INNOVATION IN BUSINESS MODELS, A STRATEGY FOR THE COMPETITIVENESS OF MSMES

LA INNOVACIÓN EN LOS MODELOS DE NEGOCIO, UNA ESTRATEGIA PARA LA COMPETITIVIDAD DE LAS MIPYMES

Sandra Lucia Aguirre Franco,a
Iberoamerican University Foundation, Colombia
(sandra.aguirre@doctorado.unini.edu.mx) (https://orcid.org/0000-0002-2595-0649)

Diana del Consuelo Caldera González
University of Guanajuato, Mexico
(dccaldera@ugto.mx) (https://orcid.org/0000-0003-2116-2538)

Manuscript information:
Received/Recibido: 02/11/2023
Reviewed/Revisado: 26/03/2024
Accepted/Aceptado: 04/04/2024

ABSTRACT

The objective is to make a documentary analysis on the concepts of innovation, business model and competitiveness that allows to understand the business work of MSMEs and their implications towards the creation of value, through the increase of customers or users of the products or services offered and the competitive advantages, this being a contribution to the reader. also addressing strategic factors that innovation has and that lead to the establishment of research trends on the subject. It is a documentary work in which various sources were consulted such as magazines, books and other literature located in Scopus, Scielo, Google scholar and other databases to have a structured frame of reference.

Although business models allow for a structured organization, new business dynamics based on technological advances coupled with innovation are essential and allow market demands to be met in a timely manner, this being an element that contributes to the adaptability of new innovative processes in each link of the production chain. as well as the creation of value, this being a scenario of great relevance for the end consumer, as well as a response from corporate social responsibility to each of its parties involved.

RESUMEN

Palabras clave: innovación, modelo de negocios, competitividad

El objetivo es hacer un análisis documental sobre los conceptos de innovación, modelo de negocios y competitividad que permita entender el quehacer empresarial de las MIPymes y sus implicaciones hacia la creación de valor, mediante el incremento de clientes o usuarios de los productos o servicios ofrecidos y las ventajas competitivas, siendo este un aporte al lector, abordando de

*a Corresponding author.
La innovación en los modelos de negocio, una estrategia para la competitividad de las MiPymes

igual manera factores estratégicos que tiene la innovación y que conlleven a establecer las tendencias investigativas sobre el tema. Es un trabajo documental en el cual se consultaron diversas fuentes como revistas, libros y demás literatura ubicada en Scopus, Scielo, Google scholar y demás bases de datos para tener un marco de referencia estructurado. Si bien los modelos de negocio permiten tener una organización estructurada, las nuevas dinámicas empresariales fundamentadas en los avances tecnológicos aunados a la innovación, son imprescindibles y permiten atender de manera oportuna las demandas del mercado, siendo este un elemento que coadyuva a la adaptabilidad de nuevos procesos innovadores en cada eslabón de la cadena productiva, como a la creación de valor, siendo este un escenario de gran relevancia para el consumidor final, como también una respuesta desde la responsabilidad social empresarial a cada una de sus partes involucradas.
Introduction

The theoretical contributions found in journals such as Long Range Planning, Strategic Entrepreneurship Journal, Journal of Business Models and the Journal of Cleaner Production, help to reflect on the new business dynamics that have arisen in the course of the 21st century, not forgetting Porter (2005), who considers that aspects such as innovation, competitiveness, shared value, among others, lead organizations to have a differentiated recognition in their sector, having as a basis:

[...] the introduction of a new, or significantly improved, product (good or service), process, new marketing method or new organizational method, in the firm's internal practices, workplace organization or external relations [...] (OECD, 2005, quoted in Acosta, et al., 2017-409)

According to the corporate purpose of the organizations, the financial, commercial, technological and other variables that adapt to their business context must be established, as well as to the dimension of their business model, which from the perspective of innovation must have sine quanon conditions aligned among them. The objective of this work is to make a documentary analysis of the concepts of innovation, business model and competitiveness that allows understanding the business activities of MSMEs and their implications for value creation.

Although in the academic context this topic is addressed under names such as entrepreneurship, business plan, innovation, among others, it should be noted that innovation in business is more a condition of decision, organizational management and from the development perspective of the entrepreneur or business owner, which is why the necessary actions must be defined, with the physical, economic, technological and knowledge resources, to make innovation a business reality according to the needs of the various business actors.

