

Universidad de Lima  
Facultad de Ingeniería  
Carrera de Ingeniería Industrial



# **BUSINESS AGILE MODEL FOR STARTUPS IN THE MEAT INDUSTRY USING DIGITAL MARKETING, LEAN CANVAS AND LEAN STARTUP**

Tesis para optar el Título Profesional de Ingeniero Industrial

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Lima – Perú

Julio de 2023

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## **Abstract**

The following research focuses on the implementation of a business model for startup projects in the meat industry, using agile methodologies such as Lean Canvas, Lean Startup, Digital Marketing and Agile, to be used by entrepreneurs in the Peruvian meat business market. The proposed business model is important to be used as a digital tool for Peruvian entrepreneurs to achieve their commercial and productive objectives, using the most updated digital tools in the current industry which also would provide them the capacity to adapt to different scenarios in the flexible market in which they are involved. Also, the following scientific article shows information about characteristics of the market of study, economic, financial, and social evaluation that will be related to this investigation. In the same way, previous studies of similar topics would be incorporated in the following research, using their contribution to find solutions for common problems of small and medium entrepreneurs in the Peruvian market. Finally, using a simulator software, we could have special indicators that would support the effectiveness of the following research and the magnitude of the contribution of this research to future investigations.

## **Keywords**

Lean Canvas, Lean Startup, Digital Marketing, Agile and Business Model

## **1. Introduction**

Many entrepreneurs on the Peruvian market try to succeed and reach their objectives to have a small participation on the current market on the way to be in the future an important reference enterprise. For many years, people with these business objectives were limited by the knowledge of the market about available technology and digital tools, but it's

a reality nowadays that opportunities offered by the increasing use of technology are changing the competitiveness of companies (Cordero et al. 2023). Currently, people tend to consume large volumes of products made from beef, chicken, pork, etc., in different presentations. However, there is a fact that is not being fully considered, which is that a higher intake of fast food could be related to overweight or obesity in children and adolescents (Jakobsen et al. 2023). In addition, the most relevant food preferred by most people is ultra-processed food which includes low quality of nutrients and replace healthy properties (Juul et al. 2021). Nuggets made of Guinea Pigs are the main product of the following investigation, but it also includes a general perspective about the minimum requirements to take in consideration to create a business model. In Peru for example, there is an important fact that is shared with some other countries of the region with similar characteristics, and it's composed for a lot of people who have business project ideas, and they are characterized for their lack of knowledge of how to set up a business and maintain it nowadays. Also, they are people who are no are afraid of possible failure in most Latin America Countries (Nicolas and Rubio, 2023). For example, if some people have the idea to set up a business meat factory where they will be using guinea pig (a very famous animal in South America with a lot of benefits for health) and quinoa (a healthy seed), it's necessary to take in consideration some aspects like the machine they would need in the different process, also it's necessary to project the financial results to know how much profits would be in the future. In the same way, it's important to consider the workers performance, who will be in charge of producing the main product and investment in general. This idea is based on the hypothesis where a lot of consumers are trying to have a better quality of life, getting healthier products for example on their daily food, and there is where guinea pig represents an attractive alternative, where it could be a better option for a lot of people. It's important to mention that the following product is nuggets made of guinea pig covered by quinoa, an important and healthy seed which provides a better sensation and appearance for the nuggets in study. For that reason, the following research has the main objective of explaining all the steps to follow to have a better performance and accomplish the requirements that are requested by consumers in the current market, where some tools like agile methodologies and digital software have more relevance nowadays.

## 1.1 Objectives

On the following research, we could find the following objectives:

- Design through a Lean Canvas Model the characteristics of the market and the product involved, considering for that some factors such as the suppliers, customers, product value and strategies of promotion and selling in the current market.
- Manage the product performance through the implementation of Minimum Product Value (MVP) where considering the customer perspective, the final product could count with the desired features of the public. In this way, customers would be satisfied with the product and could establish a connection between them and the company's philosophy.
- Implement available digital tools such as social media and websites to ensure customer satisfaction and continue with their loyalty and confidence to the product. This strategy would be important to adapt to new scenarios and continue developing the mechanisms to keep customer participation on the company's new strategies and objectives.
- Integrate in a theoretical way the knowledge of the agile methodology to ensure the company's objectives achievement, considering different perspectives and digital tools to be able to adapt to different scenarios and have the best performance, reducing the generations of costs and increasing the company's profitability.

