprises always measure customer satisfaction because it plays an essential role in establishing long-term relationships with customers (Szymanski & Hise, 2000; Devaraj et al., 2002). During the industrial revolution 4.0, educational organizations have realized the importance of websites in conveying reliable academic information (Bairamzadeh & Bolhari, 2010). A website is a valuable interactive tool between educational organizations and students; a website is considered to represent the image of an organization (Karani et al., 2021). Many studies related to the quality of the website of an educational institution indicate that the website should show appropriate content and beautiful design, provide contact information, high-security information, and some other features (Islam & Tsuji, 2011; Menten & Turan, 2012; Jabar et al., 2013; Roy et al., 2014). The renovation and improvement of the website help create trust and satisfaction of students with the university (Bairamzadeh & Bolhari, 2010; Rezaeean et al., 2012). Determining student satisfaction with online services' performance and usability helps educational institutions improve service quality (Islam & Tsuji, 2011). It shows that website quality plays a significant role in building brand trust and improving student satisfaction. Therefore, this study indicated the relationship between website quality, brand trust, and student satisfaction with Vietnamese universities.

* Corresponding author. Tel. +84 989283326

E-mail address: quocnghi@ctu.edu.vn (Q. N. Nguyen)

2. Theoretical Framework and Research Hypotheses

2.1 Theoretical framework

Website quality (WEBQUAL)

Website quality is expressed through the quality of services provided by the website system (Wen & Jiao, 2008), which is the website's ability to enable users to accomplish their goals (Loiacono et al., 2002). Experts have developed different models to measure website quality. Barnes & Vidgen (2000) have grown a website quality model with three factors: usability, information quality, and service interaction. According to Carlson et al. (2003), the quality of a website is the quality of services that the website provides and other aspects such as system structure, information quality, and safety. Chaiprasit et al. (2011) said that the three main functions of a website include providing information about products/services, conducting online transactions, and building relationships with customers. Some website quality criteria that many researchers used can be listed: design characteristics, information quality, accessibility, safety, convenience, personalization, and innovation.

Table 1
Website quality measurement criteria

| No. | Measurement criteria | Reference resources |
|-----|-----------------------|--|
| 1 | Design characteristic | Zeithaml et al. (2000), Kaynama & Black (2000), Aladwani & Palvia (2002), Loiacono et al. (2002), Yang et al. (2005), Nusair & Kandampully (2008), Garrett (2016), Tandon et al. (2017), Undu & Akuma (2018), Karani et al. (2021) |
| 2 | Information quality | Kaynama & Black (2000), Aladwani & Palvia (2002), Loiacono et al. (2002), Kim (2005), Yang et al. (2005), Ho & Lee (2007), Chaiprasit et al. (2011), Tandon et al. (2017), Sutanto et al. (2021), Karani et al. (2021) |
| 3 | Safety | Aladwani & Palvia (2002), Loiacono et al. (2002), Yang et al. (2005), Ho & Lee (2007), Chaiprasit et al. (2011), Tandon et al. (2017) |
| 4 | Convenience | Kim & Lee (2005), Yang et al. (2005), Ho & Lee (2007), Chaiprasit et al. (2011), Mohamed & Moradi (2011), Tandon et al. (2017), Ramadhani & Ilona (2018), Raduica et al. (2019), Sutanto et al. (2021) |
| 5 | Accessibility | Zeithaml et al. (2000), Kaynama & Black (2000), Palmer (2002), Yang et al. (2005), Parasuraman et al. (2005), Tandon et al. (2017), Raduica et al. (2019), Karani et al. (2021) |
| 6 | Personalization | Zeithaml et al. (2000), Madu & Madu (2002), Kim & Lee (2005), Yang et al. (2005), Ho & Lee (2007), Tandon et al. (2017) |
| 7 | Innovation | Yoo et al. (2000), Loiacono et al. (2002), Madu & Madu (2002), Bairamzadeh & Bolhari (2010), Rezaeean et al. (2012) |

Brand trust

Brand trust is the customer's expectation of a positive outcome when using that brand's product/service (Lau & Lee, 1999). Trust is an essential factor in maintaining the relationship between the customer and the service provider (Parasuraman et al., 1991). Therefore, trust is considered one of the essential components of developing long-lasting relationships with customers (Morgan & Hunt, 1994; Tax et al., 1998; Garbarino & Johnson, 1999; Schoorman et al., 2007). Brand trust is a definition that helps customers think of quality perception (Crosby et al., 1990; Ferrinadewi, 2008). Enterprises may create trust for customers if they prove that their brands meet customer expectations (Chandio et al., 2015).