Method

For the construction of this article we resorted to the documentary analysis product of other researches, which have been carried out on the subject of innovation as a strategy for the development of new business models, and that allow companies to remain competitive in the market, thus, a bibliographic search was made in specialized databases such as Scopus, Scielo, Google Scholar, among others, which allowed to recognize the different variables of innovation, competitiveness and other business factors of business models. Similarly, data consolidated in the doctoral dissertation, "Sustainable Business Management: A proposal for a business model for MSMEs in the city of Manizales, Colombia, under the authorship and direction of the authors of this document.

Results

For the conformation of a business model, it is considered necessary to take into account what Osterwalder and Pigneur (2010) propose in relation to the mission, vision, values and principles, as pillars of the strategic work of the organization and that seek to generate economic and social value to the products and/or services provided, highlighting the importance of its stakeholders, and that lead to the strategy being flexible
in relation to the organizational culture and structure of the firm, as well as proposed by Bock et al. (2012), who considers innovation as a factor that allows reconfiguring the strategic work of companies, based on the environment to be reached and the internal factors that must be intervened to achieve the proposed results.

According to the approaches proposed by Ramírez et al. (2019), strategy becomes the focus that the business model should have, as established by Maucuer and Renaud (2019), by placing the strategy in terms of organizational development, the strategy cannot be proposed, accepted and validated behind the back of the environment in which the company is located, it must respond to the needs of its stakeholders, as well as to the dynamics of the market.

For Canizales (2020), innovation is the state that an organization fulfills, between its permanence or disappearance in its business environment, it implies being alert to the constant changes regarding the task of competitiveness, and it is from this perspective that the human factor becomes a fundamental element of innovation, each time, through the implementation of training processes in business management, value is generated in the processes and procedures that are carried out in organizations, which allows their survival, as well as the adoption of new innovative processes and procedures, allowing them to meet market demands in a timely manner, especially if we are talking about a globalized market.

Regarding the concept of the Business Model, Toniut (2020) recognizes that Drucker (1954) and Levitt (1960) have already been considering it for years, when they considered that every organization should ask itself the question “What is our business? (Drucker, 1954), reflected under this question that businessmen should not look inside the business but outside, know the perception of the customer and other external actors, which allows them to be attentive to the dynamics of the markets, among others; Levitt (1960), for his part, considers that the needs of customers should be recognized, in order to meet them in a timely manner. These two scenarios lead to establishing the importance of the customer and other external stakeholders in the organization's innovative work, which must be aligned with the generation of value and competitiveness.

It also refers to the fact that innovation should be understood as a constant in the processes and procedures of the organizations, since these are due to the incorporation of technology, which is a strategy for the generation of value in the processes and procedures that support the business model, but without failing to recognize the value of people in this incorporation, in the same way it is taken into account what innovation represents in organizational management, each time that its dynamics leads to rethink and rethink the business model, without losing its essence, but incorporating new variables conducive to endure over time.

Toniut (2020) considers that there is no single definition of business model that can be applied to all companies, not even in theory, since the characteristics of each of them must be recognized and the pertinent adoptions made, this being a fundamental factor in innovation, for which reason he describes the various concepts presented by authors such as those shown in Table 1.
Table 1
Authors proposing constituent elements of business models

<table>
<thead>
<tr>
<th>Author's name</th>
<th>Business Model Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smith &amp; Linder (2005)</td>
<td>Strategic choices, value creation, value networks and value capture.</td>
</tr>
<tr>
<td>Johnson et al. (2008)</td>
<td>Value proposition, resources and key processes.</td>
</tr>
<tr>
<td>Zott &amp; Amit (2009)</td>
<td>The content, the structure and the way it is managed.</td>
</tr>
<tr>
<td>Demil &amp; Lecocq (2009)</td>
<td>Resources and competencies, internal and external organization and value proposition.</td>
</tr>
</tbody>
</table>

Note. Adapted from Toniut (2020).

According to the contributions made by the aforementioned authors, it can be established that some of them coincide in the *sine quanon* characteristics of business models (Table 2).

