

**UNIVERSIDAD DEL ROSARIO**



Innovations Developed in Times of Crisis: Temporary vs Definitive

Working Paper (Trabajo de Grado)

Jorge Esteban Vásquez Gutiérrez

Bogotá

2022

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## 1. Glossary

**Crisis:** Times of extreme volatility and uncertainty.

**Financing tools:** Tools or mechanisms used to obtain financing.

**Marketing innovation:** New marketing methods.

**Organizational innovation:** New organizational method in business practices, workplace organization or external relations.

**Process innovation:** New production or delivery method or the improvement of the existing ones.

**Product innovation:** New good or service or the improvement of the existing ones.

## 2. Resumen

Debido a la pandemia del COVID-19 los países e instituciones debieron tomar medidas para desacelerar y disminuir los contagios. Estas decisiones afectaron todas las actividades de la vida cotidiana; especialmente a aquellas relacionadas con los negocios. A pesar de esto el tejido empresarial logró mostrar capacidad de resiliencia, y apoyándose en la innovación fue capaz de crear nuevos procesos, herramientas y perspectivas que les ayudaron a sobrevivir durante esta época. Este proyecto busca responder dos preguntas ¿las innovaciones que se dieron durante la pandemia se mantendrán dentro de la compañía o solo se implementaron/lanzaron para mitigar los efectos del COVID-19 en las empresas? A su vez se desea conocer ¿cuáles fueron las herramientas de financiación para las innovaciones en el contexto de pandemia? Para responder a estas preguntas se implementó un método de investigación cualitativo, inductivo, basado en múltiples estudios de casos. Sin embargo, para entender las respuestas a estas preguntas primero se desarrolló un marco teórico alrededor de conceptos como la temporalidad y permanencia de las innovaciones, además de investigar acerca de las condiciones y herramientas de financiación cercanas a los procesos de innovación. Como conclusión podremos encontrar que una gran parte de las innovaciones que se llevaron a cabo para mitigar los efectos de la pandemia en el sector empresarial se mantendrán (e.j., implementación de marketing digital, digitalización de procesos y servicios, el modelo de oficina en casa, capacitaciones virtuales de productos para clientes), y que aquellas innovaciones que solo se dieron de forma temporal tienen un fuerte componente ambiental y contextual (e.j., creación de productos que responden a las demandas generadas por la pandemia, venta de mascarillas, implementación de protocolos estrictos de bioseguridad.).

**Palabras clave:** Innovación, innovación de procesos, innovación de marketing, innovación de productos, innovación organizacional, financiación.

## 2. Abstract

Due to the COVID-19 pandemic, countries, and institutions had to take measures to slow down and reduce infections. These decisions affected all activities of daily life; especially those related to business. Despite this, the business fabric managed to show resilience, and based on innovation, was able to create new processes, tools, and perspectives that helped them survive during this time. This project seeks to answer two questions: will the innovations that occurred during the pandemic remain within the company or were they only implemented/launched to mitigate the effects of the pandemic on companies? At the same time, we want to know what were the financing tools for innovations in the context of the pandemic? To answer these questions, a qualitative, inductive research method based on multiple case studies has been implemented. However, to understand the answers to these questions, a theoretical framework is developed around concepts such as the temporality and permanence of innovations, in addition to researching the financing conditions and tools related to the innovation processes. In conclusion, we can find that a large part of the innovations that were carried out to mitigate the effects of the pandemic in the business sector will be maintained (e.g., implementation of digital marketing, digitization of process and services, home office model, and virtual product training for customers) and that those innovations that only occurred temporarily have a strong environmental and contextual component (e.g., creation of products that respond to demands generated by the pandemic, sale of face masks and implementation of strict biosafety protocols).

**Keywords:** Innovation, process innovation, marketing innovation, product innovation, organizational innovation, pandemic, financing tools, financing mechanism, impacts.

### 3. Introduction

The objective of this project is to answer two questions: will the innovations that occurred during the pandemic remain within the company or were they only implemented/launched to mitigate the effects of COVID-19 on companies? At the same time, we want to know what were the financing tools for innovations in the context of the pandemic? To meet this goal, the project is divided into two parts, the first is based on a conceptual investigation around the following topics.

- Temporary vs. permanent innovations.
- Financing of innovations in times of crisis.

These two research questions go hand in hand due to the relationship that financing capacity has with innovation both in a negative way – “Reduced access to finance can reduce investment in innovative activities” (Hardy & Sever, 2021, p. 2) – or in a positive way: “banking development or deregulation can lead to an increase in innovation... Others have linked financial development to the loosening of financial constraints and thus greater innovative outcomes” (Hardy & Sever, 2021, p. 3). Due to this, investigating these two topics together will help us to have a broader perspective of the results and the reasons behind the innovations.

The second part is qualitative, inductive research, based on multiple case studies. In this part of the project, we seek to know the state of the innovations that were carried out during the pandemic and if they will remain within the organization or were only temporary measures to the situation that was being experienced, with the answer to this question we now understand how the pandemic

was a driver of change within organizations and business sectors, in addition to giving us a landscape of the new way in which companies carry out their operations.

While companies were creating and generating new ideas, many of them saw their economy affected and one great doubt arose as to how they were going to finance their innovations during the pandemic, with this, we want to know the incidence of the government, banks, investors, own capital, etc. in the innovation process.

