CONTRIBUTION TO ECONOMIC GROWTH, COMPETITIVENESS AND INNOVATION OF MICRO AND SMALL ENTERPRISES IN GUAYAQUIL IN THE CONTEXT OF NEW INFORMATION AND COMMUNICATION TECHNOLOGIES (NTICs)

[1]MICHEL MOGOLLÓN-CLAUDETT , [2]FRANKLIN GONZÁLEZ-SORIANO, [3]GALVARINO CASANUEVA-YÁÑEZ, [4]INGRID SARMIENTO-TORRES, [5]HENRY CARRASCAL-CHIQUITO, [6]JANETH MALDONADO-CÓRDOVA, [7]GUIDO POVEDA-BURGOS
[1]Docente Universidad de Guayaquil, michel.mogolloncl@ug.edu.ec
https://orcid.org/0000-0001-5156-3303
[2]Docente de la Universidad de Guayaquil, franklin.gonzalezs@ug.edu.ec
https://orcid.org/0000-0003-3563-724X
[3]Facultad de Ingeniería y Negocios Universidad de Las Américas, Sede Providencia, Manuel Montt948, Santiago Chile, galvarino.casanueva@edu.udla.cl
https://orcid.org/0000-0002-6154-1551
[4]Docente de la Universidad de Guayaquil, ingrid.sarmientot@ug.edu.ec
https://orcid.org/0000-0003-1081-2435
[5]Docente Universidad de Guayaquil, henry.carrascalc@ug.edu.ec
https://orcid.org/0000-0002-4148-3147
[6]Maestrante de la Universidad Estatal del Milagro, vmaldonadoc@unemi.edu.ec
[7]Docente Universidad de Guayaquil, guido.povedabu@ug.edu.ec
https://orcid.org/0000-0002-2158-6923

Summary

A documentary review was carried out on the production and publication of research papers referring to the study of the variables Economic Growth, Competitiveness and Innovation of theMicro and Small Enterprises of Guayaquil in e l context d e l as New Technologies d e l a Information and Communication . The purpose of the bibliometric analysis proposed in this document was to know the main characteristics of the volume of publications registered in the Scopus database during the period 2018-2022, achieving the identification of 49 publications. The information provided by this platform was organized through graphs and figures categorizing the information by Year of Publication, Country of Origin, Area of Knowledge and Type of Publication. Once these characteristics have been described, the position of different authors towards the proposed theme is referenced through a qualitative analysis. Among the main findings made through this research, it is found that Ecuador, with 49 publications, was the country with the highest scientific production registered in the name of authors affiliated with institutions in that country. The Area of Knowledge that made the greatest contribution to the construction of bibliographic material referring to the study of the Contribution toEconomic Growth, Competitiveness and Innovation of Microand Small Enterprises of Guayaquil in e l context d e l as New Technologies d e l a Information and Communication was Computer Science with 19 published papers, and the Publication Type that was most used during the period indicated above was the Journal Article with 31 documents, each, of the total scientific production.

Keywords: Economic Growth, Competitiveness, Innovation, Micro and Small Enterprises, New Information and Communication Technologies NTICs, Guayaquil.

1. INTRODUCTION

Today, the use of New Information and Communication Technologies by the community in general has gained importance due to the evolution that multiple aspects of our daily lives have faced, including the business sector. In general, communication represents a fundamental aspect for the

achievement of economic, strategic and positioning objectives thanks to the strengthening of the relationship of a company with its suppliers, customers and partners, all fundamental members for its development and adaptation in the globalized world. Although they have multiple definitions, Information and Communication Technologies are according to Cabero: those that revolve around three basic media: computing, microelectronics and telecommunications; But they rotate, not only in isolation, but what is more significant in an interactive and interconnected way, which allows to achieve new communicative realities. (Cabero, 1998)

At first they were limited to the promulgation of information, however, over time the multiple benefits that the implementation of the same brings in the various areas of knowledge have been discovered. Despite their advantages, it is worth clarifying that implementing them does not mean that the expected results will be obtained since in most cases their success depends on external factors that allow the maximization of the objectives of a company taking into account its main economic activity, characteristics of its products and personnel, among other features.