Satisfaction

Satisfaction is a form of psychological feeling, is the sense of satisfaction when the product/service needs are met and the feeling associated with acceptance, happiness, excitement, or joy (Zeithaml & Bitner, 2000; Solomon et al., 2012). In a study in 2004, Kotler & Armstrong stated that satisfaction is a customer's feeling of preference or disappointment when comparing product expectations and experiences. According to Hernon & Whitwan (2001), online customer satisfaction responds when experiencing online services. Customer satisfaction with a particular service provider may reduce the ability to choose an alternative service provider, supporting the customer's intention to continue using the service (Szymanski & Hise, 2000; Devaraj et al., 2002).

2.2. Research hypotheses

Relationship between website quality and brand trust

The information quality of the website positively affects customers' trust in a brand (Peterson et al., 1997; Fang et al., 2011). Furthermore, online service delivery must be reliable to gain customer trust and loyalty (Madu & Madu, 2002). Many studies have shown that website quality has a positive impact on brand trust with the corporate brand (Chang et al., 2014; Al-Qeisi et

al., 2014; Al-Debei et al., 2015; Sastika et al., 2016; Nilashi et al., 2016; Agag & El-Masry, 2017). At the same time, the renovation and improvement of the website contribute to improving students' trust in the university (Bairamzadeh & Bolhari, 2010; Rezaeean et al., 2012). Therefore, hypothesis H1 is proposed: Website quality positively impacts on students' brand trust in the university.

Relationship between website quality and satisfaction

Website quality is a decisive element in improving customer satisfaction with the corporate brand (Kim & Lee, 2005; Madu & Madu, 2002). Furthermore, customer satisfaction is influenced by design characteristics (Schaupp & Bélanger, 2005; Kim, 2005), information quality (Peterson et al., 1997; Barnes & Vidgen, 2002; Loiacono et al., 2002), convenience (Clyde, 2000; Luo & Seyedian, 2003), accessibility (Chen & Dibb, 2010; Kim & Stoel, 2004), safety (McKnight & Chervany, 2001; Park & Kim, 2003), personalization (Zeithaml et al., 2000; Ho & Lee, 2007; Tandon et al., (2017), and innovation (Yoo et al., 2000; Bairamzadeh & Bolhari, 2010; Rezaeean et al., 2012). Therefore, the quality of an educational organization's website positively affects student satisfaction (Bairamzadeh & Bolhari, 2010; Rezaeean et al., 2012; Karani et al., 2021). Thus, hypothesis H2 is proposed as: Website quality positively affects students' satisfaction with the university.

Relationship between brand trust and satisfaction

Trust is a foundation for increasing customer satisfaction (Schoorman et al., 2007; Leninkumar, 2017). Brand trust is created by past experiences of using a brand's products. Customers' positive experiences enhance their perceived satisfaction with the brand (Veloutsou, 2015; Khan & Rahman, 2016). Therefore, brand trust is an essential factor positively affecting customers' brand satisfaction (Kuan-Yin et al., 2007; Kiyani et al., 2012; Ahmed et al., 2014; Arianto, 2016; Fikri et al., 2018). Improving the brand trust contributes to higher students' satisfaction with the educational organization's website (Bairamzadeh & Bolhari, 2010; Rezaeean et al., 2012). Therefore, hypothesis H3 is suggested as Brand trust positively influences students' satisfaction with the university. Based on the literature review and research hypotheses, the study has held two group discussions (qualitative research) with the participation of 12 students from 2 prestigious universities in Vietnam (Can Tho University and RMIT University). Every discussion group includes 6 students. In addition, the selected students regularly visit the university's website and use online services. The discussion result tests the appropriateness of the research hypotheses and identifies suitable scales for the model. As a result, the proposed research model is as below.

