Investigating the effect of consumers' perceptions of the quality of online services during the corona outbreak period on brand equity (case study: Digi Kala website)

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ABSTRACT

The outbreak of coronavirus in 2020 in addition to threatening the health of people in the community has had a negative and sometimes severe impact on businesses. In this regard, some businesses, including online businesses, have been able to identify and meet the needs of their customers in this period and have had a positive effect on customers' perception of the quality of their services and ultimately the growth of business. The present study was an attempt to investigate the effect of consumers' perceptions on the quality of online services on the Digi Kala website during the outbreak of the Corona virus and its impact on brand equity. The present study is an applied research, which uses a questionnaire to collect the required data. It was distributed online and provided to the respondents through social networks. All of the respondents have purchased from the Digi Kala website during the outbreak of coronavirus. The sample size of the study is 384 people and structural equations modeling was used to test the research hypotheses. The research results revealed that the fulfillment of promises and assurance and in general consumers' perception of quality of online services had a positive and significant impact on the brand equity of this store. The effect of accessibility, responsiveness and empathy variables on brand equity was not confirmed in this study.
Keywords: brand equity, service quality, coronavirus, online service

Introduction

Nowadays, in global markets, successful brands must display distinctive images to maintain a competitive advantage (1). Successful branding strategies create a distinctive position for the desired brand by differentiating the brand from other competitors and increasing brand performance in the market (2). In a competitive environment such as online retail, a need to differentiate the business is a basic strategy. Creating tangible and intangible assets is one of the superior methods in business. Intangible assets such as brand equity and customer relationship are created to create value for the customer (3). Brand equity is a key concept in marketing and one of the valuable assets for companies (4). E-commerce has provided desirable conditions for doing business among all groups of people thanks to its several benefits for users. Several factors can drive customers to purchase from a store, whether real or virtual. After that website

attracted customers, the important step is to retain these customers (5). Services have been widely expanded. No business can survive without services. Thus, managers of financial and credit organizations should pay the most attention to the needs, opinions and objections of customers concerning the services to retain customers and provide better services. They should also retain the customers by addressing their problems and opinions and gaining knowledge on the level of customer satisfaction, and increasing the quality and speed delivering of their services (6). The present study is an attempt to investigate consumer perception of the quality of online services and its effect on brand equity. In recent years, several studies have been conducted on the quality of online services and its impact on brand equity, but one of the factors that distinguish the present study from previous studies is temporal domain of this research. Online services have undergone significant changes during coronavirus outbreak. Accordingly, the present study aims at examining the business environment in the area of online services during the outbreak of coronavirus. For this purpose, Digi Kala was investigated as one of the most well-known websites active in the area of online commerce.

Review of literature
Quality of services

According to Cutler and Armstrong (2000), service is an intangible activity offered from one side to the other and does not involve ownership. The production of a service may or may not depend on a physical commodity (7). Organizations lose a large number of their customers annually due to lack of attention to them. One of the most effective and common strategies is to try to provide high-quality, perfect and convenient service for customers. Providing high-quality service continuously creates competitive advantages for a company (8). According to Zeithamel and Berry, quality of e-services (2008) is a range that allows effective service for users in the electronic space (9). The quality of electronic services can be defined as the general assessment and judgment of the consumer of the superiority and quality of electronic services offered in the virtual market. This definition is consistent with the definition of service quality and it in fact is considered as providing a superior consumer experience through organization website (10). Quality of online services and how it is perceived by the consumer has been examined by various studies. The quality of online services has various dimensions which in this study based on the nature of the research, five dimensions of accessibility, "responsiveness", "fulfillment of promise", "empathy" and "assurance" are addressed.

Accessibility

Compared to traditional retail, in which the shopping process is done by going to a store, the ease of online shopping makes it possible for consumers purchase online from every place (11). Access to the website refers to the correct and existing technical operation of electronic systems (6). Access to electronic services actually consists of two parts of access to equipment and means of using services, such as telephone lines or Internet, and access to hardware facilities such as computer (12).

Responsiveness

In an online service research, Young et al (2002) consider responsiveness as a quick response to customer demands and speed in solving customer problems. Lin (2007) considers responsiveness as customer perceptions of how responsive and helpful the salesperson is. In other words, responsiveness means that the employees of the service company are willing to help customers, respond to their demands, inform them when services are provided and provide immediate services (14).

