

Model Of Digital Transition During The Pandemic For Msmes Of Mass Consumption In Zone 3-Ecuador

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Abstract

Digital transition is a process that companies currently implement to achieve an optimal level of competitiveness, as well as, to stay in the changing market and complicated by the conditions associated with the Covid-19 pandemic. Therefore, the objective of the research is to propose a model of digital transition during the pandemic for MSMEs of mass consumption products in Zone 3-Ecuador; that supports the insufficient integration of business elements and the migration from a traditional model to a digital one. Being a descriptive-exploratory study, the inductive-deductive, analysis-synthesis and modeling method was used; and a sample of 371 micro, small and medium enterprises was studied with a structured survey. Several analyses were carried out, including reliability analysis with Cronbach's Alpha statistic; correlation analysis with Pearson's coefficient and multivariate analysis of neural networks. As results, three sections are presented: 1) the situational analysis of MSMEs 2) the definition of the components for an efficient digital transition and 3) the proposed model. It is concluded that the digital transition requires several aspects to achieve an optimal level of sales and stability.

Keywords: Digital transition, digital marketing, e-commerce, MSMEs, commercial sector.

Introduction

In recent years, companies have been forced to use technological resources to improve interaction with customers, since the market is constantly changing and business models must adapt to these conditions to generate an optimal competitive level. In this regard, Martinez (2019) states that the digital transformation process implicitly involves innovation, cultural change and the implementation of new technologies. Therefore, it is assumed that all organizational changes must align to create value to customers and employees.

The digital transformation is based on three fundamental pillars, which are: 1) the customer experience, which seeks to attract customers through virtual channels; 2) the operational processes, which focus on internal changes in the staff; 3) the business model, which is based on new opportunities through virtual spaces (Salas, 2019). For this, it is necessary to respond to the challenges that arise with these changes, such as the redefinition of the business, digitization, use of the internet and its speed in the ability to supply products to the market (Cuenca, Matilla & Compte, 2020).

In addition, for Linares (2018) , the digital transition implies a change of mentality because it leads to a migration from traditional marketing to digital marketing. Precisely there, according to Somalo (2017) in the first one, the product or service is handled with its characteristics and attributes, while in the second one, the focus is on the customer, their needs and desires to generate added value. The price not only focuses on the value of a good or service and utility, but becomes a relationship between value and cost to satisfy the customer. The place starts from the distribution channels through which the product or service reaches the customer, as well as the physical place, but takes another approach from the convenience, to adapt it to a physical or digital space and where responsiveness is relevant. Finally, the promotion in business media is transformed into communication generating an interaction with the selected segment.

In this sense, digital marketing is related to electronic commerce or e-commerce, which is a business model based on buying and selling through the internet (Carrión, 2020) ; which supports in the interaction between the company and customers or suppliers, ensuring

effective communication and definition of current market needs (Jones, Motta & Alderete, 2016), eliminate financial costs and expand the existing product catalog (Somalo, 2017; Perdigón, 2020). It is considered an essential tool for small and micro enterprises to expand their activities, without limiting their development by the geographical access of customers.

Moreover, it enables businesses, especially small businesses, to position themselves in the market through online platforms and opt for innovative marketing channels, which are tailored to customers' needs (Kim, Lee & Ryu, 2018). Therefore, e-commerce becomes a fundamental pillar for business digital transition as it uses digital media to sell its products in times of pandemic, where traditional selling has adapted to global health conditions.

The most common types of e-commerce include: B2B, B2C, C2C and C2B, as detailed in Table 1. However, there are others that are also theoretically included since they take into consideration not only businesses and consumers, but also governments and employees.

Table 1. Types of e-commerce

Author and Year	Type of e-commerce
(Turban, King, Lee, & Turban, 2015) ; (Castaño & Jurado, 2016) ; (Montoya & Sanchez, 2016); (Sigmond, 2018) ; (Leonard & Jones, 2019)	<ul style="list-style-type: none"> • Business to Business (B2B): companies that sell to other companies. • Business to Consumer (B2C) sell through a virtual platform • Consumer to Consumer (C2C): when the user enters a virtual platform and enters a price he is willing to pay for a product or service, and the company decides whether or not to accept the offer. • Consumer to Business (C2B): when consumer mail is used to offer packages or promotions.
(Reyes, Perez, & Rodriguez, 2015) ; (Turban, King, Lee, &	<ul style="list-style-type: none"> • Government to Consumer (G2C): to make payments for government services

