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THE EFFECT OF DIGITALIZATION ON USER BEHAVIOR AND THE QUALITY OF SERVICES IN TIMES OF THE COVID-19 PANDEMIC

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ABSTRACT

This study is an attempt to empirically examine the effect of digitalization on citizen behavior and the quality of services of the occurrence of COVID-19. A survey was conducted in 12 regions of Morocco. Primary data was collected using pre-established questionnaires, and quantitative analysis techniques have been employed using SPSS and AMOS with a sample of n=639 in order to test the hypotheses. This research was generated by operationalizing the variables developed in previous studies. The research has shown that the quarantine has a significant effect on citizen behavior. A large proportion of citizens pay considerable attention to the use of public e-services in this period comparing to a regular period furthermore the hypothesis that the quality of services is impacting citizen behavior has been rejected since the users of public services are forced to use the electronic ones.

1. Introduction

In December 2019, the marvel of aggregate pneumonia showed up in the southern Chinese fish market in Wuhan, Hubei territory, China (Huang et al. 2020). National Health Commission sent experts to Wuhan to investigate. A tale Covid (hereinafter COVID-19 for Coronavirus Disease 19) was identified at the Virology Laboratory of the China Center for Disease Control and Prevention on January 7, 2020 (State Council of the People's Republic of China

2020). The quantity of pneumonia infection patients has soared and accidentally spread and traded universally and has now changed the lifestyle for all humankind including Morocco.

As of November 01, 2020, the number of confirmed patients was 46,741,975 (Worldometers News 2020). Daily updates suggest that in Morocco confirmed global cases detected currently stand at 222,544, with 3,762 deaths, as of this date. These numbers are expected to have increased considerably well before the publication of this document; a global state of emergency that evokes the confinement of citizens and the forced closure of all institutions, establishments, businesses, commercial premises, or others without exception to the fear of the spread of this deadly pandemic.

The electronic administrations are continually changing, they are becoming more associated. Thus, administrations are rapidly integrating technologies to remain current, important and client arranged. In light of a continually evolving climate, governments are embracing existing help models through 'electronic' to improve the client experience of utilizing such administrations.

Public services are an important function in the daily life of users (Sahu and Gupta, 2007). Supporting the fight against the pandemic is both a function and a responsibility of the State. Faced with the new type of coronavirus, administrations including Moroccan local authorities reacted fairly quickly, they still fulfill the functions of satisfying the needs of users and play their traditional role in terms of social services, in a previous article we noticed that the frequency of use of electronic services remains low despite the many advantages offered both for citizens and for administrators, but what about this behavior in the event of a COVID-19 pandemic where users will have no recourse other than using the electronic utilities.

While the promotion of the use of electronic services by the user is a real challenge that the government is striving to implement, in this article we will focus on understanding the sudden change brought about by the COVID19 pandemic on the behavior of the user towards the adoption of electronic services, and for this, through our literature review, we will use a triple model which brings together 3 theoretical models which lean towards understanding consumer behavior.

2. Literature review

The change in the electronic services environment at the full scale and miniature level is happening at a quicker movement than anticipated, due to this pandemic forcing administrations to actively defend their positions in an extremely risky environment. To utilize administrative services, users/citizens must exhibit their capacity to receive advancements and coordinate new technologies into their regulatory tasks because of the monetary circumstance that obliges them to do such . In any case, the selection of new innovations by citizen doesn't really convert into anticipated returns (Sethuraman and Parasuraman, 2005). While imaginative advances improve the capacity of clients to get to administrations themselves, in ordinary occasions (nonappearance of a pandemic) the selection of these advances can likewise

inspire different clients to create horrible mentalities towards the said administrations and the innovation itself (Reinders et al., 2008); our past examination demonstrates that clients due to their social convictions that utilizing electronic administrations could prompt an exercise in futility because of the failure of the framework.

Academics have also identified several characteristics related to user behavior regarding the adoption of electronic services as perceived by users; for example, perceived utility, perceived value, attitudes towards service use, perceptions. Information Systems writing presents a few models and hypothetical structures for understanding the penchant of buyers to embrace and keep on utilizing new innovations. For example, Planned Behavior Theory (TPB), Reasoned Action Theory (TRA), and Technological Acceptance Model (TAM) (and its extensions).