Table 2
Sine quanon characteristics of business models

<table>
<thead>
<tr>
<th>Feature</th>
<th>Authors</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Profile</td>
<td>Smith &amp; Linder (2005)</td>
<td>Considered as the first step to reach the final consumers with the product or service, meeting their needs in a timely manner.</td>
</tr>
<tr>
<td></td>
<td>Johnson et al. (2008)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Demil &amp; Lecocq (2009)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Osterwalder &amp; Pigneux (2010)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>teece (2012)</td>
<td></td>
</tr>
<tr>
<td>Resources</td>
<td>Smith &amp; Linder (2005)</td>
<td>They are the essential factor once the product or service to be offered is determined, the physical, technical and technological resources are articulated, together with knowledge management for the generation of value.</td>
</tr>
<tr>
<td></td>
<td>Johnson et al. (2008)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Demil &amp; Lecocq (2009)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Osterwalder &amp; Pigneux (2010)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Casadesus &amp; Ricart (2011)</td>
<td></td>
</tr>
<tr>
<td>Activities, Actions or</td>
<td>Smith &amp; Linder (2005)</td>
<td>The logical and articulated sequences of resources and people are considered for the achievement of the objectives proposed for the products or services to be offered.</td>
</tr>
<tr>
<td>Processes</td>
<td>Johnson et al. (2008)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Zott &amp; Amit (2009)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Demil &amp; Lecocq (2009)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Osterwalder &amp; Pigneux (2010)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Casadesus &amp; Ricart (2011)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>teece (2012);</td>
<td></td>
</tr>
<tr>
<td>Cost systems and financial</td>
<td>Smith &amp; Linder (2005)</td>
<td>Every business model must be accompanied by a financial plan that establishes its costs and profitability in the small, medium or long term.</td>
</tr>
<tr>
<td>structure</td>
<td>Johnson et al. (2008)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Osterwalder &amp; Pigneux (2010)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>teece (2012)</td>
<td></td>
</tr>
<tr>
<td>Value Proposition</td>
<td>Smith &amp; Linder (2005)</td>
<td>It is considered the factor that generates differentiation with other products and services offered by the competition, always seeking to satisfy the consumer’s needs.</td>
</tr>
<tr>
<td></td>
<td>Johnson et al. (2008)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Demil &amp; Lecocq (2009)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Osterwalder &amp; Pigneux (2010)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>teece (2012)</td>
<td></td>
</tr>
</tbody>
</table>

Note: Adapted from Toniut (2020).
La innovación en los modelos de negocio, una estrategia para la competitividad de las MiPymes

One of the factors to be taken into account in the work of companies is related to corporate social responsibility, which is why Coronel et al. (2019), propose that productivity conditions should be marked by the contribution made to society through the generation of value. Thus, Escudero (2014) considers that business strengthening should be based on meeting customer needs, cost management and reevaluation of the company, these being scenarios that are typical of innovation.

Other authors who consider the importance of relations with the business environment or with stakeholders are Barragán et al. (2017), who state that these relationships should be focused on meeting their needs, based on the environmental, economic and social policies that every organization should have, as proposed by Schwalb and García (2013), who also consider that information and communication systems, they also consider that information and communication systems must be useful to make known the processes and procedures of each of the production links and their value proposition in each of the processes defined from the time the materials are received until their respective final disposal, without generating any type of contamination and thus being a source of value generation.

From the point of view of competitiveness, we take up what Carrasco et al. (2021), who conceive it as the capacity of companies, regardless of their size, to produce goods and services, which allows them to meet market demands in a timely manner, always strengthening their processes so that they are of high quality, without affecting costs. They also consider that productivity reflects the importance of organizational competitiveness, based on the factors of production that have always been recognized: land, capital and labor, and that knowledge joins them to strengthen their competitive business activities.

Thus, the value proposition, cost structure, market segment, productivity, marketing, financing, among others, allow MSMEs to develop their processes and procedures in an innovative way, as well as accompanying the decision making process that should not only be noted in the physical aspect of the company, but also in intangible processes such as communication, organizational learning, the relationship with stakeholders and other concepts that contribute to the positioning and sustainability of companies and that should be developed in a systemic way, i.e., that all employees are involved in it.

Another element that should be considered in the competitive and productive work of MSMEs is the implementation of administrative and organizational processes as proposed by Carvallo et al. (2021), who consider that the implementation of administrative and organizational processes favors their business dynamics, since it allows them to have a better knowledge of their internal and external factors and to adapt to the changes demanded by the business environment to which they belong.

