







## Hybrid Study of Digital Entrepreneurship in The COVID-19 Era

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### ABSTRACT

The objective of this work was to specify a model for the study of electronic consumption. An exploratory, cross-sectional and psychometric study was conducted with a selection of Internet users, considering their time of use. An associative perceptual structure was found between the usefulness of the technology and the effectiveness of the respondent, although the research design limited the results to the research sample, suggesting the extension of the work towards other cybernetic contexts.

**Keyword:** Globalization, Perception of utility, Use of mobile Internet



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## 1. Introduction

The Internet connection from root servers, the United States, Japan, Holland and Sweden are the main nodes ([Juarez, 2020](#)). Japan is the nation with the highest connection speed (61.0 mbps), Sweden ranks fourth (18.2 mbps), Holland is sixth (8.8 mbps) and the United States occupies tenth place (4.8 mbps) ([Carreón et al, 2019](#)). The economic, technological and social consequences of globalization are described to propose the Theory of Mobile Consumption that explains the consumption of products and services through mobile telephony ([Sanchez, 2020](#)).

The theoretical, conceptual and empirical frameworks are reviewed in order to establish the axes and topics for discussion of mobile use ([Bouls, 2020](#)). The most recent works are mentioned below, as well as the instruments that measure the determining variables of Internet use ([Carreon, 2020](#)). A model is specified and the relationships between the variables are compared in order to observe the explanatory and predictive trajectories of the behavior. The discussion and contrast of the relationships between the perceptions of utility and efficiency as determinants of mobile use, an indicator of digital entrepreneurship, will contribute to the study of the formation of human capital.

A model is presented in which it is included and demonstrates that the perception of utility is the determinant of the use of mobile Internet ([Carreón et al., 2019](#)). Based on the above scenario, it is proposed that individuals, being immersed in information communication flows and networks, become potential consumers when acquiring a mobile phone. Precisely, in the following section, the Mobile Consumption Theory (TCM) is explained, which explains the determinants of consumption through a mobile phone ([Carreón et al., 2019](#)). The Theory of Mobile Consumption states that individuals carry out their purchases through a mobile phone based on their utilitarian perceptions and purchase decisions.

The TCM maintains that people consume basic products and services through the consumption of secondary products ([Carreón et al., 2019](#)). Individuals when buying a mobile phone or any product and technological information communication service, are exposed to the consumption of basic products and services that are advertised and sold through the technologies. Therefore, the TCM argues that it is the perceptions of utility, innovation and efficiency that determine the consumption of products and services that are advertised and sold through the mobile phone ([García et al., 2018](#)). TCM provides the indirect effect of perception of a technological innovation on the consumption of products and services via said mobile technology.

It explains the relationship between ICTs with individuals saturated with multiple activities, people who buy and people who work as supervisors or vendors ([García et al., 2019](#)). The TCM predicts the use of the mobile Internet from a cognitive process that begins perceptually and ends behaviorally. From the TCM, the study detailed below was carried out. The perception of utility is the central axis of the knowledge management agenda because it translates statistical data into meanings of commitment, entrepreneurship and innovation, as well as generates new protocols for information processing whenever the objectives and goals are subject to the climate of tasks, supports and relationships between stakeholders ([Hernandez et al., 2019](#)). The TCM raises three explanations of the consumption of products and services through the mobile phone.

The structure of digital entrepreneurship has focused on three preponderant dimensions alluding to perceptions, needs and expectations of opportunity, optimization and innovation. It is a tripartite structure in which the highest percentage of the total variance explains spreads in opportunism ([Adams, 2020](#)). Defined as a need to seek or generate opportunities, a perception of risks and potential benefits, as well as an expectation of minimum failure and maximum benefit, opportunism is the preponderant factor of entrepreneurship ([Garcia, 2020](#)).