This project is important because it seeks to obtain true information directly from the people involved in the innovation processes that took place during and due to the pandemic. The research becomes more relevant by understanding that the collection of these data can help grasp how external situations become a driver of change for companies and society, in addition to generating a source of information about how and what kind of aid should be sought to innovate during a time of crisis.

In conclusion, the research shows that companies maintained a large part of the innovations they developed during the pandemic, which are related to the type of innovation: product, process, marketing, and organizational. At the same time, it shows how temporary innovations are directly related to meeting the demand or needs generated by the pandemic, but once things return to normal, they cannot be applied effectively and from there comes its temporary component. It can also be concluded that the financing mechanisms for innovations in times of crisis are the same as those used in times of greater stability.

## 4. Theory

### 4.1 Temporary vs permanent innovations.

In the literature, there is not abundant information regarding temporary innovation actions carried out within organizations, in terms of issues related to products, processes, marketing, and organizational. However, it is possible to see how the different authors refer to temporary and permanent innovation as a system within organizations; there are a lot of places in which a temporary innovation system may occur: “temporary innovation systems can take many forms, including urban innovation programs, sectoral voluntary agreements, monitoring and labeling instruments, social enterprises, government Task Forces, citizen movements, online communities, et cetera.” (Wanzenböck & Frenken, 2020, p. 45).

According to Wanzenböck & Frenken (2020), it is believed that a temporary innovation system works at the same time as a permanent one, without trying to replace it or prevent its operation, which is why there is no attempt to institutionalize them to avoid conflicts with the organization's area and process guidelines. Wanzenböck & Frenken (2020) also state that if the solutions that arise from the temporary innovation systems are successful they can be embedded into the institutional frameworks of an organization.

To understand the deinstitutionalized nature of temporary innovation systems, it is necessary to comprehend how a permanent innovation works within the organization, “Form, execution and

improved environmental sustainability within organizations that rely on permanent innovation are associated with HR practices” (Kutieshat & Farmanesh, 2022, p. 1). It is necessary to emphasize that the appearance of temporary innovation has a contextual nature (Wanzenböck & Frenken, 2020). The appearance of temporary innovation systems is fed through different technological, institutional, and political contexts. At the same time is necessary to state that temporary innovation systems will grow surrounding the technological advances that allow the connectivity between different kinds of people permitting the creation of workgroups within the organization that was unable to work together.

Nevertheless, during the investigation, we could find that in the course of the pandemic there were cases of companies that applied innovation to their business model to survive; which means that they changed the most important aspects of their business model. A lot of these cases were only temporary changes, creating a temporary business model innovation: “We regard a temporary business model innovation as one which is, at least at the time of its origination, not intended as permanent” (Clauss et al., 2022, p. 297). The temporary business model innovations are an appropriate strategy in times of change; crisis and uncertainty. Clauss et al. (2022) state that an innovation strategy in response to crisis management is focused on the future and might provide solutions to emerge from a crisis.

#### **4.2 Types of innovation according to the OCDE.**

To create the framework for the analysis and characterization of the information, we decided to use the classification given by the OECD concerning the types and classes of innovation. Having said this there are four types of innovation: product, process, marketing, and organizational innovation.

According to the OECD (2018), product innovation happens when there is a new good or service or when the existing ones are significantly improved, process innovation occurs when there is a new production or delivery method or when the existing ones are significantly improved, the marketing innovation happens when a new marketing method causes significant changes in product design packaging, promotion or pricing, and the organizational innovation is when there is a new organizational method in business practices, workplace organization or external relations.

### **4.3 Financing of innovations during crisis.**

Innovative activities are a vital part of the economy, they are the cornerstone of value creation: "Schumpeter placed innovation at the center of his understanding of capitalism. As innovation must be financed (internally or externally), finance must also be at the center of any theory of capitalist economies" (Grilli et al., 2018, p. 6). Despite the importance of innovation in the economy Fernandez (2017) posits that there is a deficient level of research and development investment in competitive markets, but there are different tools used to stimulate the investment in R&D like government support, tax incentives, research partnerships, and an intellectual property

system. According to Fernandez (2017), in normal circumstances, the financing of innovations is already a difficult topic firms face, and this only gets worse during a financial crisis.

According to Grilli et al. (2018), the innovation process is becoming more and more complex due to the number of interest groups that can be part of it. With this development in complexity, the financing process hasn't become easier but wider "the entrepreneurial and innovative activities in modern economies are strongly influenced by several forces ranging from competition policy, the development and functioning of financial markets, to regulatory and law regimes, passing through the patent system and its enforcement" (Grilli et al., 2018, p. 2).

Fernandez (2017) says that investment in Research and Development is different from ordinary investments, a big reason for this is the degree associated with it, especially in the first stages of the project: "traditional valuation methods render inappropriate to assess its profitability." (Fernandez, 2017, p. 37). According to Wonglimpiyarat (2011), government policies must act as an incentive for the innovation process. Wonglimpiyarat (2011, p. 163) holds that "innovation policies need to be linked to the government's overarching economic goal, and adequately supported by specific programs".