Turban, 2015) ; (Sanabria, 2016)	<ul style="list-style-type: none"> • Mobile commerce (M-commerce): which is associated with the sale of products or services through mobile devices.
(Turban, King, Lee, & Turban, 2015)	<ul style="list-style-type: none"> • Government-to-Government (G2G): to carry out government-to-government activities.
(Turban, King, Lee, & Turban, 2015) (Basantes, et al., 2016); (Castaño & Jurado, 2016).	<ul style="list-style-type: none"> • Business to Employee (B2E): relationship established between the company and its employees, who participate in the company's processes through the corporate intranet. • Business to Government (B2G): used to connect businesses with governments, it is the digital way of establishing relationships between government organizations and their suppliers. • Consumer to Government (C2G): relations between consumers and the government, allowing telematic transactions between citizens and public administrations. • Business to Administration (B2A): commercial activities between public administrations and • private entities. • Consumer to Administration (C2A): transactions between private individuals and administrations.

Source: own elaboration based on the bibliography consulted.

In this direction, for the authors Guzmán and Ruíz (2015) , one of the examples of e-commerce, are virtual stores that require several elements such as: 1) product catalog; 2) shopping cart; 3) payment gateway to request the order; 4) product search engine; 5) customer service; 6) reports; 7) customization of the store through marketing and graphic design; and 8) Google Analytics. But these authors only focus on aspects of the online store, leaving out other types of marketing channels such as sales through social networks.

The authors Montenegro et al. (2019) propose a model for setting up an online store that has seven phases: 1) analysis of the external and internal environment; 2) analysis of the

proposal; 3) technical support; 4) marketing support; 5) marketing, purchasing and distribution support; 6) administrative-financial support; 7) monitoring and evaluation. However, as in the previous case, it only focuses on the online store but no other digital marketing channels and aspects prior to the transition.

Similarly, the authors Diaz and Salguero (2021) propose a digital marketing guide for retailers focusing on: selling through social networks, the virtual store and digital marketing aspects, such as SEO positioning and a website. However, it is essential to establish the steps for a proper digital transition, considering administrative, support, control and evaluation aspects.

On the other hand, the different vehicle and mobility restriction measures to curb Covid-19 infections have led to an increase in the use of e-commerce. Thus, during the year 2020, globally e-commerce reached 26.7 billion dollars, where 19% are retail sales or its equivalent of 2,495 million dollars; specifically, B2B e-commerce collected 21.8 million and B2C collected 4.9 billion dollars. (UNCTAD, 2021) , evidencing that this business model becomes a marketing channel that adapts to the current health conditions.

In Ecuador during the health crisis, online transactions increased from 2% in 2010 to 10% in 2020 with figures of 90 million dollars (Del Alcázar, 2021) , where preferably, transactions are at the local level in C2C or B2C categories (Pesantes, 2020) . Therefore, it denotes the importance of e-commerce for businesses and survival in times of pandemic, especially for micro, small and medium enterprises that have been seriously affected.

It should be noted that the problem is framed in the insufficient integration of the elements and components for an efficient digital transition in micro, small and medium enterprises. Likewise, it is evident that they do not have a model to guide them to move from a traditional marketing model to a digital business model. In this sense, the research is aimed at proposing a digital transition model during the pandemic for MSMEs of mass consumption products in Zone 3-Ecuador.

Methodology

Table 2. Stratified sample

	Tungurahua	Cotopaxi	Chimborazo	Pastaza	ZONE 3
Microenterprise	130	100	110	20	360
Small business	3	1	2	0	6
Medium-sized company "A".	1	1	1	1	5
TOTAL	134	102	113	21	371

Source: own elaboration

This study was descriptive-exploratory type, since the digital transition of MSMEs in zone 3 in Ecuador, during the pandemic that affected in the years 2020 and 2021, to subsequently detail each of the relevant aspects of the problem in question. In addition, the inductive-deductive method was used to analyze the digital transition from the general to the particular and vice versa; as well as the analysis-synthesis method to reach the conclusions from the different bibliographic sources consulted. Also, the modeling method was used to propose an efficient digital transition model for MSMEs from a previous analysis of several authors.

According to the INEC Business Directory (2021) , there are 101,868 MSMEs in zone 3 (Tungurahua, Cotopaxi, Chimborazo and Pastaza), of which 9,713 specifically perform marketing activities of mass consumption products and are assumed as the population for this research.

In addition, the sample selected was 371 MSMEs to which a structured online survey was applied with 23 multiple choice questions and a five-point Likert scale, to obtain relevant information on the digital transition they have made during the pandemic (see Table 2). It should be noted that the finite formula was used to calculate the sample, with a margin of error of 5% and a confidence level of 95%; and based on the percentage of representativeness, the sample was stratified by province and company size.