In the case of optimization, this is understood as a need to minimize costs, a perception of saving resources in the face of potential risks and an expectation of anticipation of risk events. Often this dimension of entrepreneurship has been correlated with opportunism in scenarios of scarcity, shortages, unhealthiness and inflation ([Benjumea & Arango, 2017](#)). Those who live in one of these four scenarios develop perceptions of opportunity and optimization of resources based on their pressing needs for cooperation, solidarity, consensus, support and co-responsibility. Because opportunism and optimization involve an association between the parties involved to undertake a project of common risks and benefits, it is necessary that both parties develop innovation in communication, protocols and management ([Carreón, 2017](#)). In this way, opportunity, optimization and innovation are an observable triad in social, cooperative and co-responsible entrepreneurs.

## 2. Method

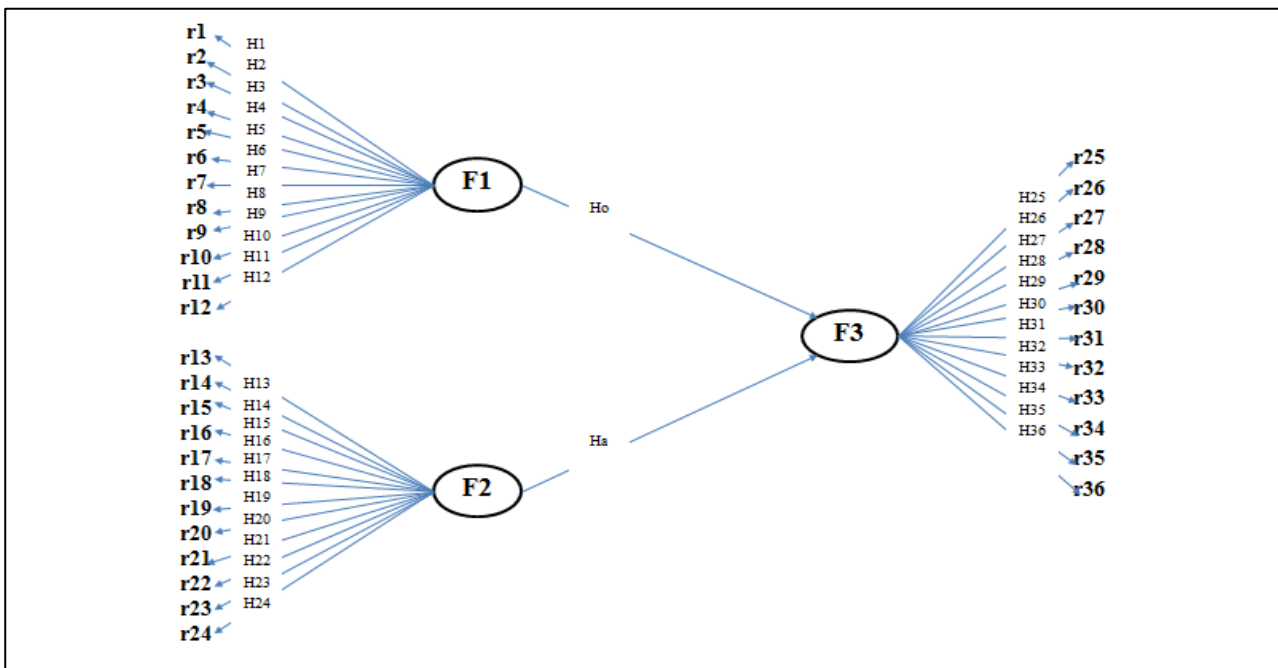
### 2.1. Modeling Digital Entrepreneurship

From the theory of social entrepreneurship and the studies of its components related to opportunity, optimization and innovation, it is possible to specify a model for the study of digital entrepreneurship defined as a system of opportunity management, resource optimization and innovation of processes, observable in the competitive advantages of the interested parties ([Sánchez, 2017](#)). Because the technologies, devices and electronic networks are subject to risks and benefits, difficulties and ease of use, it is essential to observe the dimensions of entrepreneurship in scenarios of scarcity of resources such as social networks; Facebook, YouTube, Instagram, WhatsApp, SnapChat, Periscope or Twitter ([Garcia, 2017](#)).