In the Ecuadorian case, specifically Guayaquil, which has a large number of Micro and small enterprises that have emerged in an effort to end the lack of job opportunities and increase the high figures of informality through the achievement of stable levels of competitiveness, economic and organizational stability, it is believed that ICTs have been a fundamental tool to achieve their positioning. Taking into account the above and in order to meet our general objective, this research article seeks to describe the main characteristics of the set of publications attached to the Scopus database and that are directly related to the variables Contribution toEconomic Growth, Competitiveness and Innovation of Micro and Small Enterprises of Guayaquil in e l contexto d e l as New Technologies de l a Information and Communication as well as the description of the position of certain authors affiliated with various institutions during the period between 2018 and 2022.

2. GENERAL OBJECTIVE

Analyze from a bibliometric and bibliographic perspective, the elaboration of works on the variables Contribution to l Economic Growth, Competitiveness and Innovation of theMicro and Small Enterprises of Guayaquil in e l context d e l as New Technologies d e l a Information and Communication during the period 2018-2022.

3. METHODOLOGY

This article is carried out through a mixed orientation research that combines the quantitative and qualitative method.

On the one hand, a quantitative analysis of the information selected in Scopus is carried out under a bibliometric approach of the scientific production corresponding to the study of the Contribution toEconomic Growth, Competitiveness and Innovation of theMicro and Small Enterprises of Guayaquil in e l context de las New Technologies de la Information and Communication.

On the other hand, examples of some research works published in the area of study indicated above are analyzed from a qualitative perspective, starting from a bibliographic approach that allows describing the position of different authors against the proposed topic.

It is important to note that the entire search was performed through Scopus, managing to establish the parameters referenced in *Figure 1*.

3.1 METHODOLOGICAL DESIGN

Figure 1. Methodological design
Source: Authors.

3.1.1 PHASE 1: DATA COLLECTION

Data collection was executed from the Search tool on the Scopus website, where 49 publications were obtained from the choice of the following filters:

micro AND small AND businesses AND new AND information AND communication AND technologies AND ecuador AND (LIMIT-TO (PUBYEAR , 2022) OR LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2019) OR LIMIT-TO (PUBYEAR , 2018)) AND (LIMIT-TO (AFFILCOUNTRY , "Ecuador"))

- Published documents whose study variables are related to the study ofEconomic Growth, Competitiveness and Innovation of Micro and Small Enterprises of Guayaquil in e l context d e l as New Technologies de l a Information and Communication.
- Limited to the years 2018-2022.
- Limited to Ecuador.
- No limit of area of knowledge.
- Regardless of type of publication.

3.1.2 PHASE 2: CONSTRUCTION OF ANALYSIS MATERIAL

The information collected in Scopus during the previous phase is organized and subsequently classified by graphs, figures and tables as follows:

- Type of publication.
- Country of origin of the publication.
- Year of publication.
- Area of knowledge.

3.1.3 PHASE 3: DRAFTING OF CONCLUSIONS AND OUTCOME DOCUMENT

In this phase, we proceed with the analysis of the results previously yielded resulting in the determination of conclusions and, consequently, the obtaining of the final document.

4. RESULTS

4.1 CO-OCCURRENCE OF WORDS

Figure 2 shows the co-occurrence of keywords found in the publications identified in the Scopus database.

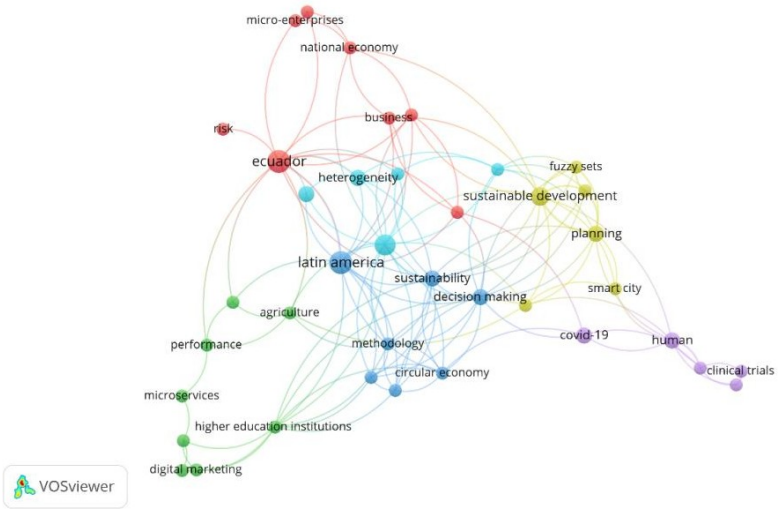

Figure 2. *Co-occurrence of words*
Source: Own elaboration (2023); based on data exported from Scopus.

Thedata in Figure 2, exported from Scopus, shows us our variables and their relationship with other terms which we will explain below.