Grilli et al. (2018) posit that every firm has a different institutional context, and because of this, they are exposed to distinct kinds of financing tools: fiscal incentives, bank debt, venture capital, etc. Every organization needs to find the best way to support its innovative endeavors taking into account their context and reality. According to Fernandez (2017), venture capital eases the cost of capital for small and new innovative firms, and large firms use internal funds. The financing of innovations depends heavily on the country they are in. Fernandez (2017) explains that in the Colombian case it was found that companies rely on retained earnings and bank debt, besides this the innovation capacity is associated with the size of the firm.

According to the World Bank Group (2012), the main external categories and mechanisms to fund innovations are:

- Debt: In this, the financier provides funds to the company in exchange for repaying the loan amount and interest on that amount on an agreed schedule.
  - Bank debt: It offers two types of debt financing loans or credit lines.
  - Crowdfunding (lending-based model): It funds a project or company by raising small amounts from many people, in this model the funders expect the money to be repaid.
- Equity: The provider of capital is entitled to an ownership stake and the revenue of the company.
  - Business Angels: These are wealthy individuals who invest their capital in young companies.
  - Crowdfunding (equity-based model). It funds a project or company by raising small amounts from many people, in this model the investors receive an equity share in the business.
  - Venture capital: These are investment funds that invest in companies with high growth potential. According to Zider (1998), venture capital plays a minor role in financing basic innovation, however, it has a more important role when seeking to commercialize innovation.
  - Stock market: These are the marketplaces in which shares of companies are issued and traded.
- Dedicated innovation funding: It refers to funding without payback requirements.

- Research and development grants. Is a mechanism for dispensing funding, usually they are won through a competition.
- Research and development tax incentives: Tax incentives that look to reduce the tax liability of firms in R&D and innovation activities.

According to Yildirim & Celik (2021), there is a hierarchy in funding in which companies will prefer internal over external sources if they need financing. So, in the first place, they will make a decision based on their capacity to complete the resources needed, but if they can't use internal funds a new question will arise around the type of external funding: "In this second stage, the theory predicts that firms will prefer low-risk debt from external financing to equity issuance" (Yıldırım & Çelik, 2021, p. 1). This theory is applicable for times of crisis, and it explains the circumstances in which a company will seek a certain type of financing, be it internal or external, and in the second case if it is based on acquiring debt or delivering equity.

Franzotti et al. (2021) posit that in the crises of 2002, 2008 and 2015 companies had an increase in the participation of bank debts against a decrease in participation in the capital market (based on equity). Considering the hierarchy in funding in times of crisis debt increases over financing through equity. However, compared to times of stability, bank loans decrease. Khan (2022) states that the provision of bank loans decreases because of impacts on the borrower guarantees (this affects the ability of firms to raise capital) to bank capital and liquidity (this affects the ability of banks to raise additional capital). It is important to emphasize that the debts of the companies in times of crisis change: "companies reduced their long-term debt and increased short-term debt in times of crisis" (Franzotti et al., 2021, p. 18). The reason behind this decision is the need to go through turbulent times and the survival of the company becomes the most important objective.

According to Hardy & Sever (2021), financial crises can lead to a decline in patents, which is related to innovative capacities, this is more related to firms that are dependent on external finances, losing access to new funding would not only affect new innovative projects but would also determine the outcome of the current ending them to meet immediate financing needs. Hardy & Sever (2021) say that there is a link between financial crises and economic development through innovation, showing that investment in innovation decreases during these times: "that intangible capital, R&D spending, and patenting fall for firms facing a credit crunch in a financial crisis." (Hardy & Sever, 2021, p. 3).

## **5. Methodology**

### **5.1 Research Design**

For this study, we selected a qualitative approach and used an inductive analysis of the interviews and online information we were able to gather. However, the topic of temporary and definitive innovations has rarely been explicitly studied. Because of this, we decided to conduct the research from a post-positivist approach, which means that the analysis of the information is bound to the facts and real information gathered, this paradigm “promotes the triangulation of qualitative and quantitative methods” (Panhwar et al., 2017, p. 254), allowing us to have diversity during the investigation. At the same time, Liu (2016) posits that the implementation of an inductive approach gives us a more flexible methodology. With this, we are contributing to the literature on the temporality of innovations in times of crisis, at the same time, we are understanding the real actions and decisions that were taken by the companies to accomplish the financing of innovations.

### **5.2 Case selection**

The companies were chosen to maximize the marginal value of the information collected according to several criteria: commercially active, of all ages and sizes, and with an online presence. 22 Colombian firms were selected. 14 belonged to the service sector, 6 to the commerce sector, and 2 to the manufacturing one.

### **5.3 Data collection**

A multiple case study relying on 22 semi-structured interviews and online information was carried out. According to Aimé et al. (2022), this methodology help understand the reality of the firms and allow them to reach insights by focusing on the *how* and *why* of different phenomena. The possibility of going beyond the causes, reasons, and forms of the answers gives us more relevant data for our investigation. It is understandable that only considering the answers provided by the interviewers would make our investigation incomplete so to avoid this problem we complement this research using online information to better understand the context and reality of the organization.