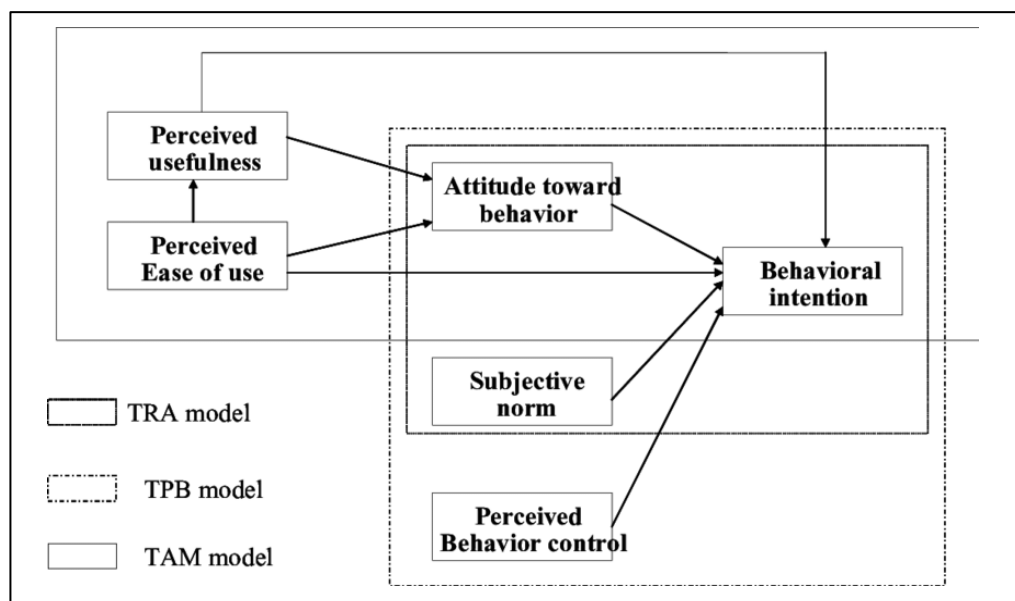


Figure n•1 : TRA-TPB-TAM Models

Most of these models see shopper acknowledgment of mechanical developments in a public electronic assistance climate as an outcome of attributes of the advancement, for example, relative favorable position, similarity, unpredictability, capacity to test or utility. This is the reason why we opted to draw inspiration from these three models which study user behavior in our case.

The current situation requires us to look at the effect of the state of emergency due to the pandemic to understand whether the latter has disrupted the behavior of the user towards the use of online services, learn a lesson of this situation to see what are the measures to be taken to encourage the use of these electronic services in normal times, this research is naturally new, we find no research established in this direction by other researchers.

In the proposed model we will try to understand two aspects, the first consists in knowing how the COVID-19 pandemic can moderate in the relationship

between the beliefs of users and their behaviors thanks to digitization, the second consists in studying what Does the perceived quality of service influence the decision to use services in times of pandemic?

3. Hypotheses

3.1 Perceived ease of use

The web and innovation have given occasions to clients to counsel and demand their managerial necessities, ongoing observational proof recommends that electronic administrations are less difficult and simpler to utilize, are all the more captivating and give more important client encounters. In a period of health crisis due to the pandemic, administrations and communities are now forcing users to adopt electronic services. However, it is very possible that users react positively to the use of electronic services even if it is considered complex for the simple reason that the latter is obliged to use this service due to the forced confinement by the state. For example, a client may see electronic administrations as being intricate in light of the fact that they require an elevated level of client contribution contrasted with their restricted inclusion in the full assistance choice. Likewise, users may have difficulty learning how to use and manage IT tools to do so. Perceived complexity refers to the degree to which consumers perceive electronic services as being more complicated, difficult to use, and requiring more effort to integrate it into their daily ritual (Moore & Benbasat, 1991). The multifaceted nature saw by clients of the new innovation might be propelled by their character qualities, for example, latency or the craving for human association. Client inactivity keeps them from performing less recognizable assignments because of the apparent multifaceted nature of elective strategies. Clients with a powerful urge for human collaboration are less inclined to receive electronic administrations in typical occasions than the individuals who want autonomy in the electronic help insight (Meuter et al., 2000).

H1 : Perceived ease of use positively influences user behavior.