Ecuador, like other Latin American countries as developing countries, is in search of alternatives or tools that allow the improvement of their business strategies in order to achieve the positioning of each of the companies that arise daily in the search for new job opportunities. There is no doubt that the national economy depends on each company, large or small, however, it is not surprising that it is precisely the smallest that are the most risky in terms of the implementation of new technologies that guarantee the correct positioning of their products in the competitive market.

4.2 Distribution of scientific production by yearof publication

Figure 3 shows how scientific production is distributed according to the year of publication.

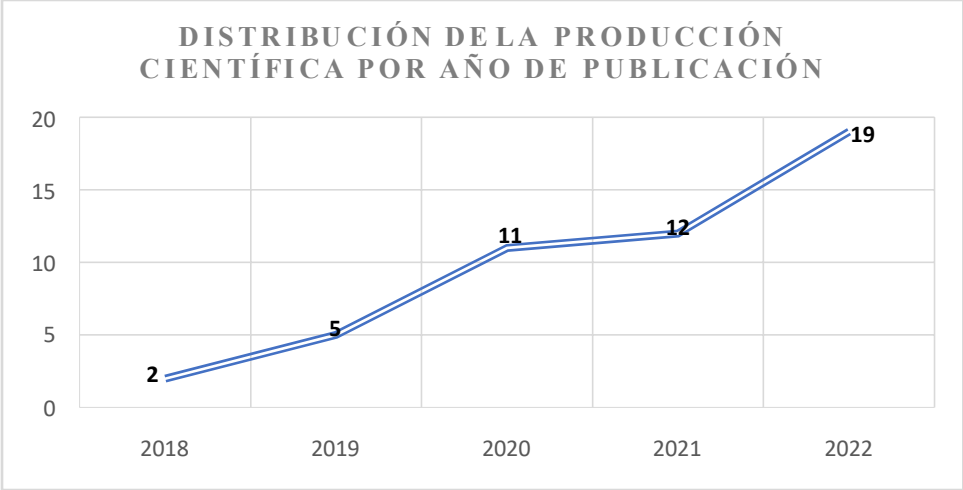

Figure 3. *Distribution of scientific production by year of publication.*
Source: Own elaboration (2023); based on data exported from Scopus

In figure 3 we find the scientific production concerning the variables Contribution to Economic Growth, Competitiveness and Innovation of Micro and Small Enterprises of Guayaquil in the context of New Information and Communication Technologies during the period between 2018 and 2022 which resulted in thepublication of 35 documents, in the Scopus database, which contain the keywords. Likewise, it is evident that some changes were experienced throughout the period. We started with the year 2018 with 4 documents, a number that increases during the following years reaching the highest number of publications in 2022.

From the year 2022, the article "Does novelty and the type of innovation affect the performance of companies? A case study for Ecuador" in which(Almachi, Álvarez, Pillajo, & Rosero, 2022) it was sought "to measure the causal effect of innovation on the productivity of companies, distinguishing the type of innovation, that is, in products, processes, organization and marketing" (Almachi, Álvarez, Pillajo, & Rosero, 2022) from the Survey of Science, Technology and Innovation Activities which showed that when innovative companies stop doing so, they generate losses than those that do not usually innovate. Although in general, the difference between productivity gains and losses depends on the type of innovation(Almachi, Álvarez, Pillajo, & Rosero, 2022)

4.3 Distribution of scientific production by country of origin.

Figure 4 shows how scientific production is distributed according to the nationality of the authors.

Figure 4. *Distribution of scientific production by country of origin.*
Source: Own elaboration (2023); based on data provided by Scopus.

In the study of the Contribution toEconomic Growth, Competitiveness and Innovation of Micro and Small Enterprises of Guayaquil in e l context d e l as New Technologies de l a Information and Communication, Ecuador lid was the list of published documents with a total of 49 records in the Scopus database during the period of the years 2018-2022, followed by Spain and Peru with 20 and 5 documents respectively.

