ISBN: 978-628-95207-4-3. ISSN: 2414-6390. Digital Object Identifier: 10.18687/LACCEI2023.1.1.726

Logistics and Information Technology: A Systematic Literature Review of Nanostores from 2014 to 2023

Cesar H. Ortega Jimenez, PhD [1], Andrea Amador Matute, MBA[2], and Jennifer Parada Lopez, Eng[3]
[1,2,3] Faculty of Engineering, Universidad Nacional Autónoma de Honduras, cortega@unah.edu.hn, andrea_amador@unah.hn, jennifer.parada@unah,hn

Abstract*– The purpose of this study is to conduct a systematic literature review (SLR) using bibliometric tools to understand both existing knowledge base and trends of research about nanostores in logistics and supply chain management (SCM). Such knowledge and trends will help to identify emerging research topics on the subject. More than 430 publications, selected through a keyword combination search from top-level databases of peer-reviewed academic publishers from period 2014-2023 are analysed for the purposes of this study, which presents an assessment to determine authors, academic publishers, years, and countries, among other key aspects. These allow identifying research and emerging research topics. A content analysis of the relevant publications within specialized literature of nanostores is presented. The findings make unique contributions by using bibliometric analysis to explore the status of research on nanostores, logistics and SCM, identifying existing topics from three dimensions out of six categories of paper content, discussing current shortcomings, challenges, and the potential areas of future research. This paper provides a comprehensive view of the range of topics of importance that have been discussed in the literature of nanostore, logistics and SCM. These research trends can serve as a basis for owners, researchers, and practitioners to improve decision making and develop strategies. In order to identify the literature focused on nanostores produced by researchers in the last nine years, a systematic review was used as a methodological tool. (i.e., important methodological contribution to the field of logistics, SCM and nanostores studies, where there is no previous SLR focused on Nanostores), to understand and reorganize available knowledge from such a dynamic and developing field, with heterogeneous studies, and concepts that often poorly operationalized, thus not providing sufficient assistance to owners, researchers, and practitioners, in their efforts to implement logistics and SCM practices in nanostores

Keywords—Nanostore, Supply Chain, Logistics, Information Technology.

Digital Object Identifier: (only for full papers, inserted by LACCEI).
ISSN, ISBN: (to be inserted by LACCEI).
DO NOT REMOVE

Logistics and Information Technology: A Systematic Literature Review of Nanostores from 2014 to 2023

Cesar H. Ortega Jimenez, PhD [1], Andrea Amador Matute, MBA[2], and Jennifer Parada Lopez, Eng[3]
[1,2,3]Faculty of Engineering, Universidad Nacional Autónoma de Honduras, cortega@unah.edu.hn, andrea_amador@unah.hn, jennifer.parada@unah,hn

Abstract*– The purpose of this study is to conduct a systematic literature review (SLR) using bibliometric tools to understand both existing knowledge base and trends of research about nanostores in logistics and supply chain management (SCM). Such knowledge and trends will help to identify emerging research topics on the subject. More than 430 publications, selected through a keyword combination search from top-level databases of peer-reviewed academic publishers from period 2014-2023 are analysed for the purposes of this study, which presents an assessment to determine authors, academic publishers, years, and countries, among other key aspects. These allow identifying research and emerging research topics. A content analysis of the relevant publications within specialized literature of nanostores is presented. The findings make unique contributions by using bibliometric analysis to explore the status of research on nanostores, logistics and SCM, identifying existing topics from three dimensions out of six categories of paper content, discussing current shortcomings, challenges, and the potential areas of future research. This paper provides a comprehensive view of the range of topics of importance that have been discussed in the literature of nanostore, logistics and SCM. These research trends can serve as a basis for owners, researchers, and practitioners to improve decision making and develop strategies. In order to identify the literature focused on nanostores produced by researchers in the last nine years, a systematic review was used as a methodological tool. (i.e., important methodological contribution to the field of logistics, SCM and nanostores studies, where there is no previous SLR focused on Nanostores), to understand and reorganize available knowledge from such a dynamic and developing field, with heterogeneous studies, and concepts that often poorly operationalized, thus not providing sufficient assistance to owners, researchers, and practitioners, in their efforts to implement logistics and SCM practices in nanostores.

Keywords—Nanostore, Supply Chain, Logistics, Information Technology

I. Introduction

The term "Nanostore" was formally introduced in 2013, describing such stores as traditional channels that are family-run, with limited space between 15 to 40 square meters, generally smaller than 15 meters [1].