## 2. Literature Review

It's important to consider some digital tools which could provide entrepreneurs a better management and implementation of all strategies to succeed with the business project people have in mind. In that way, people could get a better performance with good profits and knowledge of the market. For that reason, nowadays, agile methodologies have an important role in the business management of entrepreneurships, where following structured steps of different tools, enterprises could reach their objectives to have a great performance and better profits.

### 2.1. Lean Canvas

Graphics and templates could be an efficient tool to organize the business management, where enterprises could have a better knowledge of the market characteristics and their product value for the consumers, and there is where BMC (Business Model Canvas) adapts to the new business objective of entrepreneurships, and allow them to reduce their doubts about the objective market and realize their main necessity and requirements to find on the product (Wang et al. 2022). It's important to integrate Lean Canvas Model on the business philosophy of the company specially for their

results which also helps the enterprises to continue with the lean startup basis and confirm their business hypothesis (Moshood et al. 2022). In that way, people could confirm if their business idea could be achievable and attractive to investors. For that reason, if a new company or an entrepreneurship want to start on the market and they don't know how, the BMC provides the capacity to design the business idea into a business model (Shanbhag and Pardede 2022), where anyone could have a better visualization of the company structure considering for that all the members of the business management such as suppliers, customers, promotion strategies and the product value. The Lean Canvas diagram is important on a business strategy implementation because of its capability to do multiple changes in the process to improve product features, including for that the perspective of some participants like the customers or the business suppliers. All these steps help businesspeople to concentrate their strategies to a special market where customer necessities are not satisfied (Iglesias et al. 2022). Considering the company objectives, the business model canvas would provide people some tools to initiate operations and reach entrepreneurship objectives.

## **2.2. Lean Startup**

Many people are trying to succeed with their own business ideas, trying to start in a competitive market with big enterprises and for that most part of the time they don't have the enough knowledge of how to manage a new company. According to De Faria et al. (2021) the Lean Startup Philosophy consists of a scientific methodology for new business, where entrepreneurs can organize their business idea using a business structure model. In this century, agile methodologies are very important to consider in a company's performance, where for example, Lean startup is recognized as one of the most valuable tools for entrepreneurs nowadays around the world. This is used by many enterprises to start their business and fix all the troubles they could have as a new company; in that way they can adapt to different scenarios (Lazo-Durand et al. 2021). Also, it's important to remark on the benefits of reducing waste of supplies by having better communication with customers and giving them a product with the characteristics they are looking for (Dewobroto and Marie 2020). In that way, Lean Startup tries to operate with enough items, following a specific structure of a business model (Brecht et al. 2021). Is for that reason that this method increases the development and innovation using digital tools and realizes repetitive tests for finding out the effective process to follow and choose the correct business structure that is better for the business in study (Solaimani et al. 2022). Inside all the business market entrepreneurs don't have the attention, for that reason each one of new businesses represent an attractive case where to apply these new digital methodologies (Guezzi et al. 2022). Following that definition, it's clear to remark that the business structure that entrepreneurs usually follow are not quite reliable, with the incapacity of not being flexible to different scenarios of the market (Guezzi et al. 2022).

## **2.3. Digital Marketing**

It's important to remark on the relevant value of the implementation of available digital tools on the process to reach company objectives. Some benefits people get from these strategies are having more ways of communication with social networks and in that way, they could have a better knowledge of the customer and their behavior. It's true that using internet tools it's very important nowadays, especially if there is the ambition to satisfy customer needs, and for that they must have the option to sell their product online and be available all time to answer all customer requirements. Also, digital tools could improve the company vision by connecting the business relation of the company with customers from other countries, who could buy the products anywhere (Saura et al. 2020). Nowadays digital tools include a lot of options to have a better contact with the customer, such as blogs, social networks, and websites (Munir et al. 2023) where they could search for different opinions from previous customers to see their experience with the product (Zirena et al. 2022). Following a business structure, to have a better performance people could use digital marketing to promote their products or service in different platforms and be omnichannel (Khoa and Huynh 2023). After a situation such as the COVID-19, if enterprises want to maintain their participation on the business market, they have to take into consideration their strategies to adapt to different situations and be competitive (Behl et al. 2023). Following the conclusion of Cobos and Díaz (2023) information on websites should be correct and they must avoid creating false expectations on customers especially if they are related to health improvement. It's an opportunity that Peruvian agricultural market is recognized by its highest profitability after the mining industry (Huaraca et al. 2022).