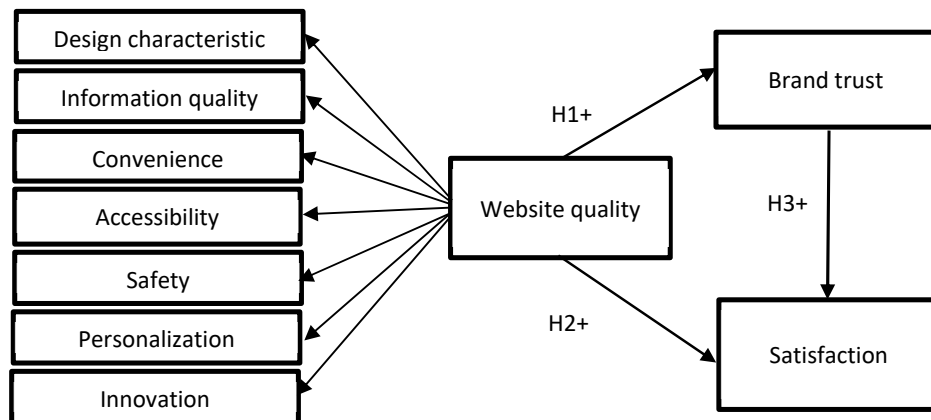


Fig.1. Proposed research model

3. Research Methodology

3.1 Analytical method

Qualitative and quantitative research are used in this study to test the proposed hypotheses. First, the participatory rural appraisal (PRA) is applied to identify appropriate scales for the research model. Quantitative analytical methods used include (1). Test the reliability of scales by Cronbach's Alpha coefficient; (2). Evaluate the convergent and discriminant validity of scales by the exploratory factor analysis (EFA); (3). Assess the relevance of the data to the market by the confirmatory factor analysis (CFA); (4). Finally, test the research hypotheses using structural equation modeling (SEM). Evaluating scales are in the form of a 5-level Likert scale, with 1 = strongly disagree and 5 = strongly agree.

3.2 Data collection method

According to Raykov & Widaman (1995), structural equation modeling (SEM) requires extensive research sample size because it is based on sample distribution theory. Hoyle (1995) argued that to achieve reliability in SEM, a sample size from 100 to 200 is satisfactory. However, Hoelter (1983) showed that the sample size in the study using SEM should be larger than

200 for higher reliability. Therefore, this study uses quota sampling to collect data. In addition, criteria for grouping universities are used to maximize the representativeness of the sample size, including national universities, regional universities, public universities, and private universities. The survey subjects are final-year students studying at the following universities: Vietnam National University - Ho Chi Minh City, University of Danang, Can Tho University, Vinh University, RMIT University, and Duy Tan University. After the data screening, the obtained sample size reached 402. Thus, the sample size meets the requirement, ensuring the reliability of the hypothesis test.