Every company must achieve a modern and agile supply chain (SC), because it allows not only fast and automatic processes (accepting, preparing, and distributing orders to customers), but also dynamic systems, high volume of data, greater flexibility, and transparency, as well as the analysis of the ways in which the use of information technology (IT) impacts the performance of the nanostore, with management approaches that allow reinventing itself according to market expectations [2]Thus, the systematic use of nanostores, as very important actors, which supply the base of the socioeconomic pyramid of cities and rural areas, in places such as Latin America and the Caribbean, which, due to their multiplicity, generates a large flow of freight transport, with long unloading times, small delivery sizes, and significant cash handling [3]

Although there has been a growing interest from nanostores in SC, production and logistics in recent years, there is still a large gap in knowledge about the concepts of this topic, in industry and academia. In fact, there has been no systematic review of the literature (SLR) that reflects the state of the art in this crucial field. Although modern retailing has grown in the last two decades in these markets, the number of nanostores is still increasing. It has also been analyzed several opportunities to improve the efficiency of the supply chains that serve them [4] Specifically, the literature does not show general research trends from the point of view of the number of studies on Nanostores in the supply chain, as well as on logistics and related topics, evaluating the context of studies and different methods. This brings us to the first research question (RQ1): What are the trends in SC and Logistics-based nanostores? In addition, there is no study that presents the results of current knowledge with advantages and disadvantages of previous studies. With this, the second research question (RQ2) is formulated: What is the existing knowledge addressed in the study of the subject?

To answer these questions, this research provides a review of the existing literature on nanostores and SC, highlighting advances, current knowledge gaps, and prospects for research. We decided to focus the review on highlighting the developments on theoretical and empirical current issues in the domain of nanostores and SC, as well as exploring questions that have not yet been answered by the literature, but that researchers and professionals are still very interested in knowing. Therefore, in this study we focus on the following objectives: (1) to find publications of existing knowledge on the

Digital Object Identifier: (only for full papers, inserted by LACCEI).
ISSN, ISBN: (to be inserted by LACCEI).
DO NOT REMOVE

subject; (2) to perform content analysis of current publications, finding key research topics and areas; and (3) synthesize the research results, presenting a current outlook and perspectives for future research. For this, the rest of the study has been organized as follows: Section II presents the conceptual framework with a model of nanostores and their role in the supply chain, as well as the propositions of such model. Section III explains the research method used. Section IV provides the data and content analysis, as well as the discussion of results. Section V presents conclusions and the agenda for future research.

II. Conceptual model and propositions

The formal concept of Nanostore was presented in 2013, as very small stores, having less than 15 m², and operated by the owner itself with the objective to support its family [1]. Nanostores, as "small family retailers," are becoming increasingly popular and have received worldwide attention. Experts estimate that there are around 50 million nanostores in developing countries, with a market share of about half of the total retail market in many countries. [3] Nanostores represent 60-70% of the market for consumer-packaged goods in Latin America.

The importance of nanostores lies in the value they bring to the local economy as they are the source of income for thousands of families in Latin America. In Mexico City alone, nanostores account for 84% of the GR sector employment (~440 thousand direct employments), while MCS and CCS account for 12% and 4%, respectively.[5] The nanostore channel is the most preferred channel to purchase groceries for customers that cannot afford to buy in a hypermarket or supermarket. Moreover, nanostores facilitate informal credit to their consumers. As a result, consumers' purchasing loyalty to the channel remains high. Although prices may be higher in a nanostore compared to those found in a supermarket or hypermarket, its consumers may lack means of transportation or cash for purchases.

This is an excellent opportunity for researchers to develop this area of knowledge, as well as for professionals and managers to find out more about this topic and figure out how they can implement Nanostore in their SC more effectively. Although it has not yet been an exact formal definition of Nanostore, its main characteristic is the link between suppliers of products and final consumers, with several advanced strategies [6], where suppliers of consumer goods visit the nanostore with a (small) truck to resupply retailers. [7] This can be enhanced by the function of the information the store can give about the quantity expected to replenish. Given the extensive adoption of the Internet of Things (IoT) and electronic devices, as well as the blockchain, such grocery companies can establish their SCs toward nanostores, using decentralized decisions and autonomous systems, for an intelligent SC by means of the implementation of intelligent systems that allow the generation of orders and offer electronic payments to clients of nanostores, as offered by Grupo Bimbo in Mexico [8].

The focus of such Intelligent SC (ISM) is to have a smart grid based on digitization and automation where machines and products interact with each other without human involvement. SC is defined as knowledge obtained and integrated from three main stakeholders of the supply chain: suppliers, customers, consumers, and competitors [9].The intelligence of the supply chain enables a company to gain a holistic view of the supply chain with perspective of customers [10].The result of the ISC is the development of smart systems that include smart devices, processes, logistics, suppliers, and products, etc. [11].

In relation to external collaboration of activities, it can also improve customer service by allowing large amounts of data to be collected from different sources and used in construction of strong networks between different partners. Digital transformation also enables consumers and end users to become experts of product and service offerings [12][13].Therefore, the first proposition is raised:

P1: There is potential for technological growth in the Nanostore sector.

The Nanostore is expected to have a significant impact on supply chains, business models and processes to achieve an ISC, with a digital practice to facilitate interaction between all parts of a company with its chain, including nanostores[14]. By implementing Nanostore in ISCs, four main elements of the chain are affected, which can also increase the productivity of the chain: integration, operations, purchasing and distribution. For example, [15] that increased collaboration between the supply chain and participants reduces total costs and increase performance. They also found that, ideally, collaboration begins with customers. and spans the entire supply chain company, from manufacture and acquisition of raw materials to suppliers of materials and services to finished product distribution [16].