## **2.4. Agile**

The structure of a business model that companies have to follow must be capable of adapting to different scenarios where some successful model innovation models are related to organizational resilience, joining the participations of all the collaborators and doing their best effort to reach entrepreneurship objectives (Eriksson et al. 2022). A reality is that adopting agile methodologies on the strategies of the company have resulted in a great performance of the company because of their co-operative and adaptive tools in the market (Saarikallio and Tyrväinen 2023). If an

entrepreneur wants to have success with their business idea in a fast-changing environment such as the manufacturing industry, they should improve their strategies with the available digital tools and innovative techniques like agile practices where the application of reconfigurable resources and best practices are fundamental to create attractive characteristics for the new product to negotiate (Qi et al. 2020). Also, considering previous experience will have an important role in the business strategy, because it will be the tools to develop high quality products, under some restrictions and in a short time (Ghezzi and Cavallo 2020). Collaborators ideas are determinant to establish an innovative solution considering different perspectives from different people, where incorporating them into a main objective could have better improvement to a current problem, and for that entrepreneurs or leaders should encourage workers share their ideas to achieve the main company objectives (Huikkola and Kohtamäki 2020). In the same way, the characteristic about agile methodologies is its capacity to implement continuous and small practices, instead of conventional strategies of business model (Xu and Koivumäki 2019).

### 3. Proposed Model

Trying to find the integration of these agile methodologies and digital tools, it's important to establish a business model, where the factors to consider such as product costs or economics strategies will determine the efficiency and effectiveness of the business performance.