It is pertinent to mention that, in this study, medium-sized type B companies and large companies were excluded, since they are those that had a digital transition prior to the pandemic. For this reason, only micro (sales less than \$100,000 and 1-9 employees), small (from \$100,001 to \$1,000,000 and 10 to 49 employees) and medium-sized companies of type A (from \$1,000,001 to \$2,000,000 and a payroll of 50 to 99 employees) were selected, as mentioned by the National Institute of Statistics and Census INEC (2014).

The reliability analysis of the data collection instrument was conducted from a pilot test to 10% of the sample, equivalent to 37 MSMEs; which yielded a result of Cronbach's Alpha of 0.834, showing that the questionnaire is good and suitable for the application. It is highlighted that this instrument was applied during the months of June, July and August through a form in the Google Drive tool, then the database was exported to SPSS (Statistical Package for the Social Sciences) version 23 for statistical processing.

In this sense, the Bivariate Pearson Correlation Coefficient was used to determine the most relevant components in the digital transition process of MSMEs in zone 3 in Ecuador. From these results, the study describes the relationships between these components through a multivariate analysis of neural networks, with the Multilayer Perceptron (MLP) algorithm.

Results

This research had three sections in which the following topics were addressed: 1) the situational analysis of MSMEs in zone 3 in Ecuador; 2) the definition of the components for an efficient digital transition; and 3) the proposed digital transition model.

1) Situation analysis of MSMEs in zone 3 in Ecuador

The managerial staff of the MSMEs in zone 3 in Ecuador is mostly between 20 to 39 years old (46.80%), similarly the accounting staff (73.33%), while the departmental heads of operational areas are between 30 to 39 years old (63.89%). This shows that microenterprises, with 98.13% of market representation in zone 3, are predominantly run by young people who have a higher level of education (55%), but require guidance to efficiently carry out the process of digital transition of their businesses.

61.5% of MSMEs have a physical store, but were forced to migrate to digital media. Therefore, 57.1% have a digital presence in social networks, 19.7% have an online catalog, 14.6% have an informative website and only 8.6% relied on an e-commerce (see figure 1). Therefore, it became evident that MSMEs require a model that allows them to achieve an efficient transition, since not only social networks are considered an online marketing channel for mass consumption companies, but also e-commerce.

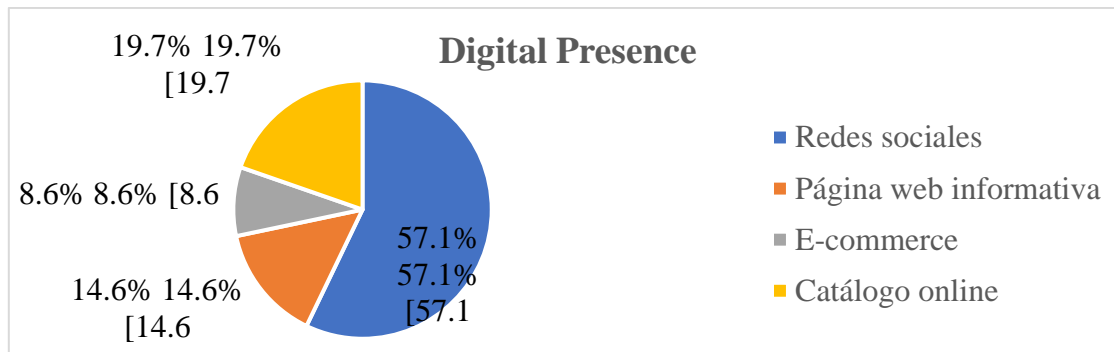


Figure 1. Digital Presence of MSMEs

In addition, the companies surveyed indicated that the digital transition is of vital importance because it allows customers to access information at the click of a button when they need it (79.5%), purchase FMCG products 24 hours a day (75.7%), different payment options (59.6%). In addition, they lead to improved loyalty of potential customers (65.0%) and expanded market reach (54.4%).

The distribution channels that MSMEs have used during the pandemic is the long indirect

channel (62.8%), since the process starts with the manufacturer, goes to the wholesaler, retailer and finally to the consumer (see Figure 2). Where, 80.6% offer home delivery service, which has an additional cost (81.4%) and 4.3% plan to implement it soon. Thus, it is evident that the digital transition must consider the distribution channels to determine those services that companies can add, such as home delivery service.