There is a need to invest in Information Technology (IT) resources to improve supply chain performance but before that comes the need to invest in developing some critical success factors and developing some supply chain characteristics that allow them to derive performance advantage from IT capabilities[17].

The main benefits of Nanostores in the ISC are threefold: (1) less time delivery to customers; (2) faster responsiveness; and (3) more efficient and effective decision making to improve performance[16] [18].Thus, nanostores in an ICS can help companies introduce complex and dynamic processes into the chain, as well as handle large-scale consumer integration. For instance, digital supply chains are intelligent, value-added, novel process that uses new approaches, specifically digital and transformation with technologies, to create competitive value and network effects [19]. Such transformations allow nanostores to take advantage of additional features, including barcode scanning, services offered based on location and near field of communication [20]. With this, the second proposition

is formulated:

P2. Nanostores create additional value in supply chains and logistics.

III. Methodology

For this study, a SLR methodology was adopted, considering both research questions in Section I as guidelines for data collection and analysis. While the definitions and conceptual delimitations for the analysis of RQ1 are number of studies, publication dates, research methods, database, geographical affiliation of authors, the ones for RQ2 are content analysis on selected categories, advantages and disadvantages of such categories, research gaps and future research. The rest of the SLR methodology was adapted, using the following three stages [21]:

A. Search for studies and inclusion criteria

Relevant studies related to RQ1 & RQ2 were located, selected, and evaluated. For search limits, important research databases were first used to access publications, including ProQuest, Wiley online library, Science direct, Scopus, WoS, Taylor & Francis, Emerald, Elsevier, IEEE, and Springer, which allowed finding relevant papers. In addition, Google Scholar was used complementarily, because this search engine shows most of the results from all databases. Our search across all databases focused on the following strings: "Nanostore and SC "," Small independent retailers and SC "," small retail family businesses and SC", Supply Chain, E-Logistics, the search query was restricted to the title of the publications only to select the studies that have the key words "Nanostore" "Supply chain" "logistic", as a central part of the discussion and analysis. In this first stage, 438 publications were selected, all after year 2006, since this topic is still relatively new.

B. Selection with exclusion criteria and evaluation of publications.

The study selection process was carried out in several steps. First, the inclusion of papers written in English and published in a journal, excluding gray literature, non-English papers, duplicate papers, papers not related to the topic, and/or outside the covered period. This step resulted in 113 publications for evaluation. As a second step, to evaluate the relevant publications on this topic, the authors reviewed the content of each article, selecting related publications, which analyze the intelligent supply chain and/or logistics with a focus on nanostores. Because there were not enough publications in this area and more articles were needed for this research, the authors searched for other databases such as Semantic Scholar, but there were no other publications found.

For step three, based on reviews of titles and abstracts, we selected studies that had a clear focus on issues of logistics, merchandise transport, new technologies aimed at small family stores and the supply chain itself related to the planning and implementation of nanostores. In case of inaccuracies in any publication, we made a complete reading before making any decision. Ultimately, the rigorous search process resulted in 20 publications being part of this SLR.

C. Extraction, analysis, and synthesis of results.

In this step, we used a publication database, to record the relevant information, using Mendeley. The precise data was coded as predefined and compared by four authors independently to avoid differences in coding and to triangulate the data, thus improving the reliability of the process. Selected publications were analyzed based on RQ1 and RQ2, of Section

A. RQ1 involved a search for existing research trends in Nanostore, logistics and supply chain, according to the established definitions and conceptual delimitations. This allowed classifying the selected studies into six categories: survey, interview, case study, content analysis, literature review and model business. For RQ2, based on current research knowledge, the collected studies were analyzed and classified, based on authors' opinions: (1) qualitative or quantitative; (2) exploratory or confirmatory, and (3) technological or managerial practices.

IV. Analysis and Discussion of Results

In the first selection, 438 papers related to nanostore, supply chains and logistics were obtained. By filtering gray literature, reading, and analyzing, on the first screening, a total of 113 papers from 15 journals were reduced to 20 from 10 Journals, as shown in the chronological distribution of the publications from 2014 to 2023 of Table I. An important fact is that the first study of the Nanostore in the supply chain was published in Argentina [22], where they analyze causes of why small stores prevail in Latin America. It is important to emphasize that before the term of nanostore in 2013, they were known as small stores. Results show Elsevier had more contributions with 9 studies, followed by Emerald with 5. Thus, nanostore in the supply chain is a topic that has growth potential for scientific databases.

Of the studies reviewed in the Table I, 11 out of 46 authors on the theme of the Nanostore in the SC are from USA. On one hand, as it is well established and this publication confirms, the United States is an innovator in this area of knowledge. On the other hand, studies in this area are increasing (Table I), and in the short term it is expected that other countries increase the scientific research on the Nanostore in SC, as Finland, Turkey, Netherlands, Mexico, Germany, Belgium, Spain, China, Spain, South Africa, and Korea each present at least two authors out of the 46. Besides, most of the reviewed studies (12 of 20), involve a qualitative approach on the Nanostore in SC (5 quantitative), thus indicating a shortage of other methods such as content analysis (1), literature review (3), surveys (5), interviews (4), case studies (5), and modelling (2).