Although planning and decision making are interrelated, they are considered fundamental to mark the development of the company and to reach levels of competitiveness. Likewise, it is considered that the interaction and interrelation between the areas of marketing, production, finance and personnel allow innovation and development processes to be consolidated in a systemic way, which leads to more effective and efficient productivity.

Table 3 presents a conceptual review of sustainability presented by some authors who have considered it an essential factor in the business models of today’s companies and who contribute to the competitiveness and productivity of companies.
Table 3
Table of authors and previous research contributions

<table>
<thead>
<tr>
<th>Authors</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bernal (2008)</td>
<td>In his study, he concluded that this generation’s connection to the auto parts industry manufacturers allows terminal companies to spread assembly costs and concentrate efforts and resources on providing professional services to customers.</td>
</tr>
<tr>
<td>Cortes and Valencia (2015)</td>
<td>They believe that the metal-mechanic industry is one of the most important industrial sectors in Colombia, made up of small and medium-sized companies because its market share is high.</td>
</tr>
<tr>
<td>Grisales and Londoño, (2015)</td>
<td>They conclude that: for the metal-mechanic industry, technology and its application contribute greatly to the creation of organizational competitiveness and competitive advantage by positioning the company and allowing its various processes to benefit in time and cost, which have an impact on the final product.</td>
</tr>
<tr>
<td>Ramirez and Vela (2016)</td>
<td>Confirm the diagnosis of the company includes determining the existing risk profile of the company questions and provide specific references in the integrated QHSE management system.</td>
</tr>
<tr>
<td>Martinez and Rodriguez (2017)</td>
<td>It states that: thanks to the high multiplier effect and quality employment opportunities, it is considered one of the most important sectors of the manufacturing industry and is an important link in the productive structure of several sectors of the national economy.</td>
</tr>
<tr>
<td>Center for Regional Economics [CERE] (2017)</td>
<td>They state that: the metal-mechanic sector is one of the most important sectors of the manufacturing industry and the main economic variables considered are presented in this work.</td>
</tr>
<tr>
<td>Ahmad et al. (2018)</td>
<td>They conclude that: most P-SPD and SPD tools are based on a life cycle perspective.</td>
</tr>
<tr>
<td>Antequera (2012)</td>
<td>It formulated a methodological proposal for the analysis of regional sustainability using the systemic vision for its conceptualization, applying the sustainability paradigm for its analysis, the methodology of indicators, and the innovative aspect of the process was that it applied a comparative analysis between two regions.</td>
</tr>
<tr>
<td>Ruiz (2018)</td>
<td>He concluded that corporate social responsibility policy is the short-term challenge for most companies is to integrate this policy into the company’s strategy, business and operating model. The definitions and criteria for classifying SMEs in Latin America have been the subject of analytical and methodological discussions.</td>
</tr>
<tr>
<td>Trujillo (2018)</td>
<td>With his study, he describes the interrelationships between inventory and maintenance management processes, spare parts allocation, troubleshooting, efforts to reduce downtime costs and keep inventory as low as possible.</td>
</tr>
<tr>
<td>Andrade and Salinas (2018)</td>
<td>To achieve sufficient process control and to gain the competitive advantage that leads to success in an organization, it is necessary to fully understand and define the main processes under study.</td>
</tr>
<tr>
<td>ECLAC (2019)</td>
<td>It states that in the commerce sector, microenterprises dominate both in total number (96.9%) and number of employees (60.5%), there are microenterprises in other sectors of economic activity, but fewer than in other sectors (62%).</td>
</tr>
<tr>
<td>Alzate et al. (2019)</td>
<td>They propose the implementation model of the integrated control system, which is built in two stages, this model refers to the processes and activities that must be considered to comply with regulatory requirements and ensure the effectiveness and efficiency of the system.</td>
</tr>
<tr>
<td>Jimenez (2019)</td>
<td>They highlight innovation and marketing management processes (IDB Competitiveness Map) and analyze successful models developed by some companies for others in the same or similar industries to adapt to manage the transfer of knowledge and technology between companies and industries.</td>
</tr>
<tr>
<td>Authors</td>
<td>Contribution</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Valladares and Eduardo (2019)</td>
<td>They emphasize that SEDEMI’s business model is focused on satisfying customer needs, so innovation objectives must take this approach into account.</td>
</tr>
<tr>
<td>Cortes et al. (2020)</td>
<td>Identify indicators that allow the analysis and evaluation of the performance and “competitiveness of the industry.”</td>
</tr>
<tr>
<td>Ampuero and Pizarro (2020)</td>
<td>They express that corporate sustainability from a public relations point of view.</td>
</tr>
<tr>
<td>González et al. (2020)</td>
<td>They see the organization as a living organism and following the constant processes of change proposed by systems theory.</td>
</tr>
<tr>
<td>Dambiski et al. (2021)</td>
<td>He identified theoretical relationships between all the variables, the strongest being between networks-open innovation, information-knowledge</td>
</tr>
<tr>
<td>Malnati (2021)</td>
<td>and product and process innovations.</td>
</tr>
<tr>
<td>Villasana (2021)</td>
<td>Leading academic research estimates that companies with a strong commitment to sustainability outperform their peers in the stock market by 11%.</td>
</tr>
<tr>
<td>Pinochet (2021)</td>
<td>It argues that knowledge management efforts should focus on knowledge creation, a process that is largely responsible for achieving optimal results</td>
</tr>
<tr>
<td>International Labor Organization [ILO] (2022)</td>
<td>The contribution of this study is the guidelines for the production of castings and other base metal products and new investments in the form of foreign direct investment in most developing countries create new jobs and development opportunities.</td>
</tr>
<tr>
<td>World Economic Forum (2022)</td>
<td>He believes that “The future of people and the planet will depend on capital investment over the next 10 to 20 years that drives clean, green, functional and healthier economic growth than ever before.”</td>
</tr>
<tr>
<td>Steiner (2022)</td>
<td>The role of the private sector in the new paths of sustainable economic development of small and medium-sized enterprises. Promote dialogue between the public and private sectors and civil society on specific development issues or industry sectors.</td>
</tr>
<tr>
<td>López and Peñalosa (2023)</td>
<td>They claim that responsible consumers are concerned about a range of factors, including product sourcing, manufacturing, production, repressive regimes, human rights, labor relations, state weapons development, animal testing, and political donations</td>
</tr>
<tr>
<td>International Metalworking (2023)</td>
<td>He highlights that there is a great debate on how to successfully implement the transition to clean energy; which consists of making a plan for alternative renewable energies, and making the most of waste.</td>
</tr>
</tbody>
</table>