It is possible to notice that the opportunities are different in each social network, but essentially the optimization of resources is carried out based on the type of network and user, as well as the innovation regarding the restrictive policies of each one of them ([Figueroa, 2017](#)). In this way, a taxonomy of the networks for their degree of openness to opportunity would be based on the interrelation between users or potential users ([Carreón, 2014](#)). The distinction between social networks lies between those that offer the opportunity to

disseminate messages and those who restrict them, as well as those that facilitate the potential growth of user contacts based on their profile and communication skills (Garcia, 2016).

Of course, in the case of resource optimization there seems to be no differences between social networks (Garcia, 2015). It is an entrepreneurial component that, being post-opportunity, transfers that influence to innovation. This is the case of the YouTube social network that offers a conditioned opportunity to subscribe to followers, limits the number of videos, but rewards content innovation rather than their reproduction. This is how the objective of the present work was to specify a model for the study of the perception of utility, considering the dimensions that literature contributes with respect to the acceptance of technology, the propensity to information and the motivation for achievement (see Figure 1).



Note: Elaborated with data study. *r* = Reactive, *F* = Factor; *F1* = Utility Perception, *F2* = Efficacy perception, *F3* = Use Technology, *H* = Hypothesis; *Ho* = Null Hypothesis, *Ha* = Alternative hypothesis, ← determinant of reactive; → determinant factor

Figure 1. Specification a model

Formulation. Do perceptions of the level of utility and the degree of innovation have an indirect, positive and significant effect on the level of use? Null hypothesis: The perception of utility when indicated by the expected benefits and profits will determine the use of mobile technology for entrepreneurship in electronic social networks. Alternate hypothesis: The perception of efficiency indicated by computational skills and the intensive use of technologies, devices and electronic social networks will determine the use of the internet oriented towards digital entrepreneurship.

## 2.2. Data Instrument

There were 186 students selected from the Metropolitan Autonomous University. 65 men (25 studied in CBI, 26 in CBS and 14 in CSH) and 121 women (22 in CBI, 59 in CBS and 40 in CSH). In the first phase, the reliability and validity of the instruments that measured the five variables was built and established. In the second phase, the likelihood of adjusting indirect and direct, negative and positive, and significant causal relationships between the study variables was modeled and demonstrated. From the Mobile Consumption Theory, twelve indicators were established that configured three dimensions for the five variables of the measurement model that were subjected to a confirmatory factor analysis of the main components with varimax rotation and maximum likelihood. The results reject the hypothesis of factorial unidimensionality for three variables of the measurement model.

Scale of the perception of the level of utility. 12 items with response options from “strongly disagree” to “strongly agree”. The convergence (indicated by the factor weight) of the reagents with respect to the factor.

Scale of the perception of the degree of efficiency. 12 items with response options from “never” to “always”.

Considering the factor weights of the perceptual variable of self-efficiency, the convergence of four reagents is demonstrated. Scale of the level of use. 12 items with response options from “less than ten minutes” to “more than twenty minutes. The psychometric properties of the instruments that measure the study variables are detailed in the Table 1 where they meet the requirements for multivariable analysis.

During the first week of the spring quarter of 2019 at the UAM-I library, students were asked how often they used their phone to download images, sounds and speeches to select the ideal sample. Subsequently, the questionnaire was provided indicating a response time of 30 minutes to answer it.