TABLE I
NUMBERS OF PAPERS BY DATABASE, YEAR, AND COUNTRY

Editorial Publisher (Reviewed)	Selected	Year	US	NL	DE	CN	MX	BE	FI	KR	TR	ZA	ES
Elsevier (35)	9	2020 (7) 2021 (1) 2018 (1)	4	1	1	7		2	4	3	2		
Emerald (37)	5	2020 (1) 2019 (1) 2018 (2) 2015 (1)	2	1			1					2	2
Taylor & Francis (12)	1	2018 (1)	1										
Wiley Online Library (9)	3	2021 (1) 2015 (2)	3	2	1		3						
Springer (20)	2	2021 (2)	1				3						
Total 113	20	20	11	4	2	7	7	2	4	3	2	2	2

Countries coded using ISO 3166/2: https://www.inapi.cl/docs/default-source/default-document-library/iniciales_paises_iso.pdf?sfvrsn=2184ea1d_2

D. Content analysis

To find key topics and areas of study, a review was performed with a content analysis through a human expert approach, verifying if the Nanostore's empirical research is more important than its conceptual/theoretical framework in the chain of supply. For the construction of table II, the reviewed papers were classified based on their content, resulting in the following dimensions: Quantitative for those papers focused on the collection and analysis of numerical data of nanostores; Qualitative for the studies that analyzed concepts, opinions, or experiences trough non numerical data. The exploratory studies are those that approached topics relatively new on the nanostore practices, such as new methods for reducing the fragmented deliveries to these stores. Confirmatory for those studies that managed to prove the proposed hypothesis of the researchers; Managerial for the papers aimed to the study of management practices focused on the improvement and success of the business and Technological for the papers who researched the use of technology and its impact in the operation of the nanostores[40] In the review, no comprehensive bibliographic classification for the supply chain based on Nanostore or vice versa was found. Therefore, the selected papers were reviewed to analyze the content of the 20 papers, classified in the three dimensions from authors' opinions for RQ2 in Section 3, as shown in Table II.

TABLE II
NUMBERS OF PUBLICATIONS BY CATEGORY

Reference	Quantitave	Qualitative.	Explicative	Confirmatory	Managerial	Technological
[23]		X	X		X	
[24]		X		X	X	
[25]	X			X	X	
[10]		X		X	X	
[26]		X		X	X	
[27]	X			X	X	
[28]		X	X		X	
[29]		X		X	X	
[30]		X	X			X
[19]		X	X			X
[31]		X	X			
[32]	X		X			
[33]	X		X			
[12]		X			X	
[34]			X			X
[35]		X			X	
[36]			X			
[37]		X			X	
[38]	X		X			
[39]			X			
Total	**5**	**12**	**11**	**6**	**11**	**3**

E. Discussion of results.

Considering certain categories to distinguish current approaches and potential research avenues for researchers in the field of nanostores, trend analysis showed that there has been a steady growth in the number of publications. The distribution of publications by country of affiliation showed that America (18, 39.13%) is the leading continent, followed by Europa (16, 34.78%). Our study reveals that, among the different research methods, the managerial approach is the most popular (28.89%), This could be attributed to the fact that the field on nanostore is relatively new, and therefore, the studies focus on gathering relevant information to contribute to future research and study ramifications. Given that the distribution of categories indicates that the number of papers on technological and managerial practices is not the same, they were classified to determine more information about their content: It was found that all the papers on technological practices are qualitative and exploratory, which means that most of them work on the conceptual part of the implementation of nanostore, supply chain and logistics.

Furthermore, the 18 % from managerial practice papers are quantitative, explaining their results with either analysis or case studies. The other papers in this category are qualitative. Overall, the findings seem to indicate limited research in the technological area that show their implementation in nanostores and SC, presenting study cases. In research on technological practices, the number of exploratory studies is greater than the confirmatory ones, reflecting that it is in the early stages of exploration rather than confirmation of hypotheses.

Because these results affirm that current research on nanostores in the SC is less focused on empirical studies than

on its conceptual/theoretical framework, further research is needed to explain more about the technological part of nanostores in SC. This confirms P1. In addition, the content analysis by categories of the selected papers allows finding knowledge gaps and future research opportunities, with the main concerns derived from the existing literature, destined to guide further research on nanostores. 20 studies show the impact of nanostores in the supply chain, exposing the importance of these small stores that in many places continue to lead the market. Also, it is key to know what the performance would be after implementing the nanostores as part of the company's systems or if there is any impact on the company's productivity.

Also, a reduced number of studies (25%) worked in the quantitative area, which suggests that the analytical research is not yet enough, demonstrating that this area requires greater technical knowledge in topics, such as technology implementation in nanostores, the mutually beneficial relationship between high performance stores and nanostores, IoT in the SC, management information systems and logistics. In the same way, each of the proposed topics can be searched and managed with approaches such as literature reviews, case studies, interviews, and surveys, applicable for directors, academics, and engineering professionals. Besides, more research is required to find the answers to questions that allow us for a framework to better understand the dynamics of nanostores and opt for high-performance practices.