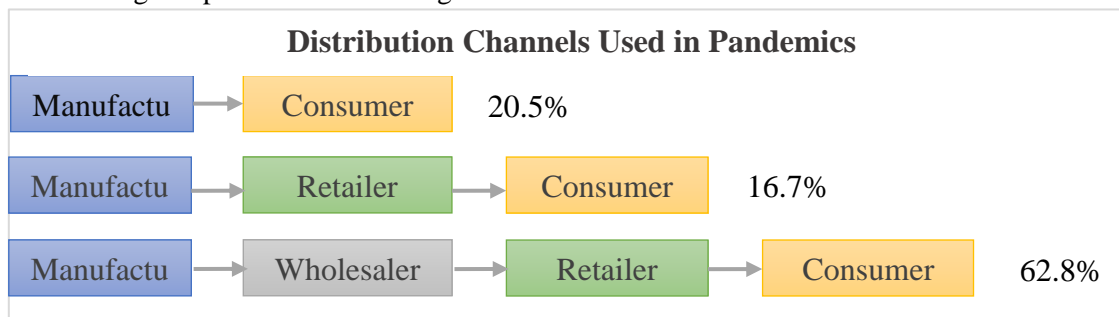


Figure 2. Distribution Channels MSMEs

Among the forms of payment preferred by customers were: cash or cash on delivery (38.5%), direct transfers (25.1%) and debit cards (24.8%); therefore, it is necessary that MSMEs have different options for customers to purchase products. To do this, they must ensure cyber security over confidential customer information (90.3%).

On the other hand, most of the companies registered bottlenecks in inventory control (57.4%), since being microenterprises, most of

them do not have adequate systems to carry out an efficient control of their products and many times they do it empirically. It is considered necessary to propose specific actions to improve internal business processes.

Sales through digital media relative to the physical store increased from less than 100 products (42.6%) to 301-400 products weekly (59.3%). Meat and related products (86%), detergents and environmental (81.4%), cereals, dry grains and noodles (72.8%),

canned goods, preserves and condiments (53.6%) and others (34.5%) stand out (see figure 3). While, vegetables and fruits decreased to 53.1% showing that customers minimized their consumption because they were not sure that the quality and freshness of

them is adequate. Therefore, MSMEs should communicate and promote the characteristics of each product to improve the perception of mass consumption products, specifically perishable products.