Table 1. Instrument descriptions

R	M	S	K	A	F1	F2	F3
r1	4,21	1,03	1,43	0.793	0.401		
r2	4,14	1.25	1,54	0.704	0.524		
r3	4.93	1,47	1,71	0.771	0.621		
r4	4.31	1.25	1,08	0.771	0.501		
r5	4.30	1,82	1,43	0.704	0.402		
r6	4.23	1,47	1,13	0.754	0.542		
r7	4.81	1,36	1,14	0.782	0.512		
r8	4.26	1,26	1,56	0.791	0.405		
r9	4.39	1,58	1,83	0.732	0,521		
r10	4.40	1,12	1,40	0.714	0.578		
r11	4,18	1,32	1,45	0.798	0.442		
r12	4.27	1,46	1,34	0.713	0.642		
r13	1.02	1.05	1,54	0.724		0.406	
r14	1.27	1,47	1,56	0.741		0.443	
r15	1.48	1.35	1,49	0.782		0.543	
r16	1.59	1,44	1,12	0,762		0.476	
r17	1,04	1.01	1,45	0,780		0.531	
r18	1,92	1,03	1,49	0.732		0.543	
r19	1,46	1.05	1,65	0.714		0,480	
r20	1,22	1,06	1,87	0.746		0.421	
r21	1,82	1,91	1,67	0,722		0,621	
r22	1,01	1,07	1,21	0,743		0,482	
r23	1,43	1,01	1,45	0,714		0,512	
r24	1,45	1,06	1,53	0,792		0,621	
r25	1,82	1,75	1,46	0,704			0,681
r26	1,94	1,54	1,34	0,761			0,651
r27	1,30	1,86	1,34	0,762			0,540
r28	1,56	1,92	1,23	0,792			0,621
r29	1,23	1,71	1,45	0,741			0,572
r30	1,31	1,64	1,56	0,7644			0,651
r31	1,50	1,52	1,10	0,781			0,403
r32	1,46	1,01	1,14	0,732			0,642
r33	1,72	1,81	1,13	0,761			0,613
r34	1,82	1,97	1,45	0,761			0,642
r35	1,90	1,88	1,28	0,768			0,432
r36	1,57	1,92	1,21	0,709			0,531

Note: Elaboration with data study; R = Reactive, M = Mean, SD = Standard Deviation, K = Kurtosis, A = Alpha excluded value item. Method: Principal axes; Rotation: promax. Adequation and Sphericity [ $\chi^2 = 16,16$  (15 df)  $p < .05$ ;  $KMO = 0,780$ ]. F1 = Utility Perception (27% total variance explained and alpha 0,780), F2 = Efficiency Perception (21% total variance explained and alpha 0,761), F3 = Use (18% total variance explained and alpha 0,708).

### 3. Result and Discussion

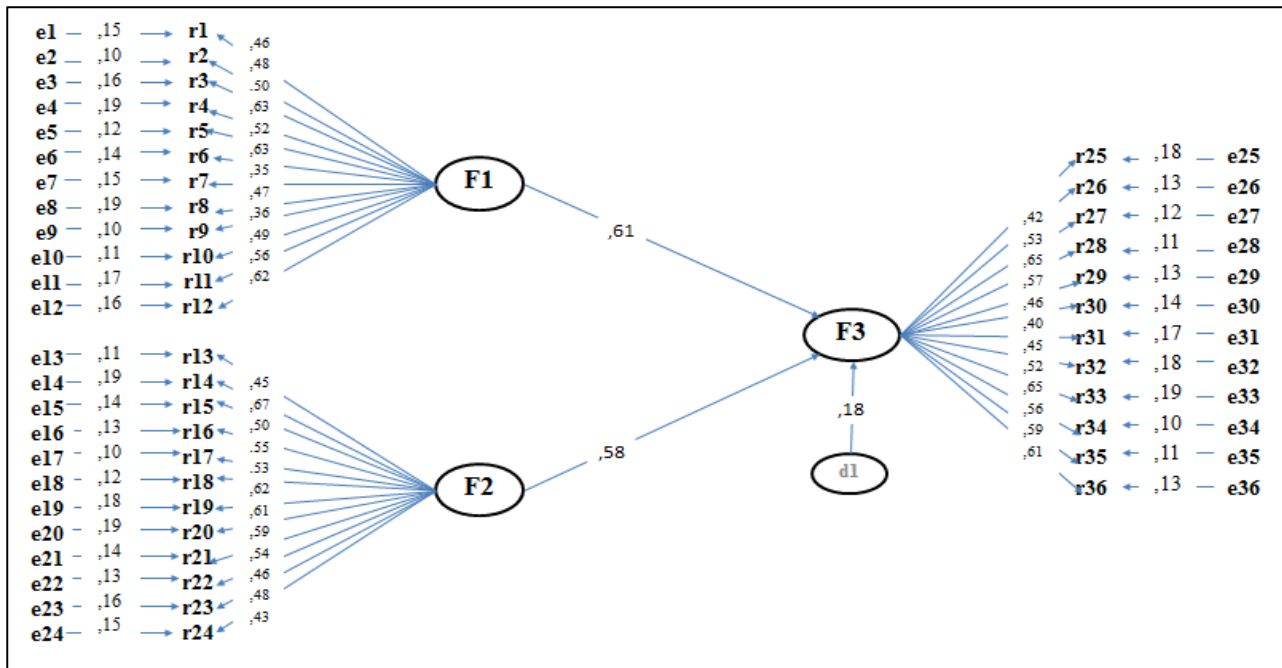
From the Mobile Consumption Theory, a new model was designed with the variables that met the criteria of reliability (alpha greater than .60) and validity (factorial weight greater than .300). The strength of association ( $r = .07$ ;  $p < .05$ ) between independent variables indicates its spurious implication (see Table 2).