Fulfillment of promise

According to Parasuraman (2005), the fulfillment of promises is the area in which the site fulfills its promises to deliver orders and the usability of ordered items is realized in specified time (15).

Empathy

Based on a definition presented by Parasuraman and Zithamel (1985), empathy is an effort to understand the specific needs and wants of customers, individual attention to each customer and also to identify permanent customers (16). Predicting customer needs and considering solutions for them before the customer requests are crucial in electronic services (17).

Assurance

In traditional stores, a person can evaluate and examine the product and seller before the process of shopping goods and services. Online stores are different from traditional stores and have unique characteristics such as lack of assurance, lack of knowledge, lack of control and opportunism of the seller. For example, online customers need provide personal information (such as e-mail address, phone number) and financial information such as credit card to the seller and his website, and also assures lack of risk of non-match of the goods and services received with the promised goods and services, as well as the vulnerability of the product in the delivery process. Customers also do not know how sellers will use the information obtained from them. Thus, trust is a crucial factor in the seller-buyer relationship in e-commerce (13).

Brand equity

One of the most valuable assets of any company is the brand of that company. If a brand has better status in the minds of consumers, the company can gain more benefit from consumers (18). Brand equity is the power of a brand that stays in the purchasers' minds of what they have experienced and how they feel about the brand over time. Brand equity can be the added value given to a product and is found in the thought, words and activities of purchasers (19). Keller (1993) was one of those who hypothesized about brand equity from a consumer perspective, emphasizing its perceptual dimensions. Claire hypothesizes that brand equity depends on brand knowledge and based on comparing it to similar product (20). Acker (1999) defines brand equity as the added value that a brand gives to a product or service. In another definition, Acker (1999) defines brand equity as a set of characteristics and commitments associated with a brand that increases or decreases the value created by the product. He considers these characteristics in five groups, including brand loyalty, brand awareness, perceived quality, brand association, and other brand-related assets (21). Brand equity has been less investigated in online companies or e-businesses as well as from the perspective of online retail customers. However, the concept and dimensions of measuring customer brand equity from the perspective of online corporate customers are different compared to those of traditional perspectives. One difference is that e-businesses are primarily service-oriented, and in these businesses, the source of experience provides the conditions for brand formation. Second, in environments created by computer, company website is considered as experience of customers. Third, it has been argued that the brand equity of online retailers has its own distinctive factors, for example, factors related to website design (assurance, accessibility, ease of web browsing) and wide classifications of products among their extensive characteristics. Fourth, since online businesses are mostly intangible and making judgment by consumers through tangible signs are difficult, an association must be established with trust (22). However, if we look at online businesses as retailors, retail brands are completely different from product brands, so it can be stated that real application of branding principles can be different (23).

Research literature review

Noni et al (2017) investigated the effect of e-service quality on customer satisfaction of the Commercial Bank of the Republic of Botswana and found that the factors of system accessibility, implementation and privacy as components of ATM e-service quality affect customer satisfaction (24). Kalia and Kalia (2017) examined e-service quality scales in retail stores and introduced the components of security, reliability, privacy, website design, information, responsiveness, and accessibility, ease of use, customer service and personalization as subscales of service quality in online retails (25). Zahir and Narsikara (2016) investigated the effect of *E-S-QUAL* and E-R-S-QUAL models on perceived quality and loyalty and concluded that the dimensions of *E-S-QUAL* model including efficiency, reward, accessibility, and confidentiality and

dimensions of the E-R-S-QUAL model, including responsiveness, service compensation, and communication are effective in perceived quality, and ultimately behavioral intentions such as loyalty (26).

Cao and Lin (2016) have conducted a study entitled "The relationship between perceived e-service quality and brand equity". The research method was survey and a convenience random sampling method was used. The results revealed a direct and significant relationship between perceived e-service quality dimensions and brand equity (27). Khodadad Hosseini et al (2017) examined the effect of e-service quality on e-loyalty by explaining the role of e-satisfaction of retailers in Tehran and the results showed that e-service quality directly and indirectly affects customer loyalty and electronic satisfaction (7). Hamidizadeh et al (2012) investigated the relationship between personality and brand equity by modifying the variable of business ethics and the result of their study showed that ethics moderates the relationship between personality and brand equity and ethical traits and characteristics of the company has a significant effect on brand equity (28). In a study entitled "Investigating the effect of consumers' perceptions on online retail ethics on brand equity: a case study of Digi Kala online store", Hamidianpour and Izadi (2018) found a significant relationship between the components of online retail ethics and brand equity (21). In a study entitled "The effect of perceived e-services quality on brand equity: a case study of Melli Bank of East Gilan branches", Abbaspour (2018) concluded that the quality of perceived e-services affects customer loyalty through trust and the quality of perceived e-services affects customer loyalty through satisfaction and customer trust affects brand equity through customer loyalty and customer satisfaction affects brand equity through customer loyalty (6).