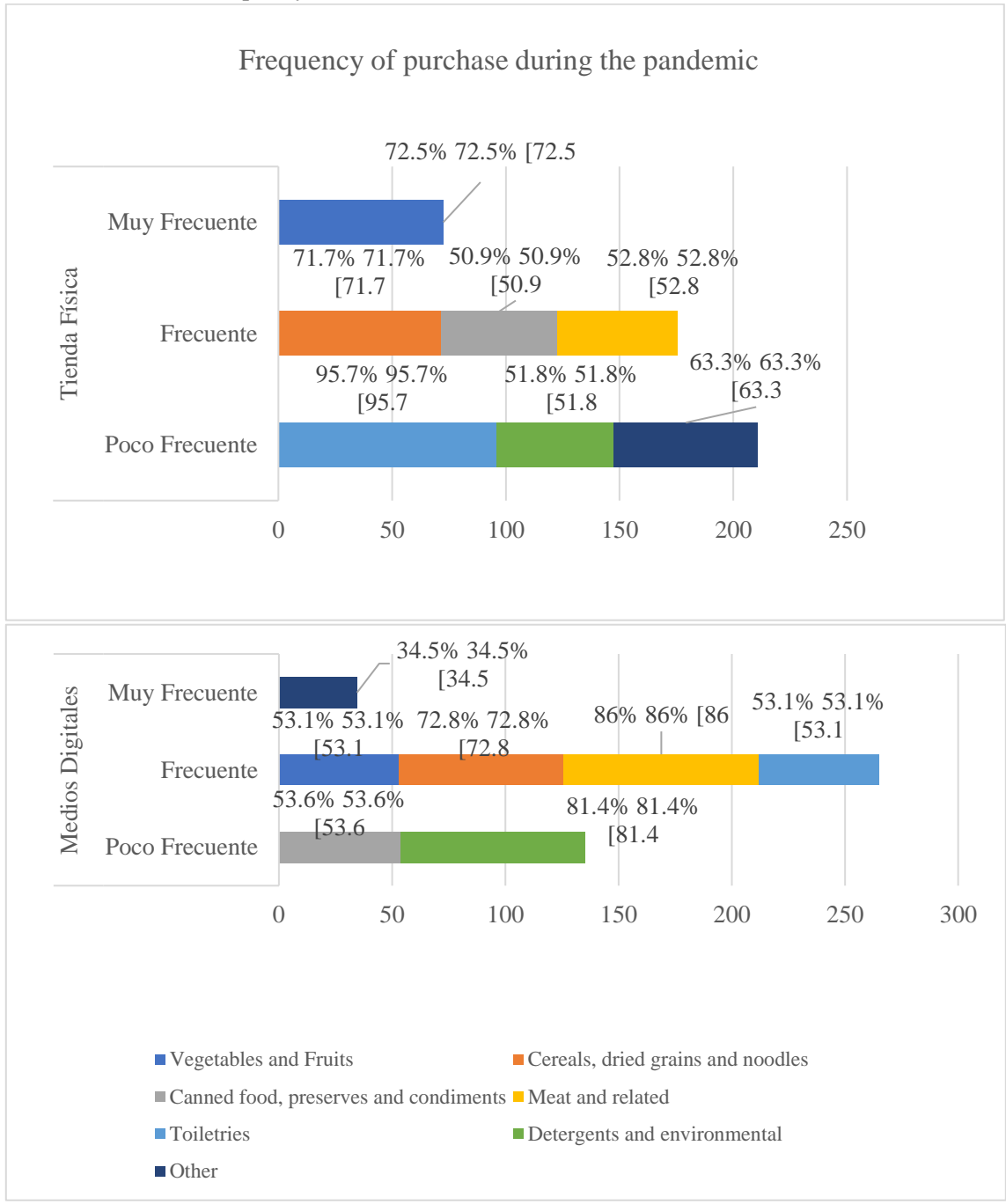


Figure 3. Frequency of Purchase During the Pandemic.

Due to the pandemic conditions, in the year 2020 they registered negative changes in their sales (84.1%), but in the year 2021 the changes were positive (64.4%). This was due to the use of digital media for mass product marketing and therefore, they had to start with a digital transformation process focusing on customers (49.1%) and value proposition (43.4%).

In addition, they implemented several digital marketing actions such as: social media marketing (74.4%) and others such as word-of-mouth or referral marketing (76.8%). But they avoided certain actions such as: email campaigns (91.4%) and viral marketing (89.2%), SEO and SEM positioning, and banner ads (74.9%). This is a consequence of the speed in which they had to adapt to the new conditions due to the pandemic and the vehicle restriction and mobility measures, so they were not prepared for this transition.

In this context, among the technological tools that they frequently use are accounting systems (81.4%) and graphic design editors (80.3%); however, they do not have mobile application tools (68.2%), inventory systems (51%), web page managers and customer relationship managers (41%). Therefore, MSMEs must rely on technology to enable them to optimize their processes and be competitive in the market.

Monitoring and evaluation was also minimal, as less than half of the respondents carried out

customer satisfaction evaluation or measurement with indicators in the different areas of their companies (49.1%). Despite this, responsiveness on social networks was good at 63.6%, specifically for the receipt of orders. However, companies do not have established processes for the optimal handling of complaints or concerns through these media (59.8%). Therefore, they require a guide to establish what to measure, how to do it, what solution alternatives they have and customer service processes.

However, they mention that aspects prior to its implementation were not considered and this process was not adequately planned (65.5%). For this reason, a digital transition model is relevant in times of Covid-19 (94.6%), which allows them to respond to the current needs of customers and consolidate in the market.

2) Defining the components for an efficient digital transition

In order to define the relevant components in the digital transition process of the MSMEs in zone 3 in Ecuador, a Pearson Bivariate Correlation analysis was used in the first instance. Where it is highlighted that the technical and support components are related to marketing (0.978), control and evaluation (0.883), marketing and distribution (0.876); similarly, between marketing and planning and research (0.897). This is because digital media as marketing channels need different aspects to function efficiently.

Table 3. Pearson's Correlation

		Planning and Research	Technical and Support	Administrative	Marketing and Distribution	Marketing	Control and Evaluation
Planning and Research	Pearson Correlation	1	,708**	,565**	,766**	,897	,712**
	Sig. (bilateral)		,000	,000	,001	,000	,000