Specifically, the research topics extracted indicate that, to have a renewal service, as well as smart city initiatives and big data in supply chain management, with a specific focus on supplier networks, the nanostore should affect multiple SC main aspects including management of relationships with customers and suppliers, incorporation of information technologies, distribution of consumer-packaged goods (CPG), freight transport, and new inventory models As nanostore retailers seek efficient and cost-effective operations systems, new technologies can help boost their competitiveness. efficient and cost-effective operations systems, and new technologies can help drive their competitiveness, however, it should not be implemented in isolation to facilitate the development of higher performance through new business models and services[41].

To benefit from these results, these themes are proposed for future studies by researchers interested in Nanostore within SC, allowing confirmation of P2.

V. Conclusions, Future Research and Originality of the Review

The selected papers were assessed for the quality of the evidence they produced, analyzed, and categorized into the following thematic groups based on the research questions: (1) commonly used SC practices in nanostores; (2) nanostore challenges solved by SC; and (3) practical SCM challenges for nanostores. Our research findings provide future dimensions for the retail industry and researchers to continue working on nanostores. Our review shows that this field is still immature and needs further empirical evaluation of the practices in SCM cases. We have found that a few empirical studies focus on characterization and description of nanostores and very few papers focus particularly on the efficiency of the SC in the nanostores.

The review shows that SCM practices can compensate for some of the shortcomings of traditional nanostores methods. SCM practices such as the comprehensive management of SC elements, the design of a logistics network that is adjusted to the needs of these small stores, inventory control and the use of technologies at their disposal are some of the distinctive characteristics that are missing in the traditional way of operations in nanostores. Therefore, they can outperform traditional nanostore practices, removing impediments to innovation, flexibility, and information analysis, as well as improving quality and competitiveness. Thus, it can be concluded that traditional nanostores practices can be combined with SCM methods for higher performance. The review shows that, on the one hand, most of the studies were exploratory and conducted to provide more knowledge on the subject. On the other hand, more attention is needed to research, with empirical data from the retail industry, noting that they are limited

Since there are only 10 of 20 studies that focus on proposals for new ideas/methods, more frameworks and models are required to incorporate SCM practices into the traditional channel which is where these underperforming stores operate. We have addressed the implications and limitations of adopting SCM practices, with their solution practices as future research opportunities, as well as the originality of this review, that can help motivate researchers, nanostore owners and factory managers, in relation to the use of SCM methods for nanostore operations. Research and practical implications. This review has several research and managerial implications. In terms of research, the review shows the following implications, which allow researchers to modify their research lines: (1) the current state of research on this topic is presented; (2) the development of a classification of reviewed papers is revealing and could be used by researchers in similar studies in the Nanostore and the supply chain; (3) the grouping of selected papers based on topics and methodologies represent the main aspects of this subject for future research; and (4) new research topics are proposed by incorporating category classification.

Implementing SC practices is a tremendous task as part of the nanostore owner's responsibilities. Therefore, exposure to the concept is important to them since it may facilitate a more effective execution of their responsibilities. If owners of nanostore read this research, they will get acquainted with SC and different perspectives and features about it, as well as becoming familiar with different infrastructures for nanostores in the SC.

In its contribution to the owners of nanostores, this review shows that the nanostores can provide a framework to address competitiveness in SC, as a great challenge in industrial engineering. This review helps nanostore owners to understand the pros and cons of the Nanostore and where the current state of the Nanostore is in the SC, which is more focused on the theoretical part, thus providing better decision criteria for the application of this and its digitalization.

They may be familiarized on how companies' SC focus on Nanostore and implement such practices. As observed, the number of nanostores willing to experiment and implement them is very low for several reasons, such as the cost implications, little familiarity with the proposed practices, and the cultural factor of the store itself since it is only focused on the subsistence of the owners and itself. Therefore, a better understanding of management & technology helps nanostore owners make better-informed decisions towards the implementation process and non-traditional practices for them. Limitations and future research. The basic limitations of any SLR are the following two items, inherent to study selection bias and possible imprecision in data extraction from variable sources: (1) specific keywords such as "nanostore"," supply chain "or" logistics "; and (2) English language that eliminates papers in other languages. To eliminate this bias and guarantee precision and accuracy in the selection of studies, we implemented the process of building search chains as a learning process that included experimentation, considering that they are language dependent and there is the possibility of missing relevant studies during each search, we then followed our research questions to define keywords for an exhaustive search in electronic databases.

Also, alternative terms to the intelligence of SC, in which the nanostore generates a value impact, such as IoT, big data, blockchain, smart cities, are not considered in the search, but they may also lead to the discovery of other studies. Another limitation of this work is the scarcity of studies on this subject that limit the results, making it impossible to create subgroups to develop this research. Also, some paper may be accidentally neglected or due to errors in the search process.