#### **5.4 Analysis.**

The data analysis followed a four-step process. 1) Codification of the transcribed interviews, in this part of the investigation we coded relevant information from the interviews related to those topics on which our investigation is focused; 2) synthesizing and grouping the findings in summary tables, in which we use the main topics of the investigation to sort out the information: our main categories were permanent innovations, temporary innovations, and financing methods; 3) identification of additional patterns and insights, in this step we look to categorize the information about innovation in four innovation categories: product, process, marketing, and organizational innovations; and finally, 4) reporting the main results comprehensively, in this final step we reported and analyzed the results, according to the classification that was built for the investigation.

## 6. Results

The following table (**Table 1**) shows the results of the interviews. The first column shows the activity to which the company is dedicated, the second shows those innovations that will be maintained, the third those of a temporary nature, and the fourth, we can find what were the financing mechanisms of these innovations.

The interviewees report innovations around 4 aspects or themes that we have classified for the analysis of the information: innovations in products, processes, services, and innovation in the business model. The interviewees stated that the financing mechanisms of the companies were: company resources, bank loans, government aid, capital from partners, private investment funds, tax incentives, and resources for winning competitions from incubators and foundations.

**Table 1: Results from the interviews**

<i>Results from the interviews</i>			
Company <sup>1</sup>	Which innovations will remain	What innovations will not be maintained	Financing mechanisms
Electric skateboard sales company	Product innovation: Create a new line of business based on the product: clothing for the customer and accessories for the product. “We invented a business line, we potentiated a business line of accessories” (G. González, personal communication, March 23, 2022).	Process innovation: Innovation in the logistics procedures, shipping the product directly from the free trade zone, and contextual innovation made to help with the cash flow of the company is temporal because of the increase in costs of urban transportation and the lack of training interactions of the costumers with the product. “We applied a logistics strategy where all the skateboards were	Cash flow of the company. “Get the cash flow required to stop the company and have another cash flow invested directly in inventory with the issue of the pandemic shows all those cash flows and projections went to the floor” (G. González, personal communication, March 23, 2022).

<sup>1</sup> To anonymize the firms, instead of writing their names we indicated their core business activity, which provides extra information about the firm.

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shipped directly from the Free Trade Zone.” (G. González, personal communication, March 23, 2022).

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<p>Manufacture and sale of safety clothing company</p>	<p>Marketing</p> <p>Implementation of digital marketing tools and development of a picking-packing system.</p> <p>“With the issue of digital platforms, let’s say that with the implementation of this we learned the new digital marketing scheme. We learned to develop a picking packing system that we did not know, ours was nothing more than</p>	<p>innovation:</p> <p>producing masks due to the pandemic, and at the right time it was decided to withdraw this product.</p> <p>“Well, the first thing was that we also made face masks. We were among the first to bring machinery and technology to make that product and I think it was the business that grew and bankrupts</p>	<p>Product innovation: They started producing masks due to the pandemic, and at the right time it was decided to withdraw this product.</p> <p>“The innovation budget is something close to 30% of the company’s profits, they come from its resources, reinvestment is based on sales, it is destined for the development and innovation of products directly and it must have the quality of being a palpable innovation.” (M. Calderón, personal communication, April 4, 2022).</p>
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	wholesale.” (M. Calderón, personal communication, April 4, 2022).	the fastest.” (M. Calderón, personal communication, April 4, 2022).
Agro-industrial company	<p>Marketing innovation: Migration and use of digital marketing strategies.</p> <p>“Strategizing anything at the point of sale was not viable, which made the brand migrate to 100% digital activities to connect with the audience.” (M. Pedroza, personal communication, April 1, 2022).</p> <p>Product innovation: Launch of an organic product that responds to the needs of the market.</p> <p>“Organic sugar in Colombia already existed but with the concept that we launched with the bases and the</p>	<p>Product Innovation: Created in the context of the pandemic and aren't applicable after the crisis: Production of antiseptic alcohol in the context of the pandemic.</p> <p>“We do not produce alcohol for antiseptic use, but we migrated and made a change in our production to be able to generate it, it was a growing demand at that time.” (M. Pedroza, personal communication, April 1, 2022).</p>

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foundations that we launched it was the innovator of the matter, so it has a whole very cool story behind it.” (M. Pedroza, personal communication, April 1, 2022).

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Logistics Company	Product innovation: They will keep working on this innovation that provides real-time information about the status of the shipments, and they look to bring a 2.0 version to the market. Their innovation has worked because they have been working with market trends. “We launched the international cargo control service.”	Product innovation: A new business unit in which they decided to collaborate with a partner but it didn’t work so they decided to put an end to this. “We decided to ally with an Argentine company that has a supremely good solution... but finally we had to back down and lose because we lost two years of	Cash flow, bank loans, and government aid. “In the pandemic, specifically, it was the government banks and cash flow” (J. Guevara, personal communication, April 1, 2022).
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	Guevara, personal communication, work on it.” (J. Guevara, personal April 1, 2022).	communication, April 1, 2022).
Waste management company	Organizational innovation: Development of an intrapreneurship during the pandemic. In this one, they associated with an employee to create this intrapreneurship in which they gave him the possibility to use the brand in exchange for royalties. “So, what did we do, we made a model, a prototype in Cali, we did intrapreneurship, with our largest commercial leader... today she has her own company, she manages our brand, she pays us royalties for the sales she has, so that's it.” (E.	Product innovations: Created in the context of the pandemic and aren't applicable after the crisis: creation and sale of biosafety protocols for the companies, they also create a service for the disinfection of spaces. “Later, as everyone was with the biosafety protocols, we drew up biosafety protocols; yes, since we were already involved in waste management, it was successful because we created procedures and created waste management plans,
		Cash Flow of the company. “No, we got the same cash flow from the company.” (E. Pérez, personal communication, April 4, 2022).

