

## **A MCDM MODEL FOR MEASURING THE PREPAREDNESS LEVEL OF SALES DEPARTMENTS IN COVID-19 AND FUTURE PANDEMICS: ELECTRICAL APPLIANCE SECTOR**

### **ABSTRACT**

A multi-criteria decision making model for measuring the preparedness level of sales departments when facing COVID-19 waves and future pandemics is proposed. The model is comprised of 8 criteria, 29 sub-criteria and 7 alternatives. AHP is used for calculating the criteria and sub-criteria weights. While, TOPSIS is used for calculating the preparedness level, ranking the companies and identifying the weaknesses that should be addressed for increasing their effectiveness in the current market scenario. This application is completely novel in the literature and has been applied in the wild with remarkable companies in Colombia. A case study in electrical appliance sector is presented.

Keywords: AHP, TOPSIS, COVID-19, socio economic changes.

### **1. Introduction**

Colombia is the fourth largest economy in Latin America and grew 3.3% last year, well above the regional average of just under 1%, while the national currency held steady against the dollar. The COVID-19 pandemic, however, has shaken forecasts. The COVID-19 pandemic had a huge impact on the real economy in the first half of 2020 all over the world and not only in Colombia. However, the trend was not the same for all multinationals also for geographical reasons: companies that generate most of their sales in China and elsewhere in Asia have, for the most part, a recovery in sales from April 2020. The impact of COVID-19 on the economy throughout 2020 remains for several reasons still difficult to predict. But, in general, the turnover of multinationals is down by -6.6% compared to the first half of 2019. Managers, entrepreneurs and business leaders are called to make important choices. In such a delicate historical moment, it is necessary to take a rational, energetic approach, without losing an opportunity to leverage and reduce costs, oversee the relationship with customers, extend the business into new opportunities. It is necessary to define new business, finance and supply chain models through an even more decisive use of digital, with a new mindset and increased relationship skills. As a recent article in Harvard Business Review claims, the emergency will not necessarily lead to company closures and layoffs (Tarki et al., 2020).

The present research aims to propose a multi criteria model that can help to face the current critical moment due to the coronavirus pandemic, to relaunch business with innovative tools suitable for contexts with great uncertainty and characterized by important socio economic changes. Thus, this study investigate critical factors that can be useful to assess the preparedness level of sales departments from the electrical appliance sector when facing Covid-19 waves and future pandemics. A multi criteria model based on AHP and TOPSIS techniques is proposed.

## 2. Literature Review

If almost all businesses are currently committed to restoring company operations, all should also begin to question themselves on the competitive context in which they will find themselves to operate, because the post COVID-19 world will be drastically different. The pandemic crisis has, accentuated the need, for all companies, to redefine the own business model. Some can just perfect it, but most, in particular the less digital and operating ones in the sectors most affected by the consequences of pandemic, they are forced to change it radically. COVID-19 is changing consumer shopping habits influencing national and local societies all around the world (Ferrannini et al., 2021). Getting close is essential to customers as much as possible by focusing on this which is important to them and communicating promptly the actions taken by the company in response to the crisis (for example, in the sector of large retailers, the description of new cleaning standards and solutions adopted to enhance the delivery service a domicile). It is also important to provide support whenever possible, adjusting temporarily the contractual standards under the conditions of exceptionality of the situation; to demonstrate empathy is the best way to earn trust, a fundamental asset in the post-crisis phase. It is therefore important to invest energy in understanding what to do for society in terms of: skills, financial resources, reconfiguration of production lines (Mou, 2020). Companies should develop *proactive strategies*. For example the limitation of personal interactions and channels of traditional sales pushed Lin Qingxuan, a cosmetics company, to transform more than 100 beauty consultants in online influencers on WeChat, resulting in an increase in sales of 200%. After the close of 5,000 goods its 7,000 stores in China, Nike is committed with Chinese consumers digitally, offering home workouts and recording, in the months of January-February, a growth of more than 35% of online sales compared to same period of the previous year. In such a context, where there are many variables, new information every day and complexities to keep under control a multi criteria approach is well suited to manage complexity (Ortiz-Barrios et al., 2020; Saaty, 2013).