*Note.* Describes the authors and their contributions as a summary. Corresponds to a summary of the state of the art of this research. Own elaboration (2023).

**Discussion and Conclusions**

For competitiveness, innovation processes are considered necessary, from the perspective of business models, every time they are articulated and interact with the various business and organizational systems that integrate it, thus market dynamics, financial and technological conditions must be *sine quanon* conditions, Jiménez (2021), considers taking into account management elements such as planning, decision making,
organization, team work, among others, that articulated to the business strategy defined by the management seeks to achieve levels of competitiveness and productivity.

Although innovation has been consolidating as an essential element in the business activity that allows organizations to remain in the environment and adapt to changes, it must be related to the generation of knowledge that takes place within the company thanks to the contributions made by employees, either from their expertise or their time in educational centers, likewise, it must be taken into account that the competitiveness of a company is centered on the competitiveness of its employees.

MSMEs have become established as the companies that drive the economy at any level, whether local, regional or national, and this is the scenario for generating growth strategies based on innovation and competitiveness, either through productive linkages with companies in the same sector or complementary sectors.

Similarly, it is considered a challenge for MSMEs, its administrative and organizational structure from the perspective of generating value in each of its processes and procedures, which leads to its permanence in the market to be increasingly competitive and productive is how the business model must recognize first of all the customer, this is who acquires the products or services offered to meet their needs, likewise resources must be considered and recognize that human capital is the one who gives value to the resources of the productive work of the organization and that together lead to the generation of value.

Innovation processes can be established as a response to market demands, either from the generation of new products or services or from the improvement of processes and procedures in favor of the improvement of existing ones, but taking as a basis what Sánchez et al. propose. (2018), by considering human talent as the primary factor in innovation processes, this is how organizations should strive to have continuous training and updating processes in new technological trends, which facilitates their adaptability, in addition to bearing in mind that technological developments, product of knowledge transfer, lead to more innovative products being offered and in line with market demands.