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Pérez, personal communication, so creating a biosafety protocol plan

April 4, 2022). was very easy for us.” (E.

Process innovation: Digitization Pérez, personal communication,

process within the company; the built April 4, 2022).

of software that counts the wastes

generated by clients.

Pérez says that “software was born,

software that measured the amount

of waste generated by our

customers.” (Personal

communication, April 4, 2022).

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An organization that potentiates and develops soft skills

Product innovation: The digitization of the services was positive and made it possible to reach a new market, now they offer the service in person and virtually. “Accelerate the

Investment from the partners.

“For us, it was essential to maintain the team, so of course, the partners made some additional contributions and even the partners stopped

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digitization process of the organization, both in products, as in ways of proceeding, in team training.” (L. Asprilla, personal communication, April 5, 2022).

Organizational innovation: Create a sustainable financial structure over time that is predictable in the event of future crises or difficult contexts.

“We need to have a financial structure that can respond very quickly and flexibly to the craziest things that can happen.” (L. Asprilla, personal communication, April 5, 2022).

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receiving salaries, not as partners, not for profits, but because we also work there, to maintain the entire team and be able to be up to date. in the face of such needs.” (L. Asprilla, personal communication, April 5, 2022).

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Transport company	<p>Process innovation: Implementation of a new service through the phone for payments.</p> <p>“Today the company already maintains an area that is dedicated to telephone sales, something that we did not have before, that is, the company did not have the main sales channel, but instead, the person called, and they did not sell by telephone, they sent him to the website or forwarded them to the box office. Today yes, so there is a Call Center in which a telephone sales process has been implemented.” (S.</p>	<p>Product innovations: Created in the context of the pandemic and aren't applicable after the crisis: special service for the business sector.</p> <p>“And there is another one, which is subject to itinerary and schedules, this other one is a special service, the common people only know the tourist and the school service; but there is also the business one, which is where the company's collaborators are transported....</p> <p>The special service one was due to the situation. It has nothing to do with the fact that the company does not want to do it, it is not that the</p>	<p>With its resources, the company has an assigned budget for the financing of innovations.</p> <p>“Yes, there was a budget allocated for that, the company budget. They were not financed by external sources, the company assumed the cost, the total cost.” (S. Ortiz, personal communication, April 6, 2022).</p>
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Ortiz, personal communication, client is no longer going to allow it, April 6, 2022). what happens is that this was achieved insofar as the client also yielded in the conditions of its operation and at this time our clients suddenly no longer have the possibility of making this type of concession and that is why it cannot be done.” (S. Ortiz, personal communication, April 6, 2022).

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Digital transformation services company	Organizational innovation: Launch the home office model and use it to attract new talents.  “But at the same time talent also arrived because of, because of that new way of being able to hire as a	A private capital fund.  “And about a year ago, a little more, a private equity fund called Advent International bought a stake from the Colombian stock market.” (D.
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	home office.” (D. Rodriguez, personal communication, April 28, 2022).		Rodriguez, personal communication, April 28, 2022).
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Manufacture Company	<p>Process innovation: The innovations made surrounding the production will be maintained.</p> <p>“What continues to be done in terms of innovation as well as production issues, that continues step by step.” (A. Ricaurte, personal communication, May 2, 2022).</p>	<p>Product innovations: Created in the context of the pandemic and aren’t applicable after the crisis: products focused on the health market.</p> <p>“In times of the pandemic, we stopped manufacturing school elements to manufacture disinfection points, isolated transport stretchers, that has been like innovation.” (A. Ricaurte, personal communication, May 2, 2022).</p>	<p>Bank loans: They used the debt quotas they had with the banks and filled them. They spent their savings at the beginning of the crisis by paying their employees.</p> <p>“We use the quotas we had with the banks and fill them.” (A. Ricaurte, personal communication, May 2, 2022).</p>
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Retail and Insurance company	<p>Process innovation: Products that previously could only be purchased in person are now offered virtually due to a digitization process.</p> <p>“More than all, the digitization of products that were previously only offered in person, for example, if you enter our website, you can purchase the 100% digital SOAT, the all-risk insurance as well.” (J. Peña, personal communication, May 2, 2022).</p>	<p>Product innovation: Before implementing an idea or innovation they work with pilots to see if they work. They decide based on the result the pilot had.</p> <p>“There are pilots who have not come up with big ideas, but rather small pilots to evaluate possibilities that have given unexpected results and allow us to have them as insights to know if it would be better for us to go another way.” (J. Peña, personal communication, May 2, 2022).</p>	<p>With the company’s resources.</p> <p>“I have this idea to sell more, let's set up the tables and evaluate the results, not all of the clients or resources are used, but a small part to see how it has evolved.” (J. Peña, personal communication, May 2, 2022).</p>
Pharmaceutical company	<p>Process innovation: Innovations implemented during the pandemic</p>	<p>Process innovation: Innovations implemented during the pandemic</p>	<p>Self-financing uses resources from the company.</p>

