City brand evolution research and future agenda: bibliometric and science mapping analysis

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ABSTRACT

This study aims to identify the evolution, trends and research agenda in city brand research. The methodology used was a science mapping bibliometric and network analysis using both, WoS and Scopus databases, to do a systematic literature review. The results of this analysis resulted in four possible perspectives in the research on city brand: Marketing of city brand, Residents and city brand, Governance of city brand and Economic and social impact of city brand. Like all bibliometric studies, this one has limitations due to its specific methodology, such as the consultation of databases that possibly excluded other studies that could offer a broader panorama, likewise, the analysis network methodology proposed perspectives that they can also be limited and exclusive. This study presents a novelty of the bibliometric analysis tool in the city brand research.

1. Introduction

Scientific research on city brand is recent. Although this strand of research is not more than 30 years old, the city brand was born in the nineteenth century with the purpose of commercialising urban places and has evolved to a more complex modern concept that involves disciplines such as marketing, architecture, urban planning, and tourism among others [1].

City branding has become more alienated from governments and has been a focus strategy to attract and retain visitors through the development of a local identity that translates into offering distinctive benefits [2]. This process is achieved in the long term and is linked to the management and public policy of the city [3] being a possible competitive tool for city management [4, 5].

However, some researchers consider that there is a general disconnect between the research and the reality of a city brand [6, 7]. Some authors propose that research is required based on alternative and critical approaches that focus on the phenomenon of the city brand itself [8]. Likewise, it is necessary to update the bibliometric studies of the research on city brand given the high rate of studies that have been undertaken in recent years [9]. This paper aims to help fill that gap in city brand knowledge by exploring how the research in city brands has developed inputs to manage the cities and the future agenda to research.

Consequently, the aim of this article is to present a scientific mapping study of city brand research, including bibliometric and network analysis to identify the evolution, emerging research trends and research agenda in order to determine some antecedents of city brand research and how research topics on city brand have changed and evolved. This allows us to establish the research agenda trends related to the city brand construct.

This article is developed as follows: first, how the methodology for bibliometric analysis was developed is described. Next, the bibliometric analysis is presented, which includes analysis of the main databases and analysis through graphic visualisation using Gephi software. Finally, the main findings and conclusions included in the proposed future agenda are presented.

2. Methodology

The research follows the concept of science mapping based on the quantitative approach and bibliometric methods to analyze the structure and development of scientific fields and disciplines [10, 11], it consists of analyzing scientific databases using methods that agree cartography and scientific information [12, 13, 14]. This analysis allows the generation of network associations in order to structure the information in scientific maps under the parameters of graph theory for visualizes its conceptual
subdomains (general areas or particular topics), its thematic evolution, trends and research agenda.

Three stages were followed: bibliometric analysis and network analysis. The first stage was carried out using WoS and Scopus to perform bibliometric indicators with Bibliometrix software. In the second stage, we build our network analysis using the WoS and Scopus database obtained, with R software we visualized the co-citations analysis. For this, the Gephi technique was used because it allows the analysis process, from data import to map export for data visualization [15]. The results are presented through the metaphor of the Tree of Knowledge based in a tree analogy, applied with the aim of classifying science [16], where, at the root, are the classic documents (Hegemonies), in the trunk the structural knowledge and in the leaves the recent perspectives. Finally, from the results of the metaphoric tree, the main proposals for future research and the incipient research that are currently being projected in the city brand research are taken.

This study was carried out under the current regulations of the ethics committees of the universities participating in the co-participation agreement of project number 1188 "University Cities: Brand Values "University City" as a Deterministic Element of the Choice of a University Center".

2.1. Bibliometric analysis

The bibliometric approach was performed using WoS and Scopus databases considering the limitations and suggestions made by previous researchers [17, 18, 19, 20]. For duplicates, the methodology used was to download the databases of articles, books, book sections etc., and duplicate documents were reviewed and filtered by DOI, title and authors. The parameters used to search for academic documents were as follows (see results in Table 1):

- Search fields: all fields
- Time period: every year
- Articles, books, book chapters and conference papers were included.
- Journal: The type of journal was not excluded.