Table 2
Interpretation of observed variables in the research model

| Factor | Observed variables | Scale | Reference resources |
|----------------------------|---|------------|---|
| Design characteristic (DC) | DC1: The website interface of (X) university is creative and professional. | Likert 1-5 | Yoo et al. (2000), Aladwani & Palvia (2002), Undu & Akuma (2018), Karani et al., (2021) |
| | DC2: (X) university's website uses easy-to-read and beautiful color fonts. | Likert 1-5 | |
| | DC3: (X) university's website uses vivid and visual images. | Likert 1-5 | |
| Information quality (IQ) | IQ1: The information posted on the (X) university's website is useful. | Likert 1-5 | Kim & Lee (2005), Yang et al (2005), Ho & Lee (2007), Tandon et al. (2017), Sutanto et al. (2021) |
| | IQ2: The (X) university website provides all necessary information for students. | Likert 1-5 | |
| | IQ3: The website of (X) university always timely updates the reliable information. | Likert 1-5 | |
| Convenience (CO) | CO1: The (X) university website is easy to navigate with back and forward buttons. | Likert 1-5 | Kim & Lee (2005), Yang et al. (2005), Ho & Lee (2007), Ramadhani & Ilona (2018), Raduica et al. (2019), Sutanto et al. (2021) |
| | CO2: The functional tools on (X) university's website is easy to understand and use. | Likert 1-5 | |
| | CO3: It is easy to access other links from (X) university's website. | Likert 1-5 | |
| Accessibility (AC) | AC1: The (X) university website promptly responds to students' requests. | Likert 1-5 | Kaynama & Black (2000), Yang et al. (2005), Tandon et al. (2017), Raduica et al. (2019) |
| | AC2: The information on the website of (X) university is transmitted quickly. | Likert 1-5 | |
| | AC3: The (X) university website is always available for transactions. | Likert 1-5 | |
| Safety (SA) | SA1: Customer's personal information is always kept confidential. | Likert 1-5 | Aladwani & Palvia (2002), Kim & Lee (2005), Ho & Lee (2007), Chaiprasit et al. (2011), Tandon et al. (2017) |
| | SA2: The website's privacy policy is clear. | Likert 1-5 | |
| | SA3: Online transactions are always protected. | Likert 1-5 | |
| Personalization (PE) | PE1: The (X) university website meets students' special requests. | Likert 1-5 | Kaynama & Black (2000), Ho & Lee (2007), Tandon et al. (2017) |
| | PE2: The website of (X) university stores information search history. | Likert 1-5 | |
| | PE3: Students can save their personal information on (X) university's website. | Likert 1-5 | |
| Innovation (IN) | IN1: (X) university's website continually updates the latest technologies. | Likert 1-5 | Yoo et al. (2000), Madu & Madu, (2002), Bairamzadeh & Bolhari (2010), Rezaeean et al. (2012) |
| | IN2: (X) university's website provides innovative products and services. | Likert 1-5 | |
| | IN3: (X) university's website is always a technology leader in the educational field. | Likert 1-5 | |
| Satisfaction (SAT) | SAT1: I am satisfied with the services provided by (X) university's website. | Likert 1-5 | Hernon & Whitwan (2001), Szymanski & Hise (2000), Devaraj et al. (2002) |
| | SAT2: The interaction with (X) university's website exceeds my expectation. | Likert 1-5 | |
| | SAT3: The website of (X) university brings an exciting experience. | Likert 1-5 | |
| | SAT4: I feel satisfied when using (X) university's website. | Likert 1-5 | |
| Brand trust (BRT) | BRT1: I trust the service quality of (X) university. | Likert 1-5 | Morgan & Hunt (1994); Wong & Sohal (2002), Adali et al. (2010), Al-Debei et al. (2015) |
| | BRT2: (X) university consistently earns students' trust. | Likert 1-5 | |
| | BRT3: (X) university always tries to ensure its commitments to students. | Likert 1-5 | |
| | BRT4: Overall, (X) university is trustworthy. | Likert 1-5 | |

4. Research Results and Discussion

4.1 Evaluate the reliability of scales

The scales are tested the reliability by a two-step process (Cronbach's Alpha test and exploratory factor analysis (EFA)), according to Narasimhan & Jayaram (1998). The test results in table 2 show that the scales are reliable, with Cronbach's Alpha values all greater than 0.7 (Nunnally, 1978; Peterson, 1994). The Convenience scale has the lowest Cronbach's Alpha value (0.704), and the highest value belongs to the Satisfaction scale (0.877). Besides, the corrected item-total correlation values of variables are more significant than 0.3, so no observed variable is excluded from the research model (Slater, 1995; Hair et al., 2006).

Therefore, all research scales meet the reliability requirement (Nunnally, 1978; Peterson, 1994; Slater, 1995) and are included in the next step of EFA.