The article "Analysis of Survey Data for the Identification of the Factors Influencing the Migration of Small Businesses to Electronic Commerce" (Criollo-C, Gaibor-Naranjo, Palacios-Pacheco, & Villegas-Ch, 2022) states that after the pandemic resulting from COVID 19, medium and small

companies saw the need to change and take the step towards electronic commerce, because they sought to market their products and interact with their customers through existing information and communication technologies. Therefore, the authors intended to identify the considerations of consumers, as well as review articles or works related to E-commerce in order to analyze everything concerning this business tool and "improve decision making in the migration to a digital market"(Criollo-C, Gaibor-Naranjo, Palacios-Pacheco, & Villegas-Ch, 2022)

At this point, it is important to note that the preparation of scientific publications in many cases is carried out from collaborations that may involve private and/or public institutions from one or more countries. Therefore, the same publication can be linked to one or more authors with different nationalities and thus to more than one country simultaneously, being part of the total number of articles or publications of each of them in the final sum. Next, in *Figure 5*, you will see in greater detail the flow of collaborative work carried out by several countries.

Figure 5. *Co-citations between countries.*
Source: Own elaboration (2023); based on data provided by Scopus.

Figure 5 shows the grouping of research according to the collaboration between authors belonging to various international institutions. There is evidence of outstanding participation among authors affiliated with institutions in Spain, Spain and Peru.

4.4 Distribution of scientific production by area of knowledge

Figure 6 shows the distribution of the elaboration of scientific publications from the area of knowledge through which the different research methodologies are implemented.

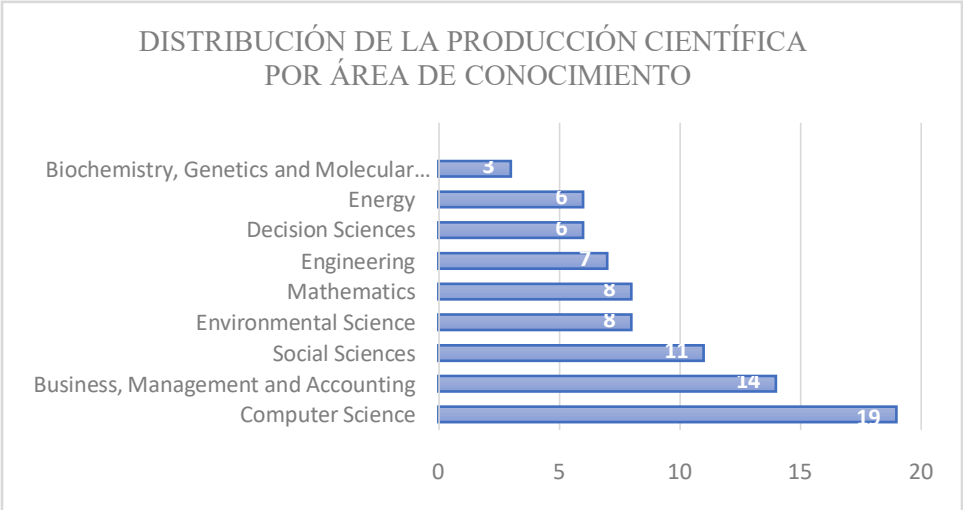

Figure 6. *Distribution of scientific production by area of knowledge.*
Source: Own elaboration (2023); based on data provided by Scopus.

Due to the nature of our variables and the repercussions they can generate in an entire community, it is not surprising that most of the publications found in the Scopus database, on these are made fromcomputer science occupying the main position in the publication of documents. Other areas such asbusiness, management and accounting as well as social scienceshave contributed to the study of these variables, publishing 14 and 11 documents respectively.

As we can see in *Figure 6*, the variables object of this study are relevant in various areas of knowledge, since they can be analyzed from the different approaches that emphasize the influence of New Information and Communication Technologies NTICs in current life.

4.5 Type of publication

In the following graph, you will observe the distribution of the bibliographic finding according to the type of publication made by each of the authors found in Scopus.