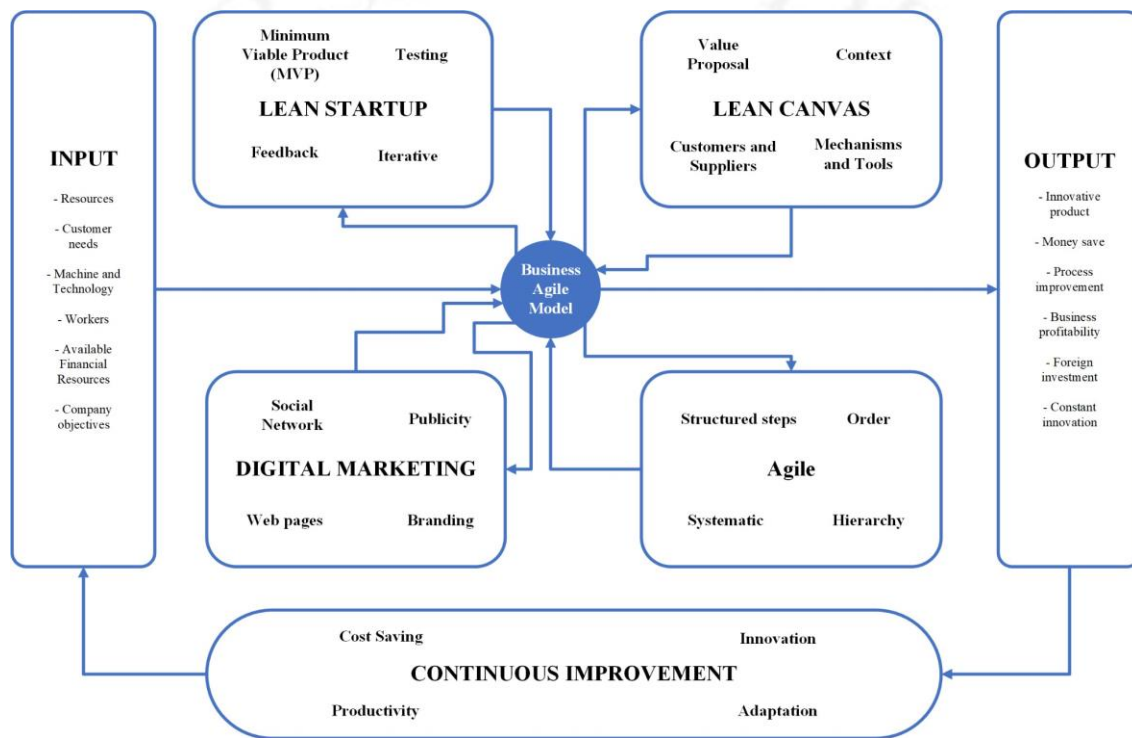


Figure 1. Proposed Business Model

In the previous figure, some relevant participants of the business model are detailed, where the process starts with special inputs such as resources or the knowledge of customer needs for example. Then it's important to mix all main aspects of the agile methodologies to find possible solutions. Finally, the business model could produce desired outputs like process improvements or constant innovation. Also, it's important to remark that all this process has continuous feedback to improve all the components of the business model facing a changing market.

#### 3.1 Proposed Process

The business model must follow a structure where each part has an important participation in the objective's achievement. For that, it's important to separate each digital methodology as a different process but linking them to have an integrated model.