## 3. Hypotheses/Objectives

The present study is a pilot project. Considering the aforementioned aspects, this research aims to assess the preparedness level of sales departments from the electrical appliance sector when facing COVID-19 waves and future pandemics.

## 4. Research Design/Methodology

The present study is based on the integration of the AHP and TOPSIS. AHP is used for calculating the criteria and sub-criteria weights. While, TOPSIS is used for calculating the preparedness level, ranking the companies and identifying the weaknesses that should be addressed for increasing their effectiveness in the current market scenario. The model was developed with the aid of an experts' group from the electrical appliance sector and studies from the reported literature.

## 5. Data/Model Analysis

The model is comprised of 8 criteria, 29 sub-criteria and 7 alternatives. Alternatives are 7 multinational companies we don't mention for confidentiality reasons

From the AHP results, it is evident that VIRTUAL SALE BY SOCIAL NETWORKS - F1 (Global weight = 19.8%) and DIGITAL ADVERTISING - F4 (Global weight = 17.6%) are the most important criteria when sales departments from the electrodomestic sector

companies face a market affected by COVID-19 waves or other future pandemics. These outcomes call for strong interventions targeting the effective involvement in Google, Whatsapp, Rappi, Instagram, Facebook, and Youtube for ensuring the interaction of potential customers and electrodomestic companies. This is explained by the effects of lockdown measures in the population as well as the lack of trust expressed by the clients who prefer not attending to the sales points searching for dampening the risk of COVID-19 infection. This is more profoundly motivated by the absence of COVID-19 vaccines and the low adherence to biosafety protocols evidenced in the current pandemic scenario. The above-mentioned considerations have significantly propelled the use of social networks which, in some companies from the electrodomestic sector, has meant a 180 degree turn in their commercial strategy while others have experienced the beginning of their virtual footprint.

There is, however, a slight difference (< 5%) between these aspects and BIOSAFETY PROTOCOLS IN SALES POINTS - F2 (Global weight = 15.2%) and SUPPLY CHAIN EFFECTIVENESS - F7 (Global weight = 15.0%). On one hand, the F2 importance is supported by the regulations implemented by the government aiming at slackening potential new infections while ensuring a trustable atmosphere for sell-in and sell-out transactions. On the other hand, it becomes evident the negative effects of the pandemics on the supply chains supporting the companies' response. In fact, administering these supply structures has become challenging for logistics experts who have reported increased variability in the lead times whereas augmented costs are experienced. This alarming situation requires designing supply chains backing up the strategies adopted by sales departments in terms of rapid and correct delivery of electrical appliances.

Regarding TOPSIS results, the ranking shows that E1 was ranked first (Preparation index = 81.81%) while the rest of electrodomestic companies were reported with low-medium preparation levels (< 75%). There is then much room for improvement not only in each sales department but the electrodomestic sector which presents common weaknesses such as the lack of sales apps, the need for extended payment deadlines, poor implementation of virtual sales in YouTube, and a low number of pandemics-focused products.

## **6. Limitations**

The combination of different multi criteria approaches can be a promising approach to define new business model during COVID-19 waves and other pandemics. However, it is important to note that the findings may be related to the characteristics of the analyzed scenario. The research was limited to Colombia which could partially explain the results. Future studies will take into account other scenarios in other countries in order to compare the results.

## **7. Conclusions**

The pandemic crisis, therefore, has accentuated the need, for all companies, to redefine the own business model. Online sales, delivery services, social media, digital payments during the lockdown were the only way to move forward and even now, in the long phase of living with the virus, they continue to be essential for small and large companies. Many companies have introduced and are introducing technological innovations in the internal organization. Digital innovations necessary for business development, but companies do not always have an adequate digital maturity to compete on global markets. It is clear that the challenge of the future is to reduce the digital divide, to invest in innovation and digital transformation.

## **8. Key References**

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## **Appendices**