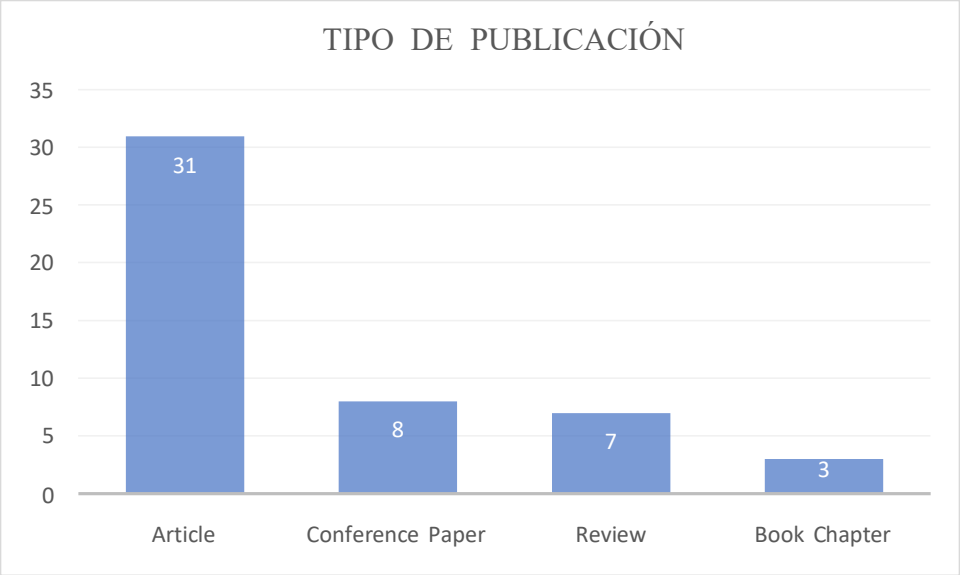

Figure 7. *Type of publication.*
Source: Own elaboration (2023); based on data provided by Scopus.

Figure 7 clearly shows that the predominant type of publication in the study of the Contribution toEconomic Growth, Competitiveness and Innovation of Micro and Small Enterprises of Guayaquil in e l context d e l as New Technologies de la Information and Communicationwere the journal article with a total of 31 papers each. Secondly, the conference proceedings are located with 8 papers followed by thereviews with 7 publications.

Grace Guevara in the document entitled "Determinants of the productivity of micro-manufacturing enterprises in Ecuador. Does it matter the industry and the canton where they operate?" (Guevara-Rosero, 2021) "It aimed to identify the determinants of productivity of micro-manufacturing enterprises, with emphasis on regional and industrial factors. A multilevel cross-classification model is employed using the 2010 Economic Census of Ecuador." (Guevara-Rosero, 2021) In the end, he was able to determine that the differences in the productivity of companies depend mainly on the type of activity they carry out and the industrial context. As+i himself was able to establish that "information and communication technologies, credit and training are important drivers of productivity. Despite this, very few microenterprises use the Internet, have access to credit or conduct training in Ecuador."(Guevara-Rosero, 2021)

5. Conclusions

From the bibliometric analysis carried out in the present research work, it was established that Ecuador fue the country with the largest number of records published for the variables Contribution to l Economic Growth, Competitiveness and Innovation of theMicro and Small Enterprises of Guayaquil in el contexto d e l as New Technologies de l a Information and Communication with a total of 49 publications, in Scopus database during the period 2018-2022 and that the area of knowledge with the greatest contribution was computer science with 19 texts.

On the one hand, we find that the implementation of ICTs in micro and small enterprises in the city of Guayaquil is a matter of national interest and is nothing more than the result of what Luis Montaleza mentioned in his article:

The investment made, both by the public and private sectors, make it meritorious to highlight the importance of the ICT market so that it is fully exploited and energized in order to increase its effective and efficient contribution to the productive sector, taking advantage of the rapid evolution that it presents, and taking references from previous ventures made around this market both nationally and internationally. (Montaleza Ortiz, 2019)

On the other hand, it has been evidenced that companies that have decided to adapt to the "use of ICTs in medium and large companies in Ecuador, show that those firms that implement ICTs for the management of their processes have higher levels of performance than those that do not apply it", (Altamirano-Cumbajin, Cabrera-Barbecho, Soria-Cubilo, & Tipán -Barros, 2022)that is, regardless of the economic activity or location of the company with only implementing the ICTs positive results have been obtained, which is why we can assure that the use of this type of technology contributes positively to the Economic Growth and Competitiveness of companies. However, this does not mean that this alone will be enough to achieve your objectives, in many cases it will require joint work with your staff to improve other aspects that directly influence the growth of any company. For this reason and in order to continue generating awareness of the importance of guaranteeing access to this type of information in a transparent way by anyone, we hope to promote with this article the participation of scientific communities in the study of these variables from any scientific profile and area of knowledge always seeking to provide more alternatives that contribute to the research of topics of general interest.

REFERENCES

[1] Akhter, S., Kumar, T., Ortiz, G. G., Saddhono, K., & Yu, G. (2022). Innovative application of new media in visual communication design and resistance to innovation. *Frontiers in Psychology*.

[2] Albors-Garrigos, J., Montalván-Burbano, N., Parrales-Guerrero, K., Sabando-Vera, D., & Yonfa-Medranda, M. (2022). Worldwide Research on Open Innovation in SMEs. *Journal of Open Innovation: Technology, Market, and Complexity*.