3.2 Perceived value

Seen esteem alludes to how much electronic administrations in a wellbeing emergency climate are seen by clients as unrivaled. For instance, seen esteem catches measurements of accommodation, benefit, intelligence and quality. The existing literature presents the positive association between perceived value and the value orientations provided by the adoption of public services developed by users in the context of a pandemic (Overby and Lee, 2006) due to the associated advantages, such as user convenience, efficiency of electronic services and accomplishment of administrative tasks.

We rely on the theory of equity, the principle of this theory states that the motivation of people to adopt a new technology depends on their gain / effort ratio which implies their behaviors. For our situation clients will be bound to have an ideal assessment of the innovation if their benefits from the utilization of the innovation are more noteworthy than their endeavors, and the other way around (Evanschitzky et al., 2015) which is at present the situation with the presence of the pandemic. In the context of electronic services, users will react

negatively in a normal situation in which communication on the advantages of a new technology falls to the tasks of administrations and communities. For example, users may find that electronic services are less useful because they are not sufficiently informed about the benefits that they can provide. On the other hand, in times of pandemic, users may prefer to use the latter due to the perceived speed of the transaction as well as the unavailability of the one-stop shop. The apparent advantages regarding mandatory use and accommodation are referred to as the two fundamental drivers of the utilization of electronic administrations during a pandemic. We therefore propose the following hypothesis:

H2 : User behavior is positively influenced by the perceived value of the service.

3.3 The novelty perceived and the use of e-services.

Electronic services are more advanced technology in the public sector and offer new and innovative services. Seen oddity alludes to how much buyers see and distinguish electronic administrations as novel and creative by helping them play out their authoritative assignments in a more charming manner than doing them on the spot. According to diffusion of innovation theory (DOI), the novelty of the technology perceived by users influences their attitude towards its successful adoption (Rogers, 2004). Clients are bound to be open to new innovations on the off chance that they see them to contain prevalent and proficient highlights and capacities. Then again, they oppose the acknowledgment of new innovations on the off chance that they are seen as not offering prevalent capacities and preferences. The current writing features the positive impact applied by the apparent oddity in the reception of the utilization of electronic administrations.

H3 : The novelty perceived by the user has a positive impact on their behavior towards use.

3.4 Adaptation to change

Variation to change can build result desires and attitudinal convictions dependent on the advantages of a relationship of this transformation. Indeed, research has shown that the level of users' adaptation to change also increases the confidentiality, controllability and familiarity of the relationship (Van der Heijden et al., 2003), as well as the perception of an expectation of a particular result different from those linked to the central unit of the service. In other words, a high level of adaptation allows individuals to create a varied positive atmosphere leading the user to a positive feeling and predisposition towards use. In this sense, it is proposed a direct effect of the adaptation of users to the change on behavior:

H4: Adaptation to change in the use of electronic services has a negative effect on the behavior of the individual.

3.5 Confinement due to COVID-19 as a moderating determinant

A moderating determinant of the behavioral attitude to accept technology is the variable that characterizes our research "Confinement due to COVID-19". This determinant is not included in the original TAM [27]. Containment of a person consists, in the strict sense of the term and in the context of the new COVID-19

epidemic, of keeping citizens at home: affected or not by the coronavirus in contact or not with a person who tested positive for the coronavirus (confirmed case), they remain unable to attend an establishment or a place open to the public because of their closure (Le Monde , 2020). Containment of COVID-19 combines influence on four basic concepts: Perceived ease, Perceived value, Perceived novelty and adaptation to change. The use of electronic services in times of pandemic depends on the significant way in which the state's imposition of containment occurs.

The capacity of administrations and local authorities to monitor and provide efficient services by strengthening the appropriate infrastructures is a prerequisite for promoting the adoption of electronic services by users. Therefore, this research study expands the original TAM by including the containment effect of COVID 19 as a factor forcing the adoption of electronic services, therefore we postulate the following hypotheses :

H5 : The effect of confinement positively moderates the relationship between the ease of use of the service by the user and his behavior.

H6 : The effect of confinement positively impacts the relationship between perceived value and behavior.

H7 : The effect of confinement positively moderates the relationship between the user's social influence on their behavior.

H8 : The effect of confinement positively moderates the relationship between adaptation to change and user behavior.