Table 3
Scales' reliability test result

| Observed variables | Mean | Standard deviation | Factor loading | Cronbach's Alpha |
|-----------------------------------|------|--------------------|----------------|------------------|
| Design characteristic (DC) | | | | 0.787 |
| DC1 | 3.79 | 0.729 | 0.737 | |
| DC2 | 3.77 | 0.717 | 0.866 | |
| DC3 | 3.68 | 0.737 | 0.634 | |
| Information quality (IQ) | | | | 0.737 |
| IQ1 | 3.45 | 0.719 | 0.618 | |
| IQ2 | 3.56 | 0.722 | 0.833 | |
| IQ3 | 3.58 | 0.751 | 0.590 | |
| Convenience (CO) | | | | 0.704 |
| CO1 | 3.83 | 0.640 | 0.605 | |
| CO2 | 3.85 | 0.679 | 0.736 | |
| CO3 | 3.97 | 0.594 | 0.658 | |
| Accessibility (AC) | | | | 0.708 |
| AC1 | 3.65 | 0.843 | 0.630 | |
| AC2 | 3.62 | 0.739 | 0.819 | |
| AC3 | 3.78 | 0.710 | 0.509 | |
| Safety (SA) | | | | 0.801 |
| SA1 | 3.64 | 0.729 | 0.717 | |
| SA2 | 3.78 | 0.660 | 0.685 | |
| SA3 | 3.85 | 0.719 | 0.861 | |
| Personalization (PE) | | | | 0.747 |
| PE1 | 3.67 | 0.729 | 0.640 | |
| PE2 | 3.64 | 0.685 | 0.862 | |
| PE3 | 3.37 | 0.740 | 0.588 | |
| Innovation (IN) | | | | 0.867 |
| IN1 | 3.39 | 0.727 | 0.737 | |
| IN2 | 3.46 | 0.847 | 0.869 | |
| IN3 | 3.41 | 0.811 | 0.871 | |
| Brand trust (BRT) | | | | 0.874 |
| BRT1 | 3.86 | 0.677 | 0.818 | |
| BRT2 | 3.87 | 0.681 | 0.781 | |
| BRT3 | 3.80 | 0.720 | 0.834 | |
| BRT4 | 3.98 | 0.645 | 0.770 | |
| Satisfaction (SAT) | | | | 0.877 |
| SAT1 | 3.95 | 0.708 | 0.881 | |
| SAT2 | 3.97 | 0.770 | 0.767 | |
| SAT3 | 3.88 | 0.745 | 0.868 | |
| SAT4 | 3.73 | 0.804 | 0.709 | |

EFA is used to test the convergent and discriminant validity of the scales. The analysis proves that the results are guaranteed. (1) Bartlett's test of the correlation between variables meets the requirements with Sig. = 0.000 (Hair et al., 1998). (2) The model's suitability test is satisfactory with KMO = 0.809 (Hair et al., 1998). (3) Cumulative variance explained = 71.53%, higher than 50% (Anderson & Gerbing, 1988). This finding shows that the observed variables included in the model have high explanatory power. (4) The reliability of the observed variables is satisfactory with the Factor loading values > 0.5 (Hair et al., 1998). As a result, 9 factors are created from 29 observed variables, consistent with the research scales. Confirmatory factor analysis (CFA) is used to assess the relevance of the research data. Following the EFA, the above nine factors are included in the CFA. According to the test result, statistical indicators are guaranteed as follows: Chi-square/df = 1,941 < 2 (Carmines, 1981) with P = 0.000 ≤ 0.05. The TLI and CFI indexes reach 0.923 and 0.937, respectively, higher than 0.9 (Bentler & Bonett, 1980). RMSEA = 0.048 < 0.08 (Steiger, 1990). This proves that the model fits the market data.

Table 4
CFA and SEM analytical result

| Evaluating criteria | CFA | SEM | Comparative coefficient | References |
|---------------------|-------|-------|-------------------------|---|
| χ^2/df | 1.941 | 1.981 | ≤ 2 | |
| P-value | 0.000 | 0.000 | < 0.05 | Gerbing & Anderson (1988), Hair et al. (2014) |
| TLI | 0.923 | 0.919 | ≥ 0.9 | |
| CFI | 0.937 | 0.929 | ≥ 0.9 | |
| RMSEA | 0.048 | 0.049 | ≤ 0.08 | |

Based on the analysis, the standardized regression weights of all scales are more significant than 0.5, and the unstandardized regression weights are statistically significant, so the factors achieve convergent validity. Besides, the correlation coefficients between factors are less than 1, and the standard deviation value is less than 0.05. Therefore, the research factors have discriminant validity. The composite reliability (Pc) values are satisfactory, with the smallest of 0.7 (Jöreskog, 1971). Although the average variance extracted (Pvc) value of some scales are low ($0.4 < Pvc < 0.5$), the Pc values are more extensive than 0.7, so all scales meet the reliability requirement (Fornell & Larcker, 1981).