	N	371	371	371	371	371	371
Technical and Support	Pearson Correlation	,708**	1	,765**	,876**	,978	,883**
	Sig. (bilateral)	,000		,001	,000	,000	,000
	N	371	371	371	371	371	371
Administrative	Pearson Correlation	,565**	,765**	1	,406**	,096	,277**
	Sig. (bilateral)	,000	,001		,000	,000	,000
	N	371	371	371	371	371	371
Marketing and Distribution	Pearson Correlation	,766**	,876**	,406**	1	,715*	,378**
	Sig. (bilateral)	,001	,000	,000		,000	,001
	N	371	371	371	371	371	371
Marketing	Pearson Correlation	,897	,978	,096	,715*	1	,706*
	Sig. (bilateral)	,000	,000	,000	,000		,001
	N	371	371	371	371	371	371
Control and Evaluation	Pearson Correlation	,712**	,883**	,277**	,378**	,706*	1
	Sig. (bilateral)	,000	,000	,000	,001	,001	
	N	371	371	371	371	371	371

** . Correlation is significant at the 0.01 level (bilateral).

* . The correlation is significant at the 0.05 level (bilateral).

Source: IBM Statistics SPSS version 23 software

Subsequently, a multivariate analysis of neural networks was performed with the Multilayer Perceptron (MLP) algorithm to describe the

main relationships between these components. Therefore, for data processing, 60.6% was selected for training, 28.8% for testing and 10.5% for reserve, as shown in Table 4.

Table 4. Case Processing Summary

	N	Percentage
Example	Training	225 60,6%
	Testing	107 28,8%
	Reservation	39 10,5%
Valid	371	100,0%
Excluded	0	
Total	371	

Source: IBM Statistics SPSS version 23 software

The dependent variable was defined as the Covid-19 model of digital transition in times of Covid-19 for MSMEs of mass consumption and as independent variables its six components (1.- planning and research; 2.-

technical and support; 3.- administrative; 4.- commercialization and distribution; 5.- marketing; 6.- control and evaluation), which were defined previously (Table 5).

Table 5. Network information

Input layer	Factors	1	Planning and Research
		2	Technical and Support
		3	Administrative
		4	Marketing and Distribution
		5	Marketing
		6	Control and Evaluation
	Number of units ^a		56
Hidden layers	Number of hidden layers		1
	Number of units in the hidden layer 1 ^a		3
	Activation function		Hyperbolic Tangent
Output layer	Dependent variables	1	Digital transition model in times of Covid-19 for MSMEs of mass consumption.
	Number of units		1
	Scale change method for scale dependencies		Standardized
	Activation function		Identity
	Error function		Sum of squares

a. Bias unit is excluded

Source: IBM Statistics SPSS version 23 software

Figure 4 shows that from the training data and from the hidden layers there is an accuracy of 60.6% between the analyzed components,

showing a strong relationship between them and which are of vital importance for an efficient digital transition of MSMEs.

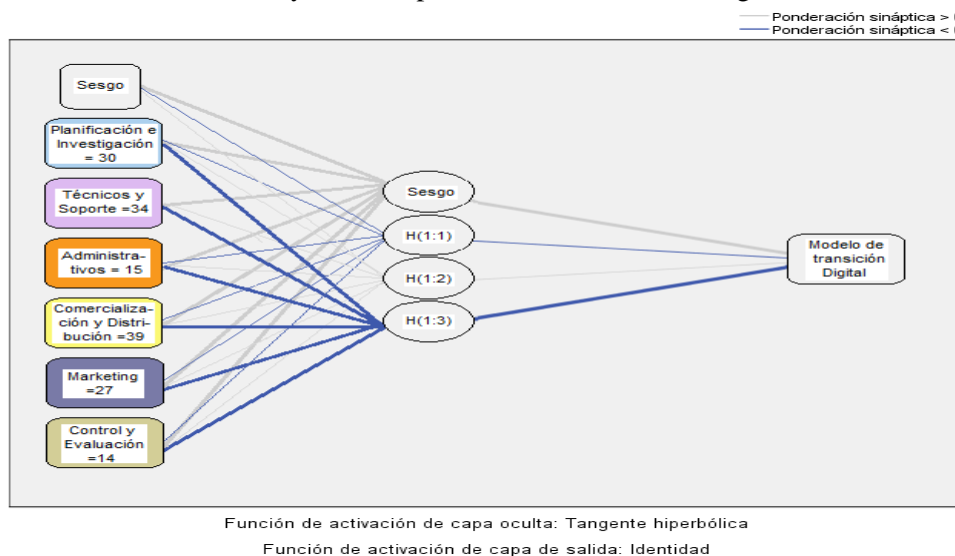


Figure 4. Output Layer Activation Function
Source: IBM Statistics SPSS version 23 software

The model obtained for the training data a sum of squares error of 0.113 and a relative error of

001, which means that the model had 99.9% as a percentage of accuracy; similarly, in the test and reserve base. Therefore, being the minimum error for a neural network analysis as it represents 1%, the model is viable (see Table 6).