Table 2. Correlations between variables

	M	S	F1	F2	F3	F1	F2	F3
F1	35,43	13,21	1,00			1,782	0,061	0,543
F2	33,24	14,35	0,072	1,00			1,982	0,613
F3	26,57	16,54	0,461	0,654	1,00			1,761

Note: Elaborated with data study; M = Mean, S = Standard Deviation, F1 = Utility Perception, F2 = Efficacy perception, F3 = Use \* $p < ,01$ ; \*\* $p < ,001$ ; \*\*\* $p < ,0001$

Multiple linear regression was calculated to establish the determinants of the dependent variable and the non-linear relationship between independent variables. The scheme shows that the perception factor of academic utility is the main determinant of the level factor of Internet use for academic purposes. This finding indicates a modification of the TCM measurement model by proposing a direct, positive and significant effect ( $\beta = .61$ ;  $p < .05$ ) of the utility factor on the use for academic purposes. That is, a person looking to buy for example a book, could get it if there was a virtual library connected to the mobile phone (see Figure 2).



Note: Elaborated with data study: e = Measurement Error of Item, r = Reactive, F = Factor; F1 = Utility Perception, F2 = Efficacy perception, F3 = Use Technology, d = Measurement Disturbance Factor; ← determinant of reactive; → determinant factor

Figure 2. Structural equation model of digital entrepreneurship

Similar reasoning would imply the perception factor of self-efficiency as a determinant of academic mobile use. An individual looking for academic information could find it through his mobile phone. However, the causal relationship lacking the required significance suggests the exclusion of the variable. Finally, the level of mobile Internet use for academic purposes is explained by the two independent variables in 22 percent of their variability ( $R^2 = .22$ ). From the original measurement model only two variables maintain a causal relationship that selects them for inclusion in another measurement model. These consequences and implications are discussed below.

The objective of the present work was to specify a model for the study of the perception of utility, considering the dimensions reported in the literature, as well as those established in the present work, but its design limited the contributions to the analyzed sample, suggesting the extension of work towards other scenarios and other study samples. In relation to the perception of utility that literature identifies as concomitant to the perceived ease of use (Martínez et al, 2019). The present work has shown that it affects, together with the perception of efficiency, the intensive use of electronic technologies, devices and networks.

Regarding the perception of effectiveness that literature links to the perception of control (Villegas, 2019). The

present study has shown that when interrelated with the perception of utility generates a predictive structure of Internet use. In relation to the use of the Internet, literature stands out as a result of the interrelationship between perceptions of utility, ease, efficiency and control (Villegas et al, 2019). The present work has shown that the perception of utility associated with the perception of effectiveness generates a structure that determines the use of the Internet. Research lines concerning the associative structure of the perception of utility with the perception of efficiency and these as determinants of the use of the Internet will explain the rational, deliberate, planned and systematic process of acceptance of technology.

#### 4. Conclusion

The objective of this paper was to specify a model based on the theory of mobile consumption, which highlights the relationship between perceptions as determinants of the use of technologies, devices and networks. However, the present work proposed a modification of the perceptual structure in order to increase the predictive power of the theory of mobile consumption, highlighting the association between the perception of utility and the perception of efficacy as predictors of behavior. Research lines concerning the predictive structure of electronic consumption will explain the associative relationship between utility and perceived effectiveness, as well as its impact on the use of the Internet.

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