Research conceptual model

Given the research literature and investigating different dimensions of perceiving the quality of online services and considering the temporal domain of research (during coronavirus outbreak), five dimensions of accessibility, responsiveness, fulfillment of promises, empathy and assurance were considered to assess consumers' perceptions of the quality of e-services and Reeves and Rikelem studies were used for brand equity variable (Figure 1).
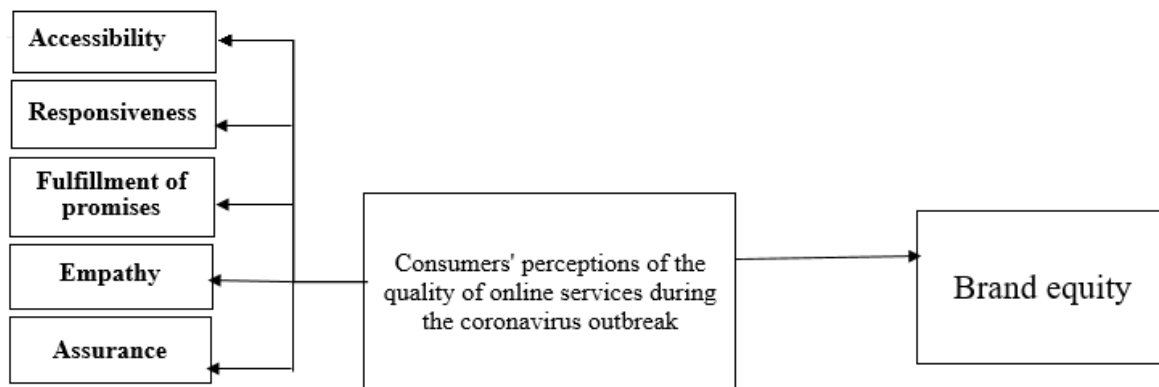

Figure 1: Research conceptual model

Research hypotheses

To explain the research problem and achieve the objectives of the present study, the following hypotheses were presented:

The main hypothesis:

1. Consumers' perception of the quality of online services during coronavirus outbreak has a positive and significant effect on brand equity.

Sub-hypotheses:

1. Accessibility as one of the dimensions of perception of quality of online services has a positive and significant effect on brand equity.

2. Responsiveness as one of the dimensions of perception of quality of online services has a positive and significant effect on brand equity.

3. Fulfillment of promises as one of the dimensions of perception of quality of online services has a positive and significant effect on brand equity.

4. Empathy as one of the dimensions of perception of quality of online services has a positive and significant effect on brand equity.

5. Assurance as one of the dimensions of perception of quality of online services has a positive and significant effect on brand equity.

Research Methods

The present study is applied in terms of aim and descriptive-survey in terms of method. The statistical population of the present study includes Digi Kala website customers who purchased from this website during the outbreak of coronavirus. A convenience non-random sampling method was used in this study. Given unlimited size of the population, the Cochran's infinite population formula was used to determine the sample size. At a 95% confidence level, the sample size was estimated at 384 people. In the present study, to complete the literature and scientific background, library studies and internet search were used. In the field studies section, information was collected using a questionnaire. The data collection instrument included a questionnaire consisting of 21 questions. It was provided to the respondents online. The first section of the questionnaire included demographic questions and in the second section of the research, variables were measured using a 5-point Likert scale (strongly agree to strongly disagree). It should be noted that in the first section of the questionnaire, the statistical population of the study was separated from others by asking the question whether you have purchased from Digi Kala website during the outbreak of coronavirus.

Data analysis

The information collected in this research was analyzed in two sections of descriptive analysis and inferential statistics and the final results were presented. For this purpose, SPSS26 and AMOS24 software was used. In descriptive analysis, descriptive statistics indices of research variables have been fully examined. In the inferential statistics section, structural equation modeling (SEM) was used to examine the research hypotheses, the relationships between variables. In other words, for generalization of the results obtained from the sample to the statistical population of the research, SEM was used.