Table 6. Summary of the model

Training	Sum of squares error	,113
	Relative error	,001
	Stop rule used	1 consecutive step(s) without error reduction ^a
	Training time	0:00:00.05
Testing	Sum of squares error	,069
	Relative error	,001
Reservation	Relative error	,001

Dependent variable: Importance of a digital transition model in times of Covid-19 for MSMEs of mass consumption.

a. Error calculations are based on the check sample.

Source: IBM Statistics SPSS version 23 software

Table 7 shows that when analyzing the components individually, the order of

importance is: technical and support (100%), planning and research (72.8%), marketing and distribution (72.4%), administrative (66.1%), marketing (65.4%) and control and evaluation (53.9%).

Table 7. Importance of the independent variables

	Importance	Normalized Importance
Planning and Research	,169	72,8%
Technical and Support	,532	100,0%
Administrative	,154	66,1%
Marketing and Distribution	,168	72,4%
Marketing	,152	65,4%
Control and Evaluation	,125	53,9%

Source: IBM Statistics SPSS version 23 software

3) Digital transition model during the pandemic for mass consumption MSMEs in Zone 3-Ecuador

After the previous analysis, Figure 5 shows the proposed model with six components for MSMEs of mass consumption in Zone 3-Ecuador.

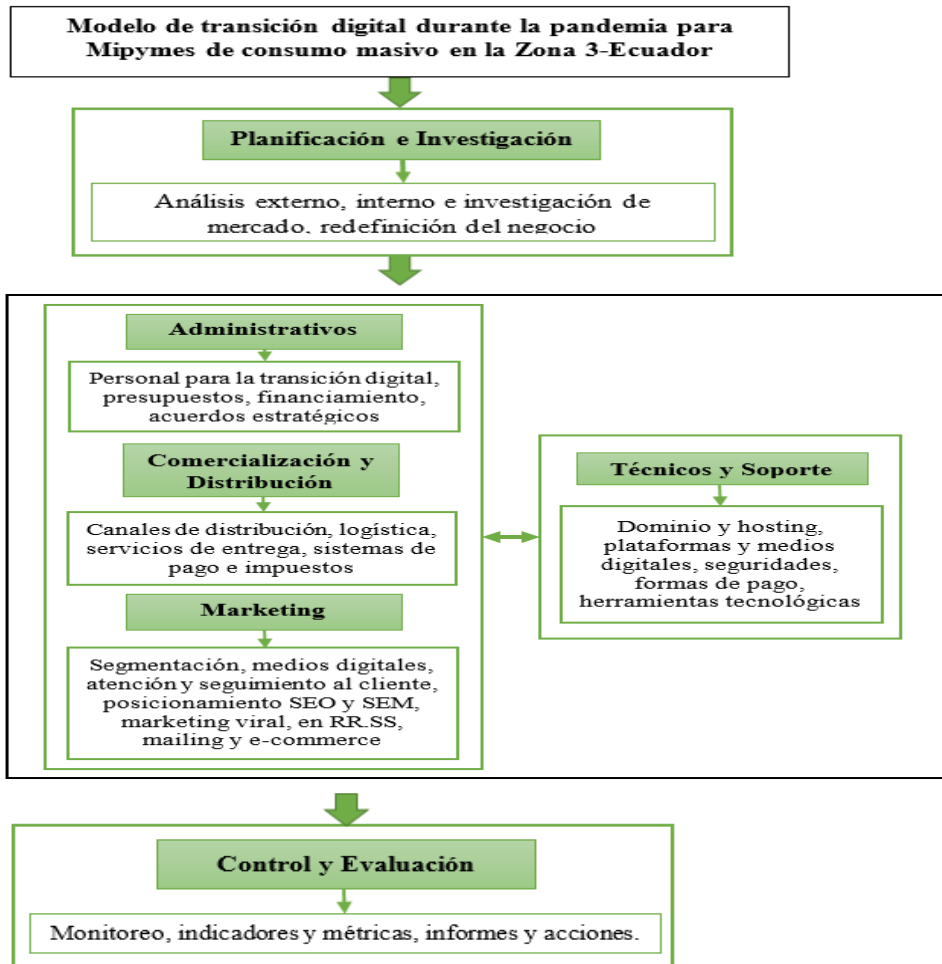


Figure 5. Digital transition model

This model begins with the first component prior to the digitization process, called planning and research, where MSMEs must analyze the external context where they operate and the internal context, to establish the strengths, weaknesses, threats and weaknesses that allow redefine the business and orient their activities to digital media.