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focused on the digitalization of process: virtual training for patients. "Virtual training to patient remained... but virtual training is what educators do JJ patients so towards patients if we stay virtual basically because we optimize a lot of resources." (M. Escobar, personal communication, May 3, 2022).

focused on the digitalization of processes but that will not remain once the pandemic is over: medical visits and virtual representatives. "What people did was start training people to quickly develop these skills to make a virtual medical visit. Adapt all our materials and resources because of course, the rest of us work on a lot of physical materials so, well, now the materials have to be videos, they have to be light, they have to be able to go through the mail and be developed... in Colombia we implemented it for areas like Chocó

"We have a budget assigned by country and that is the budget that exists and with that, we have to develop everything, well, all the initiatives, but everything is still agreed in our strategic plan." (M. Escobar, personal communication, May 3, 2022).

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Amazonas and others so we said ready no obviously we return to normality because we continue to focus on where the potential is.” (M. Escobar, personal communication, May 3, 2022).

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<p>Entrepreneurship acceleration company</p>	<p>Process innovation: The pandemic and virtuality are used to offer the service to areas outside the city and the country, currently this practice is maintained.</p> <p>“For example, this program could be offered to people who were not in Bogotá, in other cities of the country or also in other regions, for example, we also have entrepreneurs from</p>	<p>Investors and investment funds.</p> <p>“It has been financed by investors who have believed in XXXX, in what is done, so, yes, until now nothing of the kind has been seen... Alliances have also been made with investment funds in other countries such as Visit Ventures.” (V. Cantillo, personal communication, May 4, 2022).</p>
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Mexico.... we are still taking advantage of it.” (V. Cantillo, personal communication, May 4, 2022).

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Financial services company	Organizational innovation: With the pandemic, they decided to change their approach and start alliances with strategic partners, with interventions in the territory and marketplace.  "We turned to a model of combining alliances with strategic partners, some interventions in the territory and a lot of Marketplaces." (J. Carrillo, personal communication, May 5, 2022).	Product innovation: Being in the product design stage of the app; tests are carried out and ideas are implemented and constantly discarded  "I think all of them because we are currently in a stage of product design, of testing, as we integrate and change a lot. We do a lot of experimentation week to week, all the adjustments we made indicated that we should develop something	Resources from winning prizes in competitions of incubators and foundations, financing from the Inter-American Development Bank, blockchain, and investment seed round.  "Since we started in 2018, we have raised close to \$600,000 in accelerator award final resources, non-reimbursable cooperation resources. The pilot was financed by the IDB USD\$250,000, a prize
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new, adjust something existing.” (J. Carrillo, personal communication, May 5, 2022).

from the XXX Foundation to upload all the credit activities and the total of our blockchain: that has been the largest source of financing, last year we did a seed investment round for 15% with USD\$100,000. This year with this month we are closing a seed investment round for 2 million dollars.” (J. Carrillo, personal communication, May 5, 2022).

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Drinking water company  
Marketing innovation: Implement the use of social networks and everything related to cyberspace: marketing, promotion, and sales.

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Resources from the company and the partners.  
"We had to take money out of our pockets for a long time to sustain what we already had.” (F.

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“More than an innovation generated due to the pandemic, we realized that the presence of social networks and digital platforms and all the presence is going to help us a lot also to support that the product is going to be for the people.” (F. Cabrera, personal communication, May 4, 2022).

Cabrera, personal communication, May 4, 2022).

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Financial services  
company

Marketing innovation: Migrate to a concept closer to fintech to improve the service, and customer experience and create more channels for access and communication with the client. “We are migrating more towards the concept of Fintech, like many financial companies, where they are

Product innovation: Created in the context of the pandemic and aren't applicable after the crisis: financial products adjusted to the crisis with lower quotas for the clients so the losses of the company can be balanced.

Direct resources, the money of the I+D department comes from the company budget. “Well, look the entire R&D issue is included in the cost of the company's central office.... To direct resources, we are going to take a part and we are going to put

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taking this new path; giving much more importance to the entire subject of customer experience and customer relations, facilitating channels, and opening more varied channels of access to the customer, facilitating their forms of payment and forms of communication with our company, which has made the response to customers has been very favorable.” (A. García, personal communication, May 5, 2022).

“Mainly to launch products that will adapt to the new reality of customers, products that allow customers to have a rationalization of the installments that they have been paying and that will adjust directly to the reality that they present.” (A. García, personal communication, May 5, 2022).

it for innovation; We don't have it like that, but many of the positions enter indirectly within the offices, including I have a percentage of my installed capacity, to call it in some way, dedicated to the subject of innovation and so on. So, I think that I couldn't tell you the exact figure there because I don't have it in my head, but I think it is an important item of resources that are being put into this issue.” (A. García, personal communication, May 5, 2022).

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Financial services    Organizational    innovation:    The  
 company            company    was    born    during    the

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Funding partners.

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pandemic, so they have worked at home, and they are currently migrating to a face-to-face model.

“I would say the challenge is the other way around, as we were born in the pandemic, the challenge is more like now that it is returning a little more to “normality”, it is how to return to that normality.” (J. Martínez, personal communication, May 6, 2022).