[3] Alejo Machado, Ó., Jácome Tapia, J., Táfur Avilés, G., Vélez Barros, C., & Zumba Córdova, M. (2018). Technological development of the tourism sector in the city of Guayaquil (Ecuador). *Spaces* .

[4] Almachi, O. O., Álvarez, J. F., Pillajo, J. R., & Rosero, G. C. (2022). Does novelty and the type of innovation affect the performance of companies? A case study for Ecuador. *Investigaciones Regionales*, 81-102.

[5] Altamirano-Cumbajin, J., Cabrera-Barbecho, F., Soria-Cubilo, R., & Tipán -Barros, B. (2022). Does the use of Information and Communication Technologies increase the productivity of firms? Empirical evidence in Ecuador in 2019. *UTA-Ecuador* , 37-48.

[6] Benalcázar, M., Carrillo, J., Hidalgo, O., López, J., Mazon-Olivo, B., & Paredes, M. .. (2018). ICT readiness model and adoption of electronic commerce in the trade sector. *Espacios*.

[7] Cabero, J. (1998). Approaches in the organization and management of formal and non-formal educational institutions. . In *Impact of new information and communication technologies in educational organizations* (pp. 197-206). Granada: Grupo Editorial Universitario.

[8] Cajas Cajas, V. E., Carvajal, M. G., Mardani, A., Mishra, A. R., & Saeidi, P. (2022). Evaluate sustainable human resource management in the manufacturing companies using an extended Pythagorean fuzzy SWARA-TOPSIS method. *Journal of Cleaner Production*.

[9] Calderón Pineda, F., Castro Loor, D., Olives, J. C., & Pirela Añez, A. (2021). Multivariant and Geo-Statistical Analysis of the Effects of the COVID 19 Pandemic of the Microenterprise Business Segment in Ecuador (Province of Santa Elena Case). *Communications in Computer and Information Science*, 372-384.

[10] Criollo-C, S., Gaibor-Naranjo, W., Palacios-Pacheco, X., & Villegas-Ch, W. (2022). Analysis of Data from Surveys for the Identification of the Factors That Influence the Migration of Small Companies to eCommerce. *Future Internet*.

[11] Fernandez-Jardon, C., Martinez-Cobas, X., & Martinez-Ortiz, F. (2020). Technology and culture in subsistence small businesses. *Sustainability (Switzerland)*, 1-13.

[12] Flores-Siguenza, P., Guamán, R., Jadan-Avilés, D., Rosero-Mantilla, C., & Siguenza-Guzman, L. (2021). Textile Micro, Small and Medium Enterprises (MSME) Layout Dynamics in the Ecuadorian Context. *Communications in Computer and Information Science*, 265-276.

[13] Franco-Crespo, A., & Ibujés-Villacís, J. (2022). Determinant factors of innovation management in the manufacturing industry of Pichincha, Ecuador. *Journal of Technology Management and Innovation*, 50-70.

[14] Gonzabay Meza, C., & Parrales Vera, C. (2020). RELATIONSHIP BETWEEN THE USE OF NTICS IN THE COMPETITIVENESS OF MICRO AND SMALL COMMERCIAL ENTERPRISES IN GUAYAQUIL. 1-122.

[15] Guevara-Rosero, G. C. (2021). Determinants of manufacturing micro firms' productivity in Ecuador. Do industry and canton where they operate matter? *Regional Science Policy and Practice*, 1215-1248.

[16] Honig, B., Koehne, F., & Woodward, R. (2022). The potentials and perils of prosocial power: Transnational social entrepreneurship dynamics in vulnerable places. *Journal of Business Venturing*.

[17] Montaleza Ortiz, L. D. (2019). The ICT market and its contribution to Ecuadorian economic development, Period 2007-2017. 1-57.

[18] Montalván-Burbano, N., Parrales-Guerrero, K., Rodríguez-Insuasti, H., Suárez-Rodríguez, O., & Yonfá-Medranda, M. (2022). Creative Economy: A Worldwide Research in Business, Management and Accounting. *Sustainability (Switzerland)*.

[19] Ordoñez, M., Pazos, J., Vásquez, T., & Vivas, G. (2021). Review of models to identify ict adoption factors in sme. *RISTI - Revista Iberica de Sistemas e Tecnologias de Informacao*, 496-511.

[20] Villa Sandoval, L. (2020). IMPACT OF INFORMATION TECHNOLOGIES IN MEDIUM-SIZED ENTERPRISES IN GUAYAQUI. 1-77.