In addition, there are other series of limitations to integrate the Nanostore in SC. For example, the lack of technological infrastructure makes it difficult to implement SC practices. Similarly, there is a lack of experts with knowledge in this area to start new models or remodel for maximum results. Consequently, there is not enough support and commitment from the owners to implement the Nanostore in SC Since Information Technology is defined as a critical factor to enhance the supply chain performance, and the huge advances in information technology over the past two decades enabled the emergence of modern supply chain management., it is important to look for alternatives to implement technological tools in the operation of the stores[42].

However, the nanostore must address integration to the SC and ways to increase reliability in this environment. Further research on this topic would clarify these vague points, the potential benefits, and the effects on the competitiveness of nanostores. The limited number of experienced professionals at Nanostore is a factor limiting advanced research and discussion on this topic. This is reflected in the few studies on this subject, indicating that extensive and solid research is lacking. This presents an opportunity for experts in this area to write a set of guides that serve as a reliable reference for factory chains in developing this concept, as well as identifying Nanostore roles in the chain. Originality of the review. A first SLR was made to highlight trends, advances, and gaps in research on the application of Nanostore in SCM. The findings show that Nanostore is considered a concept that has an important role in the SC, by improving competitiveness in the companies involved in the chains. Nanostores are usually located at the lowest level in the SC of consumer goods, although they continue to lead in markets, such as in Latin America. Thus, making effective operational decisions will not only improve their position but will also benefit the performance of many others as well [43].

This work provides researchers, nanostore owners, and company managers a detailed overview of the current state of Nanostore in SC and related future trends in research and practice.In addition, through the analysis carried out, results showed that SC and the logistics of the manufacturers are affected areas through Nanostores. The three dimensions of category analysis allow for new research topics. These fields can be a baseline for owners to initiate the implementation of SC practices and for researchers to develop their research in these areas. Given this scenario, we believe that research in this field, still under development, with fragmented and diverse studies, benefits significantly from our updated SLR, aimed at understanding and reorganizing the available knowledge. This review also makes an important methodological contribution by applying elements of SLR that originate in the so-called health sciences to the field of SC and nanostores studies, where there is no SLR, and the concepts are often poorly operationalized.

ACKNOWLEDGMENT

Supply Chain and Operations Research Group GI-2021-04, Faculty of Engineering, CURLP, Universidad Nacional Autonoma de Honduras.

REFERENCES

[1] M. Al-Talib, W. Y. Melhem, A. I. Anosike, J. A. Garza Reyes, S. P. Nadeem, and A. Kumar, “Achieving resilience in the supply chain by applying IoT technology,” *Procedia CIRP*, vol. 91, pp. 752–757, 2020, doi: 10.1016/j.procir.2020.02.231.

[2] S. J. Berman, “Digital transformation: Opportunities to create new business models,” *Strateg. Leadersh.*, vol. 40, no. 2, pp. 16–24, 2012, doi: 10.1108/10878571211209314.

[3] D. E. E. Blanco and D. E. L. Paiva, “Supply chain management in Latin America,” *Int. J. Phys. Distrib. Logist. Manag.*, vol. 44, no. 7,