The second component covers the administrative area of the companies, specifically the designation of the personnel that will be in charge of carrying out the digitalization process, establishing the budgets to execute it, the financing in case of needing it and achieving strategic agreements with other companies, or even with governmental entities that allow a recognition in the market.

The third component includes the marketing and distribution aspects that focus on the channels through which products are brought to customers and the logistics of doing so. They must also consider the delivery services or home delivery, which in pandemic was of vital importance for the mobilization and circulation measures. In addition, the payment system that companies will have in their digital channels and the taxes that must be paid for these transactions.

The fourth component focuses on marketing aspects to ensure proper customer care and monitoring in digital channels; therefore, the public must be segmented for each of them and define their actions. From the different marketing tools, it is recommended for

MSMEs marketing in social networks, SEO and SEM positioning, viral marketing and mailing campaigns with your customer database. Similarly, they should have an e-commerce platform with which they can market their products through an online store to facilitate browsing the catalog, receiving orders and billing them.

The fifth component is framed in the technical and support aspects since they are of vital importance for the digitization of companies and is related to all other components, especially the second, third and fourth. Precisely, must be defined: the domain and hosting of e-commerce, digital media to be used as social networks, the security that each and every one must have, ensuring the personal information of customers, viable forms of payment and technological tools with which will be supported for economic activities and their control.

There, it is related to the sixth and last component, called control and evaluation, where all those managers of social networks, graphic design tools and editing web pages, as well as accounting systems of inventories and others that support business activities are established.

Discussion

The author Carrión (2020) establishes that the use of e-commerce in companies leads to a competitive advantage since business activities can be executed by digital means, which supports the provision of services or marketing of national and international products for its versatility, accessibility and market reach. Criterion that the authors of this study agree, since in the data collection it was corroborated that MSMEs consider important to include e-commerce in their business to achieve a successful digitization process (65%), although only 8.6% of them have

implemented it. Therefore, they require a model that includes this marketing channel for mass consumption products.

In that sense, Caballero (2015) states that the digitization of SMEs is a process that must be executed rapidly, since the needs of customers change according to globalization and the emergence of new technologies. In the research it was determined that MSMEs focused on migrating to digital media and channels to survive in a period of time complicated by the conditions associated with the Covid-19. Thus, 57.1% of the companies surveyed have a digital presence in social networks, 19.7% have an online catalog and 14.6% have a website; evidencing the need for constant adaptation.

One of the main challenges for companies in Ecuador, as Pesantes points out, is to achieve the development of an economy based on e-marketing systems, including legal, political, technological and security aspects. (2020) is to achieve the development of an economy based on electronic marketing systems, including legal, political, technological and security aspects. Therefore, for an efficient digital transition process of MSMEs, it is necessary a model where the different components are specified to cover the most relevant aspects to maintain and consolidate in the current market.

In that sense, thanks to the contribution of the authors Guzmán and Ruíz (2015); Montenegro, et al. (2019); and Díaz and Salguero (2021), a model with the most relevant components for an efficient digital transition was proposed, focusing on the use of marketing and technological tools for its management, as well as, administrative, support, control and evaluation aspects.

Conclusions

Digital transformation involves a change of mentality to adapt to adverse or challenging market circumstances, which is why companies have been forced to migrate their traditional activities to digital channels. In this way, social networks and e-commerce platforms have become fundamental tools for the marketing of products or services in times of pandemic.

That is why the business models of MSMEs changed radically in this period, using digital marketing as a fundamental pillar for the sale of mass consumption products. They reflected a remarkable digital presence, but that requires a guide to incorporate specific actions of online advertising and content management and monitoring. Despite this, they use technological tools such as graphic design editors and accounting systems that allow their operation.

The level of sales during the first half of the year 2021 recovered compared to 2020, this was due to a digital transformation process that most MSMEs began to execute it. However, they have aspects that still need to improve to achieve an optimal transition, which is intended to support the development of this model.

Thus, from a statistical analysis it was determined that the most relevant components are the technical and support components that are related to marketing, control and evaluation, marketing and distribution. The marketing, planning and research components are also added, which are part of the proposed model, including the administrative aspects.

Among the limitations of this study, is the scope of data collection, since it was selected to micro, small and medium (type B) companies exclusively from zone 3 of Ecuador, but in future research can focus on other provinces and medium or large

companies. In addition, in subsequent studies, the implementation of this model in the companies can be analyzed and compared with those that did not implement it.

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