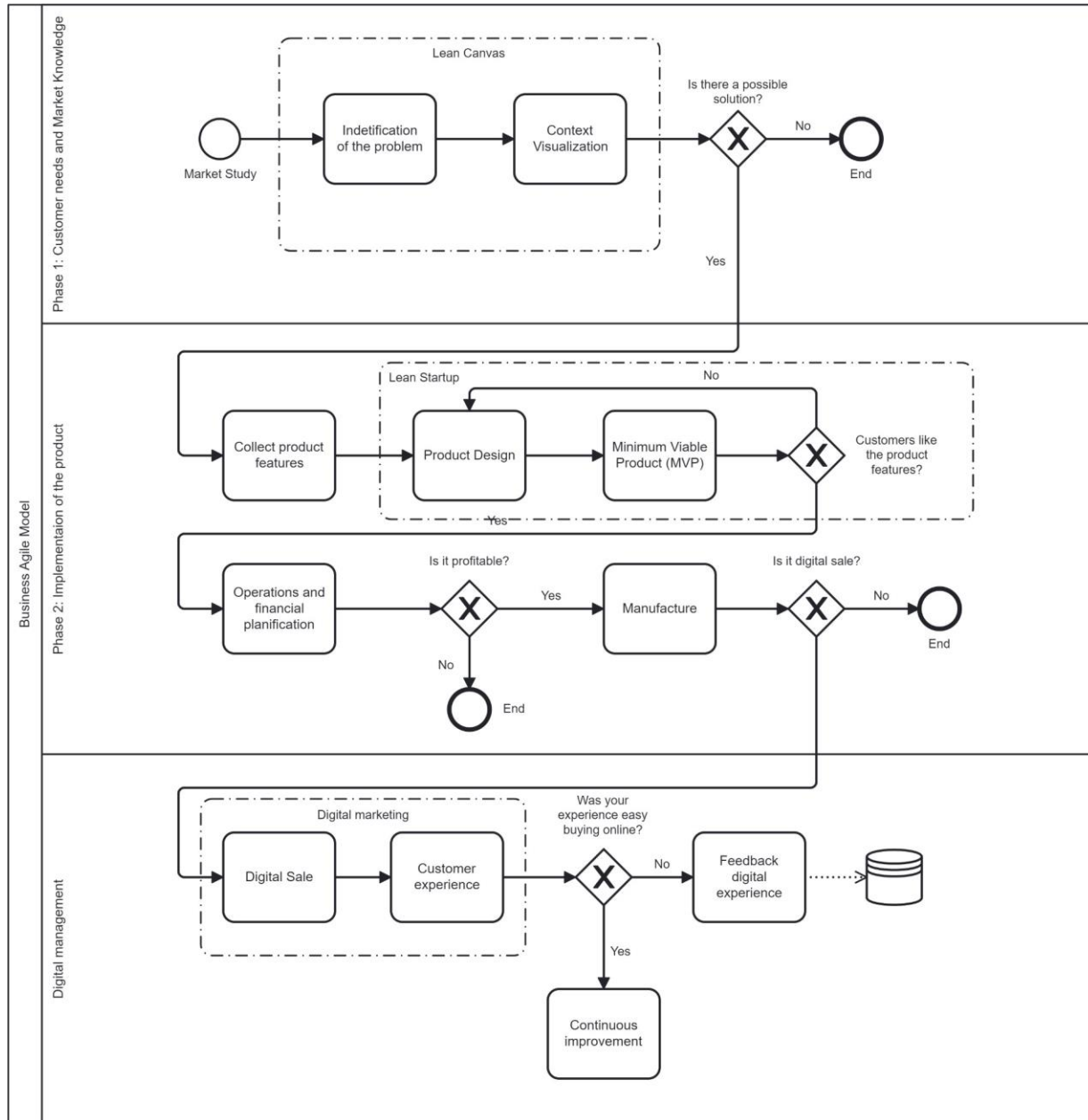


Figure 2. Implementation of the business model

For example, on the previous diagram, some information such as the market and customer study, implementation and design of the product, and the digital marketing administration, are the bases of the proposed business model, where the integration between them should be channeled through some available digital tools. In this way, the product performance and the communication with customers would be so articulated that in future improvements of the product would be easier and efficient to implement, in order to contribute to the continuous upgrade of the business and stay up to date with the latest trends in technology.

### 3.2 Model Stages

3.2.1 *Phase 1.* In this part it's important to recognize the characteristics of the customer and their needs. For that, it's going to be important to analyze the business market, comparing with the nearest competitors and try to create an innovator solution (product or service) to catch the customer's attention. It's important to take into consideration that

the analysis of the scope of the product and the key characters in this project must be carried out, for this reason a Canvas model is made to have a better understanding of the relationships between the different components of the business of study. Defining the needs of the public we are targeting and knowing the key characters, as well as their needs, ailments and benefits are the key points this phase could offer.

3.2.1 *Phase 2.* Customers will be the main objective of the investigation, where their opinion about the product will be relevant to improve the product value and create an attractive alternative option on the market. Also, it will be taken into consideration that the client's opinions must be analyzed so indicators could be created to show the effectiveness and achievement of the company strategies, considering all process, since they interact with the brand until they consume the product. That is why it's necessary to design multiple prototypes of the product and its MVP (Minimum Viable Product). With these tools, it will be confirmed if it solves the needs of clients within the chosen market. Therefore, the Lean Startup philosophy will be considered to carry out constant iterations and analyze what has been achieved with each prototype. Once we have obtained one or more products, the operations and financial planning will begin. In the study of the demand, and the technical - technological, economic, and financial viability of the implementation of a guinea pig nuggets factory with quinoa in Metropolitan Lima, will determinate the best option for the implementation of the factory, considering for those studies of Engineering of the main process, as well as the necessary machines, their capacity and technical feasibility. With that in mind, the manufacturing of the product should begin, and a first batch should be made to test the process from supply management, operation, storage, and delivery to the final customer. Finally, it's important to make an analysis of the best way to sell digitally, to manage sales and have a good performance of CRM (Customer Relationship Management).

3.2.1 *Phase 3.* Digital tools will be used to loyalty the participation and preference of the customer, where through websites and social media will remain the communication with the customer, know their needs and opinions about the product, and to add some improvement they would like to see in the future. At the beginning, it will start with sales coordination through digital tools such as social networks and landing pages using the Google search engine as the main source of leads. Later it is expected to channel these leads to follow with a continuous improvement not only to find the benefits of the product itself, but also in the relationship with our most important clients, promote commercial benefits and improve digital image to be found more easily by new customers.

### 3.3 Proposed Model Indicators

It's important to define some special indicators which are going to be used as a metric tool to see the business improvement of the strategies adopted by the company.