Jul. 2014, doi: 10.1108/ijpdlm-05-2014-0102.
[4] E. E. Blanco and J. C. Fransoo, "Reaching 50 million nanostores: retail distribution in emerging megacities," p. 22.
[5] C. A. Mora-Quiñones, L. E. Cárdenas-Barrón, J. C. Velázquez-Martínez, and K. M. Gámez-Pérez, "The {Coexistence} of {Nanostores} within the {Retail} {Landscape}: {A} {Spatial} {Statistical} {Study} for {Mexico} {City}," *Sustain. 2021, Vol. 13, Page 10615*, vol. 13, no. 19, p. 10615, 2021, doi: 10.3390/SU131910615.
[6] Y. Boulaksil and A. C. C. van Wijk, "A cash-constrained stochastic inventory model with consumer loans and supplier credits: the case of nanostores in emerging markets," *Int. J. Prod. Res.*, vol. 56, no. 15, pp. 4983–5004, 2018, doi: 10.1080/00207543.2018.1424368.
[7] E. E. Blanco and J. C. Fransoo, "Reaching 50 million nanostores Retail distribution in emerging megacities," vol. Beta WP 40, no. January, pp. 1–19, 2013.
[8] Y. Boulaksil and M. J. Belkora, "Distribution strategies toward nanostores in emerging markets: The Valencia case," *Interfaces (Providence).*, vol. 47, no. 6, pp. 505–517, 2017, doi: 10.1287/inte.2017.0914.
[9] Y. Boulaksil, J. C. Fransoo, E. E. Blanco, and S. Koubida, "Understanding the fragmented demand for transportation – Small traditional retailers in emerging markets," *Transp. Res. Part A*, vol. 130, pp. 65–81, 2019, doi: 10.1016/j.tra.2019.09.003.
[10] G. Büyüközkan and F. Göçer, "Digital Supply Chain: Literature review and a proposed framework for future research," *Comput. Ind.*, vol. 97, pp. 157–177, 2018, doi: 10.1016/j.compind.2018.02.010.
[11] A. Calatayud and M. F. Millan, "ALC 2030: Construyendo las cadenas de suministro del futuro," *ALC 2030 Construyendo las cadenas sCalatayud, A., Millan, M. F. (2019). ALC 2030 Construyendo las cadenas Suminist. del Futur. ALC 2030 Construyendo Las Cadenas Suminist. Del Futur. https//doi.org/10.18235/0001969uministro del Futur.*, 2019, doi: 10.18235/0001969.
[12] R. Escamilla, J. C. Fransoo, and C. S. Tang, "Improving Agility, Adaptability, Alignment, Accessibility, and Affordability in Nanostore Supply Chains," *Prod. Oper. Manag.*, vol. 30, no. 3, pp. 676–688, Mar. 2021, doi: 10.1111/POMS.13309.
[13] J. C. Fransoo, E. E. Blanco, and C. M. Argueta, *Reaching 50 million nanostores: retail distribution in emerging megacities*. CreateSpace Independent Publishing Platform, 2017.
[14] M. R. Acevedo-Amaya and C. H. Ortega-Jimenez, "Intervening effects of agility and adaptability: Supply chain for nanostores of high performance during COVID-19 pandemic," pp. 1–7, 2023, doi: 10.18687/leird2022.1.1.97.
[15] M. M. C. Fritz and M. E. Silva, "Exploring supply chain sustainability research in Latin America," *Int. J. Phys. Distrib. Logist. Manag.*, vol. 48, no. 8, pp. 818–841, 2018, doi: 10.1108/IJPDLM-01-2017-0023.
[16] J. C. Fransoo, E. E. Blanco, and C. M. Argueta, *Reaching 50 million nanostores: retail distribution in emerging megacities*. CreateSpace Independent Publishing Platform, 2017.
[17] E. Samadi, I. Kassou, E. Samadi, and I. Kassou, "The Relationship between IT and Supply Chain Performance: A Systematic Review and Future Research," *Am. J. Ind. Bus. Manag.*, vol. 6, no. 4, pp. 480–495, Apr. 2016, doi: 10.4236/AJIBM.2016.64044.
[18] C. H. O. Jiménez, A. M. A. Matute, J. S. P. López, N. A. M. Martínez, and J. D. C. Amaya, "Entorno competitivo de Nanostores durante Covid-19: Adaptabilidad para mayor rendimiento en Honduras.," *Univ. y Soc.*, vol. 14, no. 6, pp. 473-483., Nov. 2022, Accessed: Feb. 26, 2023. [Online]. Available: https://rus.ucf.edu.cu/index.php/rus/article/view/3397
[19] J. Ge, D. Honhon, J. C. Fransoo, and L. Zhao, "Manufacturer competition in the nanostore retail channel," *Eur. J. Oper. Res.*, vol. 286, no. 1, pp. 360–374, 2020, doi: 10.1016/j.ejor.2020.03.011.
[20] M. R. Gholami, E. G. Ström, H. Wymeersch, and S. Gezici, "Upper bounds on position error of a single location estimate in wireless sensor networks," *EURASIP J. Adv. Signal Process.*, vol. 2014, no. 1, pp. 1–14, 2014, doi: 10.1186/1687-6180-2014-4.
[21] M. P. Haydock, "Supply Chain Intelligence," *Bus. Excell. Produktion und Logistik*, vol. 5, 2003, doi: 10.1007/978-3-8349-6688-9_14.
[22] G. D'Andrea, B. Lopez-Aleman, and A. Stengel, "Why small retailers endure in Latin America," *Int. J. Retail Distrib. Manag.*, vol. 34, no. 9, pp. 661–673, 2006, doi: 10.1108/09590550610683184.
[23] B. Kin, "Less fragmentation and more sustainability: How to supply nanostores in urban areas more efficiently?," *Transp. Res. Procedia*, vol. 46, no. 2019, pp. 117–124, 2020, doi: 10.1016/j.trpro.2020.03.171.
[24] M. Mkansi, S. de Leeuw, and O. Amosun, "Mobile application supported urban-township e-grocery distribution," *Int. J. Phys. Distrib. Logist. Manag.*, vol. 50, no. 1, pp. 26–53, Nov. 2019, doi: 10.1108/IJPDLM-10-2018-0358.
[25] M. Nasiri, J. Ukko, M. Saunila, and T. Rantala, "Managing the digital supply chain: The role of smart technologies," *Technovation*, vol. 96–97, no. May 2019, p. 102121, 2020, doi: 10.1016/j.technovation.2020.102121.
[26] C. Öberg and G. Graham, "How smart cities will change supply chain management: A technical viewpoint," *Prod. Plan. Control*, vol. 27, no. 6, pp. 529–538, Apr. 2016, doi: 10.1080/09537287.2016.1147095.
[27] T. Schoenherr and M. Swink, "The Roles of Supply Chain Intelligence and Adaptability in New Product Launch Success," *Decis. Sci.*, vol. 46, no. 5, pp. 901–936, 2015, doi: 10.1111/deci.12163.
[28] Y. Shin, S. Lee, and I. Moon, "Robust multiperiod inventory model considering trade-in program and refurbishment service: Implications to emerging markets," *Transp. Res. Part E Logist. Transp. Rev.*, vol. 138, Jun. 2020, doi: 10.1016/j.tre.2020.101932.
[29] A. Snoeck and M. Winkenbach, "The value of physical distribution flexibility in serving dense and uncertain urban markets," *Transp. Res. Part A Policy Pract.*, vol. 136, pp. 151–177, Jun. 2020, doi: 10.1016/j.tra.2020.02.011.
[30] E. M. Tachizawa, M. J. Alvarez-Gil, and M. J. Montes-Sancho, "How 'smart cities' will change supply chain management," *Supply Chain Manag.*, vol. 20, no. 3, pp. 237–248, May 2015, doi: 10.1108/SCM-03-2014-0108.
[31] M. Tanco, M. Escuder, G. Heckmann, D. Jurburg, and J. Velazquez, "Supply chain management in Latin America: current research and future directions," *Supply Chain Manag.*, vol. 23, no. 5, pp. 412–430, 2018, doi: 10.1108/SCM-07-2017-0236.
[32] J. C. Velázquez-Martínez and C. Tayaksi, "Supply Chain Management for Micro and Small Firms in Latin America," *Supply Chain Manag. Logist. Emerg. Mark.*, pp. 197–214, 2020, doi: 10.1108/978-1-83909-331-920201009.
[33] J. Yang, H. Xie, G. Yu, and M. Liu, "Achieving a just–in–time supply chain: The role of supply chain intelligence," *Int. J. Prod. Econ.*, vol. 231, no. March 2020, p. 107878, 2021, doi: 10.1016/j.ijpe.2020.107878.
[34] X. Guo, G. Lu, V. H. Villena, D. Vogel, and G. R. Heim, "Supply chain transformation and technology management challenges in developing regions: Inductive theory building from rural Chinese nanostores," *J. Oper. Manag.*, vol. 68, no. 5, pp. 454–486, Jul. 2022, doi: 10.1002/JOOM.1198.
[35] M. A. Avila, J. A. Larco, C. Antonini, M. B. Ortíz, and C. Mejía Argueta, "A Discrete Choice Model for Retailer Selection in Emerging Markets," *Supply Chain Manag. Logist. Emerg. Mark.*, pp. 299–318, Nov. 2020, doi: 10.1108/978-1-83909-331-920201014.
[36] R. Soto-Peredo, B. Sánchez-Lara, and M. Gómez-Eguiluz, "Nanostores' {Density} and {Geographical} {Location}: {An} {Empirical} {Study} {Under} {Urban} {Logistics} {Approach}," 2021, pp. 271–290. doi: 10.1007/978-3-030-68663-5_18.
[37] "Less fragmentation and more sustainability: {How} to supply nanostores in urban areas more efficiently? - {ScienceDirect}." Accessed: Oct. 02, 2022. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S2352146520303719
[38] D. Granados-Rivera, G. Mejía, L. Tinjaca, and N. Cárdenas, "Design of a Nanostores' Delivery Service Network for Food Supplying in