“We are four founders of which we all have an equal share, we all have the same; the opinion of each one, each one leads their area, but the decision-making, in general, is made between the four of us.” (J. Martínez, personal communication, May 6, 2022).

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Packaging company	Process innovation: Focus on recycling. Purchase a special machine that decontaminates and reuses plastic. An alliance has been
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Bank loans and direct resources: Every area has a budget approved by the holding based on the projects and innovations that departments

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made with a recycling company to take full advantage of this machine.

“We are also starting the use of a machine that allows us to use a raw material that is recycled.” (A. Álvarez, personal communication, May 6, 2022).

Process innovation: Investment in equipment to allow monitoring of the factory from home. Now that the investment has been made, it will continue.

“Work was done with a company where cameras were located inside the operations plant to thoroughly supervise the production of the

have launched. Usually, they invest 30% of the budget.

“Each area has its budget, the holding company manages a budget that is ultimately through projects launched by the innovation departments; they present a project, they structure it, they give feedback to verify the return on investment, they generate financial information and based on this is where the approval or not of the members of the holding company and the board comes in... They give a part of the budget; we are talking about 30% of the money that they have ready to

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machines.” (A. Álvarez, personal communication, May 6, 2022).

invest and the rest is through banks that finance all these projects.” (A. Álvarez, personal communication, May 6, 2022).

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<p>Educational service company from the public sector</p>	<p>Organizational innovation: Innovations implemented during the pandemic focused on the digitalization of process: a hybrid between face-to-face and virtual work.</p> <p>"Now, within the entity, I think that the best strategy could have been the hybrid system. Right now, I am at the Hilton Hotel in Corferias, but tomorrow I am going to the entity.</p> <p>Not all public entities have these</p>
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Government.

"Let's see, Athena is an entity that, being public, has to think in the long term, however, being in a political context, the creation of these entities in a government position implies not having much of a strategy but dedicating itself to constant action." (J. Montaña, personal communication, May 6, 2022).

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facilities, as we are an agency, not an entity like the others, we allow ourselves that flexibility." (J. Montaña personal communication, May 6, 2022).

Organizational and product innovation: Constitution and creation of an associated company to produce biologicals

“On Friday, a whole package of 5,000 million pesos was approved for the entire construction and development of biological products for Bogotá. That is going to be constituted as a company associated

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with XXXX.” (J. Montaña, personal communication, May 6, 2022).

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Energy company	Organizational innovation: Innovations implemented during the pandemic focused on the digitalization of process: a hybrid between face-to-face and virtual work. “I think that one of the ones that will continue is the hybrid between virtuality and face-to-face, so much so that our offices have completely accommodated themselves.” (A. Correa, personal communication, May 10, 2022)	innovation: Organizational innovation: Direct resources: The company has a specific budget for the innovation department. “From the innovation unit we have the budget for the whole topic of culture and innovation to spread throughout the company through training, activities, and events; the training in general and the management of intellectual property that was also mentioned above. We in the unit have that annual budget to develop these, well, carry out these initiatives and
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Marketing innovation: The but it was not developed because it each of the business lines also has appearance of services that use the became clear that the proximity within their budget's investments or digital environment to work; alert beep is not pleasant for the allocation of investments for the accounting through telephone, the personnel in operational matters." development of projects such as virtual invoice, money orders (A. Correa, personal innovation or piloting or research through 472, and cell phone charges. communication, May 10, 2022). that they require during the year." "Many commercial strategies that (A. Correa, personal continue to exist in terms of customer communication, May 10, 2022). solutions, 100% telephone Government projects: Participation in government calls for innovation in projects, investigations, and development to obtain tax benefits. accounting, the virtual invoice had already been launched, among others that are no longer removed." (A. Correa, personal communication, May 10, 2022). "We also leverage a lot in the calls for everything that is innovation in projects, execution of research and development projects in innovation

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in calls such as Minciencias to obtain tax benefits as well, because we review royalty fund calls as well.” (A. Correa, personal communication, May 10, 2022).

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Consulting Firm Marketing innovation: Move the marketing experience to a digital area and use data mining to reach potential customers.

“But now we have already improved it quite a bit, the communication issue in the sense of incorporating ourselves more into the digital marketing strategy, not into the digital market.” (M.

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With their resources, they also have participated in government calls but of low investment such as the payment of patent registration.

“With their resources, because there is no one, and no one understands, not even the banks, what it is to do research. Then it's up to one with their resources... Yes, we have called, for example, in the patent contest that pays us the entire patent

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	<p>Villanueva, personal communication, May 10, 2022).</p>	<p>registration process, but no more.”</p>
		<p>(M. Villanueva, personal communication, May 10, 2022).</p>
<p>Healthy supermarket</p>	<p>Marketing innovation: Go from a store with physical channels to an e-commerce store with a strong digital presence.</p> <p>“But once we went to e-commerce, well, and in the middle of a pandemic, that also biases you a bit, but the adaptation was immediate, that is, success is seen right away.”</p> <p>(M. Rincón, personal communication, May 18, 2022).</p> <p>Process innovation: Implement a new logistics process based on fast</p>	<p>With their resources until the first round of investment in 2020.</p> <p>“No, at first it was all own resources. Until the first time we received investment, it was in December 2020, but before that, everything was own resources.”</p> <p>(M. Rincón, personal communication, May 18, 2022).</p>

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delivery, and a new channel of communication.