3.6 Quality of service: Mediator effect

Quality of service in the context of electronic services has received considerable attention in the literature. Generally, the quality of service has been identified as the degree of difference in service performance between what users expect and what they receive (M. J. Alsamydai et al, 2015). In the context of online services, electronic service has been identified as the electronic delivery of interactive web services provided via the Internet. The quality of electronic services can be described as the overall evaluation of the user and his judgment on both the excellence and the quality of the delivery of electronic services on the so-called virtual administration. In this study, we will try to confirm or deny whether in times of pandemic quality plays an essential factor in the adoption of electronic services.

H9: Quality has a neutral impact on user behavior and their decision to use electronic services.

The conceptual model of these hypotheses is presented in figure n ° 1:

H10: behavior due to antecedent variables positively influences the use of electronic services.

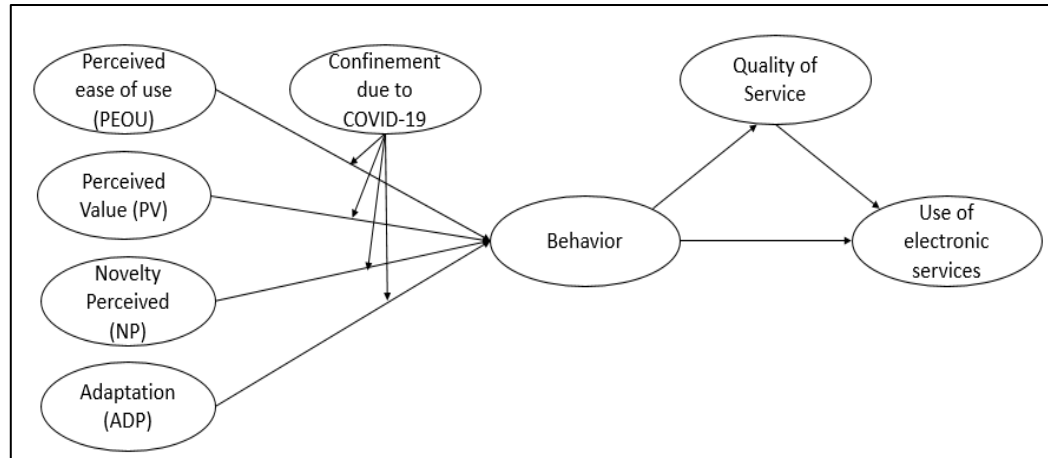


Figure N°1: Conceptual model

4. Method

4.1 Research population and data collection

Our population is made up of users of public services. We obtained 639 responses following an online questionnaire survey.

Regarding the variable measurements, we relied on pre-existing measurement scales from the literature coupled with a documentary study to adapt it to the Moroccan context. All the variables were then the subject of a multi-item measurement evaluated by a LIKERT scale, in 5 modalities.

4.2 Data Processing

Given that the process of operationalizing the variables was based both on pre-existing scales by adapting them and amending them thanks to the documentary study, it is therefore necessary to ensure their validity and their reliability in order to confirm the factorial structure of the model and its psychometric qualities.

To analyze our results, we used structural equation modeling, we used IBM SPSS's SPSS-AMOS V.25 software using multiple regression or the LISREL approach (Linear Structural Relationship), this approach will allow us to test the structural relationships on the latent variables.

We first began to purify our data using the SPSS software by performing a principal component analysis (PCA) on all the measuring instruments respectively comprising the explanatory, moderating variables, and to explain to ensure the absence of multicollinearity, then of a new PCA by latent variable to check its unidimensionality by observing the distribution of items on the factors before a Varimax rotation and after. The purification was done by retaining the criterion defined by eliminating the items whose factor contributions do not reach 0.5 on the principal components. Each time we were reassured of the validity of the variables, we proceeded to assess their reliability using the Cronbach's alpha measure, retaining the criterion of 0.7.

Then an assessment of the goodness of fit of the structural model through the study of the causal links between the latent variables of the model. In this regard, we have opted for modeling by structural equations to test the

relationships between the exogenous latent variables representing the containment of COVID-19 and the endogenous variable "use of the service".