Table 1. Business Model Indicators

Indicators	Formula	Unit	Objective
Lead Conversion	$(\#purchases / \#clicks) * 100\%$	Percentage	Greater than 80%
Lead recommendation	$(\#customers\ who\ recommend\ the\ product / \#customers\ who\ bought\ the\ product) * 100\%$	Percentage	Greater than 70%
Unit Profits	Price - Production Unit Cost	Cost	Greater than 1

Some special indicators to track and measure the effectiveness of digital strategies adopted by the company could be Lead Conversion on web pages, to know if shopping is being made according to the previous business planification. In the same way, Lead recommendation (to see if customers really advise their contacts about the product features and encourage them to buy the product) and Unit Profit (to see if financial and economic results are aligned with the company objectives) are special indicators of the development of the company and on that way, they could find out if the company objectives are being reached, according to the organization perspective.

## 4. Validation

### 4.1 Product Validation

It's important to do tests to get the customer's perspective about the product and have a real opinion about if it's what they were waiting for. In the same way, the information that could be collected will be very useful to get some improvements of the product characteristics.



Figure 3. Supplies

The main ingredients to be part of the following case of study were the guinea pig (which is boned to use only the meat), white and black quinoa (to be part of the product and recover the nuggets), and some condiments such as the salt, oregano, flour, eggs, breadcrumbs, cumin, garlic powder and pepper, to provide them with a great taste, distinctive of breaded products and fast food on the market.



Figure 4. Process

During the production, it was composed by sequenced steps such as all the materials preparation, the meat boned and washing process, seasoned with all ingredients and meat frying of nuggets.



Figure 5: Final product

On the previous figure, the final product could be observed, fulfilling with the physical features desired by the customer to see in the product and in the same way reach company objectives. After letting the nuggets rest and dry, they are packed in ten units per package, ready to be sold to the target customer.



Table 2. Results of Product testing

Product	Validation
<b>Characteristics</b>	Around 80% of the surveyed liked the product and the rest one didn't like the product for special reasons such as they didn't like guinea pig or preferred other condiments with more flavor.
<b>Observations</b>	Some of the observations made by the customers were that nuggets should be bigger, increase salt proportion, more options of flavor and include more pieces on the box.
<b>Improvements</b>	More options and pieces in the presentation, increase flavor with condiments and make them bigger.
<b>Average price</b>	The average price that customers would be satisfied with is 14 PEN.

Previous research such as surveys and interviews would be relevant to have a main idea about the main features that customer would expect to see and taste on the product value, such as better flavor, peculiar smell, and consistent price.

#### 4.2 Financial Model Validation

Entrepreneurs should count on financial resources to make their business ideas possible. It's important to take into consideration the own capital of the investors, and a banking loan to buy all the requirements to start the business. On the same way, to have a better understanding, having a positive Net Present Value (NPV), an Internal Rate of Return (IRR) greater than Weighted Average Cost of Capital (WACC) and a Cost Benefit Ratio greater than 1, the project in evaluation could be interpreted with good results in the future, to achieve leader's alignments.

Table 3. Financial Indicators

Financial Net Present Value (NPV)	278,995.71 PEN
Cost Benefit Ratio	1.1264
Internal Rate of Return (IRR)	24%
Recovery Period (years)	4.76

As it's shown in the previous chart, the case of study gives a NPV of 278,995 PEN, and IRR of 24% and finally the Cost Benefit Ratio of 1.1264 achieves the expected goals. This confirms the profitability of the company.

#### 4.3 Economic Validation

As well as the financial model validation, in this part will be important to analyze the business performance only considering the investor capital, to see if without the banking loan the project could be profitable.

Table 4. Economic Indicators

Economic Net Present Value (NPV)	139,969.46 PEN
Cost Benefit Ratio	1.0507
Internal Rate of Return (IRR)	21%
Recovery Period (years)	4.8861

In the same way, like the financial Model Validation, the indicators maintain their interpretation.