COVID-19 Times: A Linear Optimization Approach," *Commun. Comput. Inf. Sci.*, vol. 1408 CCIS, pp. 19–32, 2021, doi: 10.1007/978-3-030-76310-7_2/COVER.

[39] S. Sun and B. Zhang, "Operation strategies for nanostore in community group buying," *Omega*, vol. 110, p. 102636, Jul. 2022, doi: 10.1016/J.OMEGA.2022.102636.

[40] L. D. Hartelius, E. J., & Browning, "The Application of Rhetorical Theory in Managerial Research: A Literature Review," *Manag. Commun. Quarterly, 22(1), 13–39.*, no. August 2008, 2008, doi: 10.1177/0893318908318513.

[41] C. H. Ortega-jimenez *et al.*, "Fourth Industrial Revolution and Total Quality Management : Improving the performance of nanostores during a pandemic Cuarta Revolución Industrial y Gestión de Calidad Total : Mejora del rendimiento de nanostores durante pandemia," pp. 1–11.

[42] S. E. Fawcett, C. Wallin, C. Allred, A. M. Fawcett, and G. M. Magnan, "INFORMATION TECHNOLOGY AS AN ENABLER OF SUPPLY CHAIN COLLABORATION: A DYNAMIC-CAPABILITIES PERSPECTIVE," *J. Supply Chain Manag.*, vol. 47, no. 1, pp. 38–59, Jan. 2011, doi: 10.1111/J.1745-493X.2010.03213.X.

[43] M. Mkansi, S. de Leeuw, and O. Amosun, "Mobile application supported urban-township e-grocery distribution," *Int. J. Phys. Distrib. Logist. Manag.*, vol. 50, no. 1, pp. 26–53, Jan. 2020, doi: 10.1108/IJPDLM-10-2018-0358/FULL/XML.