"And what I'm telling you, set up your logistics, improve processes, set up your communication channel, make it strong." (M. Rincón, personal communication, May 18, 2022).

Organizational innovation: From a B2B to a B2C model.

"We stopped being a B2B company to be a B2C company, and when you are facing the client, well your strategy and everything changes, having a large client is not the same as having six thousand, ten thousand,

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or twenty thousand clients facing, from B2C.” (M. Rincón, personal communication, May 18, 2022).

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<p>Manufacturing and rail transportation</p>	<p>Product innovation: Issuance of green bonds to improve financial performance.</p> <p>“From other points of view, such as finance, such as this bond issue, it seems very important to me. We create and believe in issuing green bonds like many companies to seek trust from the environmental point of view.” (M. Ortega, personal communication, May 23, 2022).</p>
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International investment funds that focus on investigation, national and public investment funds, and resources from the company.

“Normally the company sets a budget, the universities also and we look for external funds. For example, the Newton Fund, which is a fund of the Royal Academy of Engineering of the United Kingdom... Also, Colciencias, we have accessed funds from Colciencias, Ruta N as well.” (M.

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Process innovation: implementation of a test prototyping center in association with universities.

“We are setting up a test prototyping center because we have a partnership with the universities, we work on it in partnership with the universities.”

(M. Ortega, personal communication, May 23, 2022).

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Ortega, personal communication, May 23, 2022).

Table 1: Results from the interviews. It shows the quotes of the people interviewed regarding the subjects investigated.

Source: Author's own work.

## 7. Discussion

We found that there is such a thing as temporary innovations regarding products, processes, and organizational; during the theoretical investigation, we were unable to find information regarding this due to the lack of studies that delve into the subject. However, with the analysis of the interviews, we were unable to see temporary innovations in marketing, this may occur because innovations in this area directly affect the customer experience and if they are eliminated, discomfort can be generated.

Regarding the financing of innovations, we were able to find that the interviews and the theoretical research have points in common, companies use the financing methods that best suit their context, business activity, and size. The most used financing mechanisms were:

- Company resources: Cash flow or a predetermined budget for innovations.
- Government aid: Tax incentives and public investment funds.
- Private investors: Private investment funds, seed investment rounds.
- Bank loans.
- Partners' capital.
- Competition prizes: Competitions of accelerators and foundations.

For example, larger companies with a more established image rely on the company's resources and generally have a budget allocated for innovations, companies with a long history but not large saw bank loans as a financing opportunity for them, and organizations closest to the public sector see in tax incentives an opportunity to improve their financing, it is in the youngest companies that

we can find the most variety that ranges from the support of private investment funds, capital from partners, government calls and competitions from incubators and foundations.

It is important to emphasize that a large part of the temporary innovations occur due to the context of the pandemic and are not maintained since they are only viable during this time, this is the case of several companies that during this time decided to create products designed to meet the demand generated by the pandemic. Such as the production and sale of face masks, or the implementation of strict biosafety protocols, these are products and processes that have a direct relationship with the appearance of COVID-19. In addition to this, organizational innovation is characterized by the digitization of the home office, concerning this issue, it is notable that many companies have taken this issue as a permanent innovation and are seeking to implement a model of hybrid work in the future.

I expected to find in the interviews that many temporary innovations were characterized in this way since when implemented, they gave results that can be considered a failure, however, it was found that several of these turned out to be successful and the cause of their temporary nature was the context, their temporariness resides in the fact that they are a response to the market demand and the needs of this.

## 8. Conclusions

The main conclusions of the research are:

- It was possible to confirm the existence of temporary innovations. In this research, these are represented in the context of the pandemic crisis, however, with research focused on moments of greater normality, they can also be identified and characterized.
- Temporary innovations in products, processes, and organizational could be found; however, temporary marketing innovations could not be found. Permanent innovations meet all categories: products, processes, marketing, and organizational.
- There aren't significant changes in financing mechanisms in times of crisis concerning times of greater stability.

To answer our research question: will the innovations that occurred during the pandemic remain within the company or were they only implemented/launched to mitigate the effects of the pandemic on companies? We found that companies will maintain a large part of the innovations that were carried out in the management of the pandemic, the process innovations that are maintained are related to the digitalization of different proceedings the same thing happens with the marketing innovations that are characterized by the entry into new digital marketing and sales channels, however, the product innovations that are maintained are those in which the offer of a product is related to the core of the business. At the same time, those innovations that are not maintained and were positive have a contextual component and the main reason why they are temporary is their lack of applicability outside of times of pandemic.

Regarding the second question: we want to know what were the financing tools for innovations in the context of the pandemic? We found that the financing mechanisms were company resources, bank loans, government aid, capital from partners, private investment funds, tax incentives, government aid, and resources for winning competitions from incubators and foundations. These financing mechanisms respond to the financing method that best suits the reality and context of the organization.

This research has several limitations: a) the number of interviews is small; therefore, it is important to continue investigating more companies, b) the investigation is focused on a specific period in which the business sector was handling a crisis, and c) the research is focused on a specific context and country.

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