4.3 Analysis

A1 : Results of the preliminary measurement model

As a first step, a preliminary analysis and confirmatory factor analysis (CFA) utilizing AMOS 25 uncovered that the measures utilized in this exploration showed satisfactory psychometric properties and had all the earmarks of being liberated from efficient inclination (Hair, 2006; Hair et al., 2011) (see table 2). The adjustment of the CFA for the research carried out is acceptable, ($p < 0.05$); comparative fit index (CFI) = 0.436; mean square error of approximation (RMSEA) = 0.214; and normalized adjustment index (NFI) = 0.429. These outcomes propose a solid match of the model to the information, and the eight-factor model is all around upheld by the investigation.

A2 : Reliability and validity of the construct

The extricated mean fluctuation (AVE) of each build is more prominent than 0.50, supporting the joined legitimacy. All normalized factor loads are more prominent than 0.70 and huge ($P < 0.05$), which further reinforces united legitimacy. These components were held in light of the fact that different proportions of unwavering quality and legitimacy of the apparent multitude of instruments were agreeable. Investigations of the connection network (see Table 1) uncovered powerless relationships between's various sets of builds. The square foundation of the AVE of each develop was more prominent than its connection between's the components, proposing that each build stands apart from the others. Likewise, the mean AVE of each develop was additionally more noteworthy than the greatest shared squared change (MSV), affirming the discriminant legitimacy between each pair of builds. The aftereffects of these tests show that the builds have reached discriminant legitimacy. Fundamental dependability breaks down (see Table 2) uncovered that the inner consistency of all scales was over the base limit (Cronbach's $\alpha > 0.70$). Cronbach's alpha qualities announced as great (0.71–0.91), good (0.58–0.97) and satisfactory (0.45–0.96) because of absence of clear chain of importance in proposed ranges appear to be subjective. (Taber, 2018) recommended that the edge esteems for Cronbach's alpha don't imply that the lower charges infer an inadmissible worth.

Table 1. Reliability of the construct, convergent and discriminant validity

	CR	AVE	MSV	MaxR(H)	PEOU	PV	NP	Adp	UES	Behv	Conf	SQ
PEOU	0.711	0.612	0.548	0.87	0.695							
PV	0.822	0.608	0.601	0.831	0,740***	0.78						
NP	0.831	0.625	0.401	0.867	0,401***	0,633***	0.791					
Adp	0.86	0.673	0.8	0.874	0,534***	0,697***	0,399***	0.82				
UES	0.927	0.808	0.599	0.934	0,657***	0,728***	0,495***	0,642***	0.899			
Behv	0.828	0.601	0.8	0.892	0.58	0.775	0.567	0.894	0.774	0.75		
Conf	0.871	0.628	0.469	0.878	0,620***	0,680***	0,517***	0,545***	0,685***	0,685***	0.792	
SQ	0.813	0.529	0.487	0.851	0,563***	0,698***	0,569***	0,334***	0,465***	0,463***	0.568	0.72

All the variables are accepted with $p < 0,05$

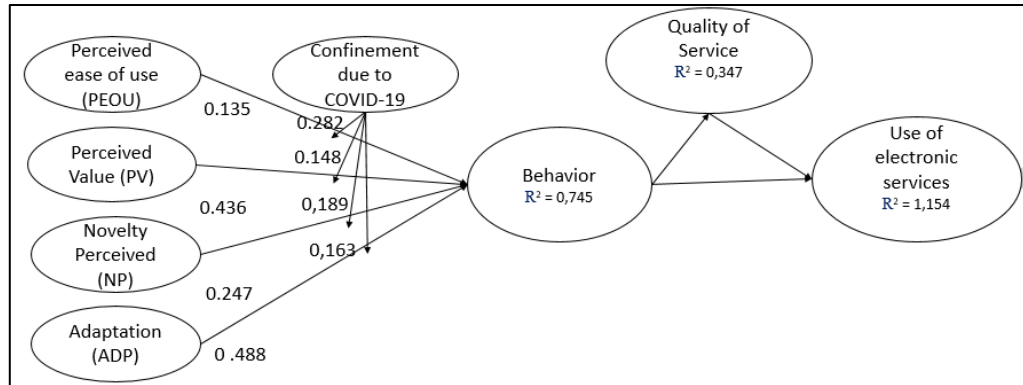


Figure 2. Conceptual Model

The results of the modeling of the structural equations support all the assumptions except H1 (see Fig. 2). The effect of ease of use → Behavior was found to be insignificant (Baron and Kenny, 1986). However, all the hypotheses were considered accepted. Table 2 presents a summary of the results.