The contributions made by Ramírez et al. (2021), are framed in the importance for companies to define strategies leading to the generation of added value in each of the actions, whether production or service, that are carried out in the organization and that are denoted in the external context with which it interacts, although it is recognized as a system, where the processes of improvement or innovation must impact on all areas, which leads to the fulfillment of competitiveness indicators.

For MSMEs in the metal-mechanic sector, these scenarios become visible to the extent that they are integrated with large companies for the development of some parts of their production processes, so it is considered that the generation of production chains or clusters should be aligned with the growth and development strategy of the companies involved, and also allows the linking of collaborators who, without a high degree of academic training, do have great technical experience, which is essential when developing new products or services.

It can be well established that innovation in business models is based on four variables, which contribute in an articulated manner so that the model is not only visible, but can be adapted to the demands of the business environment in which it is located, and each of the variables is described below.
The factors that are part of each of the four variables of the model are listed below.

- **Variable one**: learning and knowledge management for innovation in administrative management.
  - Collective policies,
  - The work-family relationship and
  - The employees’ career plans.
- **Variable two**: transfer of knowledge and technology (TCT) for strengthening processes and eco-efficiency
  - The use of heat from the plant,
  - Guidelines for air quality improvement,
  - Air conditioning management,
  - Reuse of products and components
  - Optimization of production capacity.
- **Variable three**: marketing and communication management for customer loyalty
  - Brand strategy,
  - Guidelines for competitive analysis,
  - Actions for green marketing,
  - Suggestions for the communication strategy.
- **Variable four**: financial planning for value generation
  - Actions to improve the company’s profit margin,
  - Guide for establishing the investment budget,
  - Indicators for profitability, liquidity and debt capacity analysis.

Likewise, the following are the elements of business management and in which each of them are located and which complement each other in a systemic way, always seeking to be competitive.
Figure 2
Elements of business management for innovation

Note. Describes the elements of an organizational management model for innovation in SMEs, taken from Ríos et al. (2022).

This means that business models should not be static but dynamic, that their processes and procedures should be read from a systemic perspective, leading to the achievement of the competitiveness and productivity demanded by the business sector.

Similarly, it can be considered a contribution to the academic work from the teaching of entrepreneurship, where the concept of innovation becomes a scenario that can only be learned in practice, when each of the elements of business management are strategically combined and aligned with the task of sustainability, always with the sole purpose of having an innovative and competitive business model.

References


La innovación en los modelos de negocio, una estrategia para la competitividad de las MiPymes

https://repositorioacademico.upc.edu.pe/bitstream/handle/10757/624065/SALINAS_WR.pdf?sequence=4


https://digitak.areandina.edu.co/bitstream/handle/areandina/3441/Planeaci%20estrat%e9%20de%20las%e2%80%9a%20pymes%20sector%20metalme%e2%80%9a%20nico.pdf?sequence=1&isAllowed=y

https://doi.org/10.1177/21582440211052


https://repositorio.utp.edu.co/items/ab2a0dc0-aee6-4fe0-8bd3-242ca76f6eee

Foro Económico Mundial. (2022, 15 de julio). *4 pasos para que el crecimiento económico sea sostenible, resiliente e inclusivo*. 

https://www.revistaespacios.com/a20v41n29/a20v41n29p13.pdf


https://ridum.umanizales.edu.co/xmlui/handle/20.500.12746/5545

https://ridum.umanizales.edu.co/xmlui/handle/20.500.12746/5545


https://doi.org/10.24054/face.v21i2.1104

https://www.pf-mex.com/articulos/5-innovaciones-prometedoras-para-los-acabados-de-superficies-en-metales

https://repositorioacademico.upc.edu.pe/bitstream/handle/10757/622674/IOS_EPH_RG.pdf?sequence=5&isAllowed=y


https://www.metalmeccanica.com/es/noticias/como-lograr-la-transicion-energetica-en-la-industria-manufacturera-de-latam

La innovación en los modelos de negocio, una estrategia para la competitividad de las MiPymes

Innovación. (3a. ed.). París: Organización para la Cooperación y Desarrollo Económico.


https://repository.javeriana.edu.co/bitstream/handle/10554/41022/TrujilloAlvaredoLeonardo2018..pdf?sequence=2&isAllowed=y

https://bibdigital.epn.edu.ec/handle/15000/20580