Table 5
Scale testing result

| Factor | Number of variables | Composite reliability (Pc) | The average variance extracted (Pvc) | References |
|----------------------------|---------------------|----------------------------|--------------------------------------|--------------------------|
| Design characteristic (DC) | 3 | 0.79 | 0.56 | Fornell & Larcker (1981) |
| Information quality (IQ) | 3 | 0.74 | 0.50 | |
| Convenience (CO) | 3 | 0.70 | 0.44 | |
| Accessibility (AC) | 3 | 0.72 | 0.46 | |
| Safety (SA) | 3 | 0.80 | 0.57 | |
| Personalization (PE) | 3 | 0.75 | 0.50 | |
| Innovation (IN) | 3 | 0.87 | 0.69 | |
| Brand trust (BRT) | 4 | 0.88 | 0.64 | |
| Satisfaction (SAT) | 4 | 0.88 | 0.65 | |

4.2 Research hypothesis test

Structural equation modeling (SEM) is used to test the research hypotheses. The analytical result is in table 5.

Table 6
Hypothesis test result

| Relationship | Unstandardized | | | Standardized estimated value | Significance | Hypothesis |
|---------------|-----------------|--------------------|--------------------|------------------------------|--------------|--------------|
| | Estimated value | Standard error S.E | Critical ratio C.R | | | |
| BRT ← WEBQUAL | 0.744 | 0.139 | 5.340 | 0.402 | *** | H1: accepted |
| SAT ← WEBQUAL | 0.857 | 0.171 | 5.021 | 0.385 | *** | H2: accepted |
| SAT ← BRT | 0.199 | 0.071 | 2.785 | 0.165 | *** | H3: accepted |

Table 5 shows that hypotheses H1, H2, and H3 are accepted at a 99% significance level. The relationship between factors is explained in detail below:

Hypothesis H1: The website quality of the university has a positive impact on students' brand trust. The analysis indicates that website quality positively affects students' brand trust, with a standardized estimated coefficient = 0.402, reaching the statistical significance of $p = 0.000$. Thus, the university website attributes (design characteristics, information quality, safety, convenience, accessibility, personalization, and innovation) are essential in building students' brand trust with the university. Therefore, if the quality of the website is improved, it will create a positive brand impression and more vital brand trust. The research result is consistent with studies proposed by Bairamzadeh & Bolhari (2010), Rezaeean et al. (2012).

Hypothesis H2: Website quality positively influences students' satisfaction with universities. This hypothesis is accepted with the standardized estimated value = 0.385 and the statistical significance $p = 0.000$. This confirms a positive relationship between website quality and students' satisfaction. Furthermore, students' high evaluation of the website, especially online support services, will positively affect their satisfaction with the university. Therefore, to improve student satisfaction, universities should enhance the quality of their websites. This result is similar to studies of Bairamzadeh & Bolhari (2010), Rezaeean et al. (2012), Karani et al. (2021).

Hypothesis H3: Brand trust positively impacts students' satisfaction with universities. The test result points out a beneficial relationship between brand trust and student satisfaction with the university, a standardized estimated value of 0.165 and a statistical significance of $p = 0.000$. Hence, brand trust is an essential factor positively affecting brand satisfaction (Kuan-Yin et al., 2007; Kiyani et al., 2012; Ahmed et al., 2014; Arianto, 2016; Fikri et al., 2018). Furthermore, once brand trust is improved, students' satisfaction with the university increases. The result is similar to research proposed by Bairamzadeh & Bolhari (2010), Rezaeean et al. (2012).

5. Conclusions and Managerial Implications

This study has demonstrated the relationship between website quality, students' brand trust, and satisfaction with the university. Research results have shown that the quality of a university's website is reflected by the following factors: design characteristics, information quality, safety, convenience, accessibility, personalization, and innovation. The website quality plays a significant role in building brand trust and improving student satisfaction. Furthermore, the study has proven that brand trust positively impacts student satisfaction with the university. Based on the above results, the study proposes some managerial implications to improve the role of website quality in improving brand trust and student satisfaction. Firstly, develop a modern and high-aesthetic web design. Secondly, improve support tools with convenience and good accessibility, especially online learning support services. Thirdly, regularly update the latest academic information and ensure its quality. Fourthly, upgrade personal information security features to meet students' personalization requirements.

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