Results

Demographic information of this research includes gender, age, and level of education and frequency of purchases from Digi Kala website. The frequency and percentage of demographic information of the respondents are presented in table below.

Table 1: Description of respondents based on demographic variables

variable		frequency	percentage	accumulative percentage
gender	female	240	5.62	5.62
	male	144	5.37	100
age	18-30 years	112	2.29	2.29
	31-40 years	168	8.43	9.72
	40-50 years	66	2.17	1.90
	older than 50 years	38	9/9	100
level of education	diploma	42	9.10	9.10
	associate	28	3.7	2.18
	master and higher	72	8.18	37
	bachelor	242	63	100
Have you purchased from Digi Kala website during the outbreak of coronavirus?	yes	384	384	100
How many times have you purchased from Digi Kala website during the outbreak of coronavirus?	once	15	9.3	9.3
	2-5 times	186	4.48	3.52
	5-10 years	150	1.39	4.91
	over 10 times	33	8/6	100
total		384	100	

The reliability of each of the latent variable markers in the AMOS model is determined by the value of factor loads of each marker. The value of each of the factor loads of the relevant variable markers must be greater than or equal to 0.4. Table 2 shows the value of factor loads for the indicators of the latent variables of the research.

Table 2: Estimate of standard coefficients related to the structural model

variable		Estimate of standard coefficients	critical ratio (C.R)
accessibility	Q3	754.0	-
	Q2	788.0	025.14
	Q1	733.0	224.13
responsiveness	Q6	778.0	-
	Q5	881.0	515.15
	Q4	654.0	473.12
fulfillment of promises	Q9	818.0	-
	Q8	723.0	652.14
	Q7	748.0	246.15
empathy	Q12	894.0	-
	Q11	765.0	566.18
	Q10	797.0	867.19
assurance	Q15	889.0	-
	Q14	818.0	996.20
	Q13	862.0	177.23
equity	Q16	508.0	-
	Q17	722.0	628.9
	Q18	813.0	177.10
	Q19	719.0	608.9
	Q20	587.0	582.8
	Q21	855.0	393.10

As shown in Table 2, all values of standard coefficients related to the research dimensions are higher than 0.4, so it can be stated that this measurement model has sufficient reliability in latent variable items. The table above also shows the critical ratio (CR) values for the items. These values are usually introduced as validity parameters related to the structural model. As shown, all values are out of range (-1.96-1.96) and are significant, so the research instrument has appropriate validity.

Model fit evaluation
After examining the structure markers and ensuring that the model is identifiable, it is time to evaluate the model fit.

Table 3: Fit indices

test	descriptions	acceptable value	obtained value
χ2/df	chi-square to degree of freedom	<3good <5acceptable	341.2
RMR	root mean square residual	1.<0	013.0
GFI	goodness of fit index	9.>0	904.0
NFI	normed fit index	9.>0	921.0
RFI	relative fit index	9.>0	905.0
IFI	incremental fit index	9.>0	953.0
TLI	Tucker-Lewis fit index	9.>0	943.0
CFI	comparative fit index	9.>0	953.0
RMSEA	Root Mean Square Error of Approximation	08. <0good 1. >0poor	059.0

Structure scales based on convergent validity should normally cover a high degree of variance. In the present study, average variance extracted (AVE) index was used to assess the convergent validity of each of the variables. Various researchers have considered a value of 0.5 or higher to be appropriate for this index. The average variance extracted is obtained by dividing the sum of the squares of the factor loads by the number of observed variables. The results of examining the convergent validity are presented in Table 4.

Table 4: Convergent validity of latent variables

variable	average variance extracted (AVE)
accessibility	576.0
responsiveness	603.0
fulfillment of promises	584.0
empathy	673.0
assurance	734.0
brand equity	505.0

Composite reliability: Since the Cronbach's alpha criterion is a traditional criterion for determining factor reliability, a more modern criterion than Cronbach's alpha called as composite reliability is used. This criterion was introduced by Wertz et al in 1974, and its advantage over Cronbach's alpha is that the reliability of the factors is calculated not in absolute form, but it is calculated based on the correlation of the factors with each other. As a result, both of these criteria are used to better measure reliability. If the composite reliability value for each factor is higher than 0.7, it will indicate the appropriate internal stability for the measurement models and a value less than 0.6 indicates the lack of reliability.