Table 2. Summary of Results.

Hypothesis	Estimate	SE	CR	P	Hypothesis
H1: Perceived ease of use → user behavior.	-0.135	0.052	-2.573	0.01	Accepted
H2 : perceived value of the service → User behavior	0.436	0.05	8.735	0.00	Accepted
H3 : The user's Novelty perceived has a positive impact on their behavior towards use.	0.247	0.025	9.839	0.00	Accepted
H4 : Adaptation to change in the use of electronic services → the behavior of the individual.	0.488	0.033	14.569	0.00	Accepted
H5: The effect of containment mediates the relationship between the ease of use of the service by the user and their behavior.	-0.357	0.106	-3.38	0.00	Accepted
H6: The effect of confinement mediates the relationship between perceived value and behavior.	0.34	0.054	6.233	0.00	Accepted
H7: The effect of confinement has a mediating effect on the relationship between the user's social influence on their behavior.	0.213	0.024	9.034	0.00	Accepted
H8: The effect of confinement has a mediating effect on the relationship between adaptation to change and user behavior.	0.434	0.033	12.992	0.00	Accepted
H9: Quality has a mediating effect on the behavior of the user and his decision to use electronic services.	0.596	0.064	9.307	0.00	Accepted
H10: User behavior due to antecedent variables → use of electronic services.	1.005	0.056	17.984	0.00	Accepted

Based on the approach employed, we tested the indirect effects using AMOS SPSS V.24. Results show that all indirect effects were significant (see Table 3).

Table 3. Direct and Indirect Effects.

	Hypothesis	Estimate	SE	CR	P	Hypothesis
<i>direct effects</i>	<i>Behavior<--- PEOU</i>	-0.135	0.052	-2.573	0.01	Accepted
	<i>Behavior<--- PV</i>	0.436	0.05	8.735	0.00	Accepted
	<i>Behavior<--- NP</i>	0.247	0.025	9.839	0.00	Accepted
	<i>Behavior<--- Adp</i>	0.488	0.033	14.569	0.00	Accepted
	Hypothesis	Estimate	SE	CR	P	Hypothesis
<i>indirect effects</i>	<i>Conf<--- PU</i>	1.231	0.157	7.866	0.00	Accepted
	<i>Behavior<--- Conf</i>	0.282	0.041	6.859	0.00	Accepted
	<i>Behavior<--- PEOU</i>	-0.357	0.106	-3.38	0.00	Accepted
	<i>Conf<--- PV</i>	0.905	0.074	12.241	0.00	Accepted
	<i>Behavior<--- Conf</i>	0.148	0.027	5.405	0.00	Accepted
	<i>Behavior<--- PV</i>	0.34	0.054	6.233	0.00	Accepted
	<i>Conf<--- NP</i>	0.415	0.056	7.381	0.00	Accepted
	<i>Behavior<--- Conf</i>	0.189	0.022	8.591	0.00	Accepted
	<i>Behavior<--- SI</i>	0.213	0.024	9.034	0.00	Accepted
	<i>Conf<--- Adp</i>	0.613	0.05	12.191	0.00	Accepted
	<i>Behavior<--- Conf</i>	0.163	0.023	7.064	0.00	Accepted
	<i>Behavior<--- Adp</i>	0.434	0.033	12.992	0.00	Accepted

5. Discussion

This research extends the analysis of behavior on the use of electronic services, user behavior and strategies for establishing user-government relationships by taking into account the antecedents of the perceived value of the use of electronic services in time of pandemic.

The turn of events and testing of our reasonable model adopts an alternate strategy from general SI models, including TRA, TPB, TAM and its augmentations. This study advances the scope of the impact of COVID-19 containment in the use of e-services and research the literature on digitalization innovation by examining its antecedents and results in the context of the user. Our results show that in the context of a pandemic, user assessment of the factors that influence their behavior play an essential role in the development of positive perceptions of the use of electronic services.

They also offer a more holistic perspective on how the complexity, novelty, benefits and perceived risk characteristics in times of pandemic could contribute to the development of user perceptions of the value of using electronic services, leading positive adoption experiences for users. At the same time it should be noted that in times of pandemic the perceived quality of service has not proved to be paramount in the use of electronic services due to the factor forcing users to use electronic services.

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