## 5. Discussion

After demonstrating and validating the project, scientific articles were searched to compare indicators of success. Firstly, the article provided by Iglesias et al. (2022) has a similar purpose of how to apply digital tools and knowledge to build a business model to follow in any fast-changing market. There, the complete process to produce the cookies, could not be observed and confirmed by readers. This is important to take into consideration because, with some information such as some pictures of the process to follow, customers or any people trying to adapt a business model to their current project could solve their doubts about if they could follow the same steps as the following research and confirm if their purpose is achievable. Otherwise, the following research provides the investigation with a better realistic model to follow, taking for that a real example recorded. Also comparing the focus investigation of Peralta and Quiroz (2022), the lack of graphics and management indicators could obstruct people's understanding. It's important to demonstrate the effectiveness of a business model, but this investigation must be graphically attractive, to be chosen and put into practice. Finally, it's important to remark that to take into consideration any model or new strategies to develop a specific part of a company, it's important to explain that adding a real case, where the purpose of the investigation and their results could be compared with a real situation, as it is detailed on the research of Lazo et al. (2021), for example.

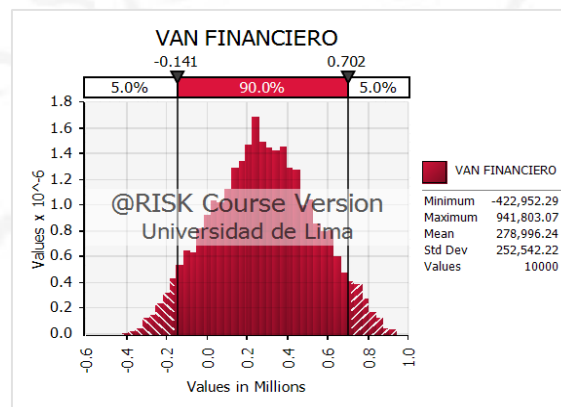


Figure 6. Financial Net Present Value

According to the Risk Simulator, it shows a range with a probability of 90 % where the project could have a Financial NPV between -0.141 (millions of PEN) and 0.702.

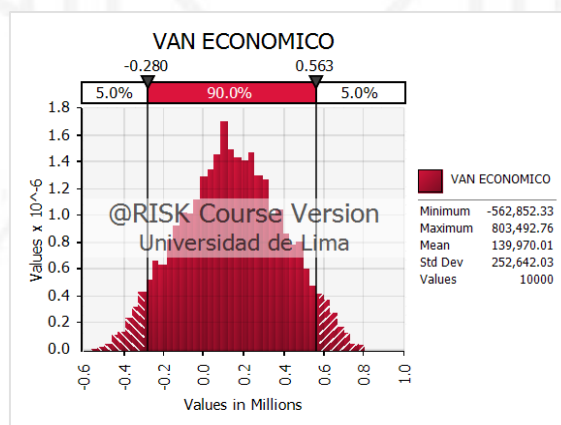


Figure 7. Economic Net Present Value

Also, the software could show with a 90% certainty that the Economic NPV would be between -0.280 and 0.563 million of PEN.

## 6. Conclusion

Nowadays, entrepreneurship should be updated with the latest technological and digital tools that industry could support to be successful in the market and reach their objectives. Talking about agile methodologies should not be a topic without relevance in the company strategies, because it provides a better understanding about how to operate in a fast-changing environment such as the 21st century, specifically on the meat industry, where there are a lot of companies that have a better experience and performance in the current market. On the same way, digital marketing it's a relevant topic to be considered on the business development, where using a group of technological tools and key indicators, organizations could get propose better strategies to reach the customer. It's important to remark that strategies followed by the company and their efficient use of digital tools available would be determinant to differentiate the new product of the competitors, catch the customer's attention and loyalty them. To materialize that business idea and reach the entrepreneurs goals, it's going to be necessary to have a general perspective and knowledge of the customer and the market where people are going to be involved (considering demographic characteristics such as age or gender), then determine the product features, which could be improved by small and iterative tests with the customer's experience (MVP), and finally manage the digital customer experiences through the digital tools that are available for all enterprises such as social media and web pages. Once this all aspects are integrated, and the company counts with all relevant information to operate, the agile business model is when it could start to work with all this data articulated. If an entrepreneur wants to start a small business, specially related to the meat industry, a lot of factors should be considered, to predict future economic or financial situations of the company and improve their strategies on the market where they are involved. The main ingredients of the proposed product are Guinea Pig, which is a special meat, with healthier benefits compared to their closest competitors (such as chicken, pork and turkey), and quinoa, a healthy and interesting complement which differentiate even more from the closest competitors. In order to improve a product with this attractive and alternative ingredient, there are several factors of the business market to improve, because with the numeric predictions and software evaluation, having a Financial of NPV 278,995 PEN and an Economic NPV of 139,969 PEN is low compared to other previous investigations, but their explanation is mainly because having this product as an important input on the following investigation to produce nuggets is expensive, but with digital improvements and efficient election of the business strategies, better results could be generated, considering that nowadays more people prefer to buy healthier products than the usual ones.