Table 5: Reliability value for latent variables

variable	Cronbach's alpha	composite reliability
accessibility	800.0	803.0
responsiveness	811.0	818.0
Fulfillment of promise	804.0	808.0
Sympathy	856.0	860.0
Assurance	892.0	892.0
Brand equity	852.0	856.0

As shown in Table 5, the value of these criteria, i.e. Cronbach's alpha and the composite reliability of the research factors, in all factors is higher than 0.6, which indicates the appropriate reliability of the model.

Testing research hypotheses
The main hypothesis

Consumers' perceptions of the quality of online services during the coronavirus outbreak have a positive and significant effect on brand equity.

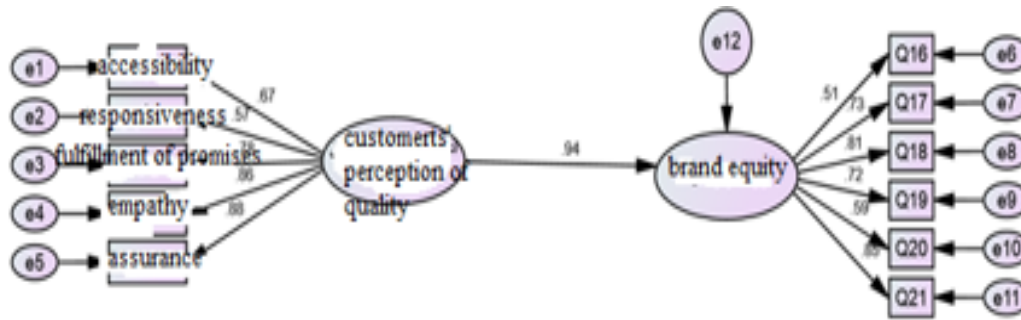The following model was used to test the main research hypothesis:

Figure 2: The basic model in Amos software

Table 6: Regression coefficients related to the main hypothesis

path name	path estimate	critical ratio (CR)
consumers' perception of quality → brand equity	944.0	164.9

As shown in Table 6, the path coefficient between the two variables of consumer perception of quality and brand equity is 0.944 and the critical ratio is 9.164 (in order that a coefficient to be significant, its critical ratio must be out of range of (-1.96-1.96) and this direct relationship with 95% confidence is significant. Thus, consumers' perception of the quality of online services during the coronavirus outbreak has a positive and significant effect on brand equity and the main hypothesis is confirmed.

Sub-hypotheses

1- Accessibility as one of the dimensions of perception of quality of online services has a positive and significant effect on brand equity.

2- Responsiveness as one of the dimensions of perception of quality of online services has a positive and significant effect on brand equity.

3- Fulfillment of promises as one of the dimensions of perception of quality of online services has a positive and significant effect on brand equity.

4- Empathy as one of the dimensions of perception of quality of online services has a positive and significant effect on brand equity.

5- Reliability as one of the dimensions of perception of quality of online services has a positive and significant effect on brand equity.

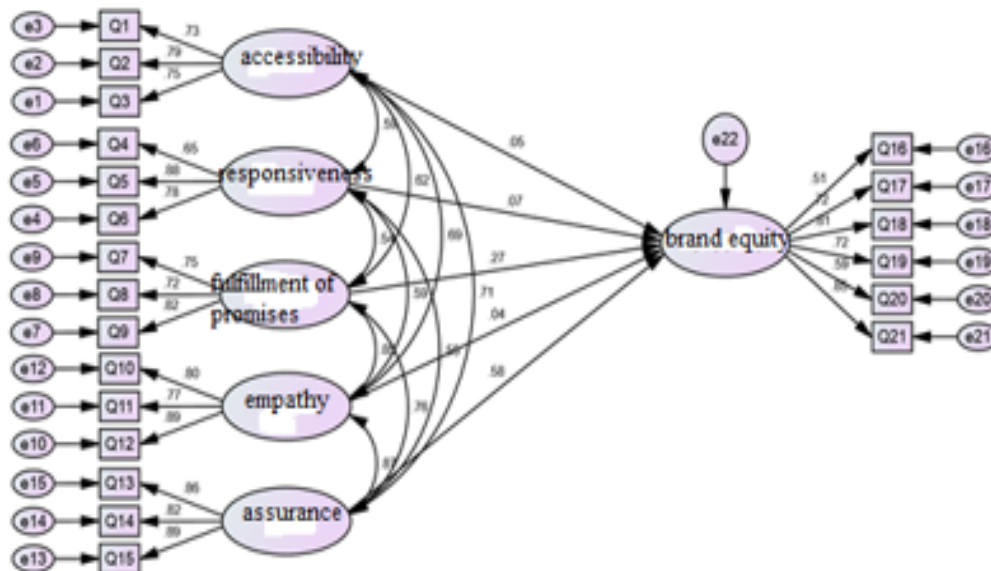The following model was used to test the research hypotheses:

Figure 3: Modified model in Amos software

Table 7: Regression coefficients related to sub-hypothesis 1

path name	path estimate	critical ratio (CR)
accessibility ← brand equity	055.0	949.0

As shown in Table 7, the path coefficient between the two variables of accessibility and brand equity is 0.055 and the critical ratio is 0.949, and this direct relationship with 95% confidence is not significant. Thus, accessibility as one of the dimensions of perception of quality of online services does not have a positive and significant effect on brand equity and sub-hypothesis 1 is rejected.

Table 8: Regression coefficients related to sub-hypothesis 2

path name	path estimate	critical ratio (CR)
responsiveness ← brand equity	067.0	478.1

As shown in Table 8, the path coefficient between the two variables of responsiveness and brand equity is 0.067 and the critical ratio is 1.478, and this direct relationship with 95% confidence is not significant. Thus, responsiveness as one of the dimensions of perception of quality of online services does not have a positive and significant effect on brand equity and sub-hypothesis 2 is rejected.

Table 9: Regression coefficients related to sub-hypothesis 3

path name	path estimate	critical ratio (CR)
fulfillment of promises ← brand equity	27.0	133.3

As shown in Table 9, the path coefficient between the two variables of fulfillment of promises and brand equity is 0.27 and the critical ratio is 3.133 (in order that a coefficient to be significant, its critical ratio must be out of range of (-1.96-1.96) is) and this direct relationship is significant with 95% confidence. Thus,

fulfillment of promises as one of the dimensions of perception of quality of online services has a positive and significant effect on brand equity and sub-hypothesis 3 is confirmed.

Table 10: Regression coefficients related to sub-hypothesis 4

path name	path estimate	critical ratio (CR)
empathy ← brand equity	044.0	377.0

As shown in Table 10, the path coefficient between the two variables of empathy and brand equity is 0.044 and the critical ratio is 0.377, and this direct relationship with 95% confidence is not significant. Thus, empathy as one of the dimensions of perception of the quality of online services does not have a positive and significant effect on brand equity and sub-hypothesis 4 is rejected.

Table 11: Regression coefficients related to sub-hypothesis 5

path name	path estimate	critical ratio (CR)
assurance ← brand equity	578.0	515.5

As shown in Table 11, the path coefficient between the two variables of assurance and brand equity is 0.578 and the critical ratio is 5.515 (in order that a coefficient to be significant, its critical ratio must be out of range (-1.96-1.96) and this direct relationship is significant with 95% confidence. Therefore, reliability as one of the dimensions of perception of the quality of online services has a positive and significant effect on brand equity and sub-hypothesis 5 is confirmed.

Conclusion

The aim of this study is to investigate the effect of consumers' perceptions on the quality of online services during the outbreak of coronavirus on brand equity. The outbreak of the coronavirus in 2020, despite imposing many threats to the health of people in the community and also affecting businesses, created opportunities for some businesses, especially some e-businesses. In this period, by making wise decisions, they could identify the needs of their customers and affect the brand equity with providing services with appropriate quality. As shown in the data analysis, the main hypothesis of the present study was confirmed; indicating consumers' perceptions of the quality of online services during the outbreak of coronavirus has a positive and significant effect on brand equity. It can be seen that the first, second and fourth sub-hypotheses were not confirmed in the present study, indicating that the variables of accessibility, responsiveness and empathy did not have a positive and significant effect on brand equity. The fourth and fifth hypotheses of the present study are confirmed, indicating that the two variables of fulfillment of promises and assurance have a positive and significant effect on brand equity. Thus, online businesses increase the quality of their services and thus strengthen their brand equity by strengthening the influential variables during coronavirus outbreak.

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