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## Biographies

**Alexandro Manuel Gutierrez-Posadas** is a Bachelor of Industrial Engineering from Universidad de Lima. He counts with work experience in commercial within financial and automotive companies. He has worked in international financial companies performing reporting, coordination, and management responsibilities with teams of more than 25 people. He is currently working in a company that is part of the world's largest Japanese conglomerate in the commercial area of the vehicle leasing service.

**Renzo Leonardo Vargas-Castillo** is a Bachelor of Industrial Engineering from Universidad de Lima. He counts with work experience in commercial area and financial analysis. He had experienced working in the operations area in a private company dedicated to pension insurance, also he worked as a commercial in an international German manufacturing and technological company and could have the opportunity to be part working in a Peruvian Bank as a Business Banking Analyst.

**Juan Carlos Quiroz-Flores** holds an MBA from Universidad ESAN. Industrial Engineer from Universidad de Lima. PhD. in Industrial Engineering from Universidad Nacional Mayor de San Marcos, Black Belt in Lean Six Sigma. He is currently an undergraduate professor and researcher at the University of Lima. Expert in Lean Supply Chain and Operations with more than 20 years of professional experience in the direction and management of operations, process improvement, and productivity; specialist in implementing Continuous Improvement Projects, PDCA, TOC, and Lean Six Sigma. Leader of transformation, productivity, and change generation projects. Able to form high-performance teams aligned with the company's "Continuous Improvement" strategies and programs. He has published journal articles and conferences indexed in Scopus and Web of Science. His research interests include supply chain and logistics management, lean manufacturing, lean six sigma, business process management, agribusiness, design work, facility layout design, systematic distribution planning, quality management, Industry 4.0, Digital Transformation, and Lean Manufacturing. He is a classified researcher by the National Council of Science, Technology, and Technological Innovation of Peru (CONCYTEC) and a member of IEOM, IISE, ASQ, IEEE, and CIP (College of Engineers of Peru).

**Ruth Vásquez-Rivas-Plata** is Ph.D. in Accounting and Financial Sciences. MBA from Keller School of Management. Masters in finance from Universidad Pacifico. Industrial Engineer from Universidad de Lima. Associate Professor and Coordinator of Business Engineering area at Universidad de Lima. Expert in Finance with over 15 years of professional experience in Management of budget, treasury, accounting in service and industrial textile sector. Broad experience in planning, business, and financial management. Author of "Economic Engineering, how to measure the profitability of a project" and "Business Finance, practical approach". Member of IISE and CIP (College of Engineers of Peru).

**Martín Fidel Collao-Díaz** at ESAN University and Industrial Engineer from the University of Lima specialized in supply chain management and operations. A leader with more than 25 years of local and international experience in national and multinational companies in the industrial, hydrocarbon, and mass consumption sectors. Broad experience in supply chain management (purchasing, inventory, suppliers and supply sources management, logistics: transport, distribution, and warehouse management), operations (planning and control of production and maintenance), and integrated system management (ISO 9001, ISO 14001, and OHSAS 18001). Business alignment based on sales and operations planning (S&OP). Besides, continuous search for improvements in profitability based on process optimization and saving projects using tools such as Six Sigma methodology, among others, focused on being a High-performance Organization (HPO). Development of a high-performance team. Member of IEEE and CIP (College of Engineers of Peru).

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