In the study we used five bibliometric and scientific mapping indicators [10]: citation analysis, co-word analysis, co-citation analysis, co-author analysis, bibliographical coupling analysis. Citation analysis refers to the evolution of research areas categorised by country, journal and author. Co-word analysis is used to map the strength of association between keywords in textual data; this technique measures the co-occurrence of keywords to examine content in the textual data. Co-citation analysis shows the network of contributions and collaboration. Co-author analysis represents the collaboration between authors. Bibliographic coupling occurs when two works reference a common third work in their bibliographies; in our article, it is an indicator that allows us to identify emerging fields and perspectives.

2.2. Network analysis

First of all, it was applied the network analysis using graph theory [21], this technique generates information associated with the typology and characteristics of the network and each document that integrates it [22]. We merged the records obtained, we extracted their references (bibliography), we eliminated duplicates, and we structured an inter-citations network.

The network calculates from the references the Indegree, Outdegree, and Betweenness, to generate the scheme using the tree analogy [16]. We organized the tree in three categories: the roots (high Indegree), which are cited but do not cite others and where the classical documents, hegemonic or the intellectual base of knowledge of a field are located [23]. The trunk (high betweenness) cite and cited others; involves the documents that generate strong applications in the development of current knowledge of the concept examined, and, therefore, are known as intellectual structure pointing out the traditions of research in the field, it shows the relevant research topics in the literature and the pattern of their interrelationships [24]. Finally, the leaves (high outdegree) gather the most recent documents that cite others in the knowledge base (trunk and roots) but are not referenced, showing the research fronts (Price, 1965) and making the perspectives visible.

Clustering algorithm proposed by [25] was applied to identify the perspectives or sub-areas of the city marketing from the reference network. This technique allows through a co-citation analysis to classify the documents in the three established categories.

Then, it was identified the perspectives under bibliometric criteria [10], the literature reviewed choose the most relevant documents (90) as follows: 20 from the root (classics), 20 from the trunk (structural) and 50 from the leaves (bibliometric perspectives). As an example, we reviewed 4 relevant papers considered hegemonic (according to the number of references within the network). Subnets were finally structured from the bibliometric perspectives using the corresponding documents; we generated word clouds, which were contrasted with the documents to find the conceptual perspectives and research opportunities.

3. Results

3.1. Historic evolution of research

Figure 1 shows the scientific production between 1987 and 2021 (674 documents in total). Until 2010, we found 115 documents; the number of documents increased considerably between 2009 and 2020, during which time the production exceeded the previous period, achieving 75 publications in 2020. The growing trend can be an indicator of the interest of the scientific community in this topic.

Figure 2 lists the ten countries leading the research on this topic around the world. In the analysis of scientific production by country, Spain, China, the United Kingdom, and USA stand out. Spain shows 75 publications in Scopus and 81 in WoS; China has 94 publications in Scopus and 79 in WoS and the UK shows 77 publications in Scopus and 67 in WoS.

3.2. Index data and journals

Table 2 summarises the most important ones by quartiles. The most significant number of publications come from Place Branding and Public Diplomacy (34 in Scopus Q3) followed by Journal of Place Management and Development (21 in Scopus Q3) and Cities (20 in WoS and Scopus Q1, Q1).

On the other hand, Table 3 shows the list of authors more relevant for this analysis, classified by the number of documents registered in each database, and their index h is also related.

In general, Sebastian Zenker, followed by Chung-Shing Chan and Magdalena Florek, are the authors with the highest scientific production in this field. However, when reviewing the referencing, the most

| Database            | Equation search     | Number of papers | Duplicates | Total |
|---------------------|---------------------|------------------|------------|-------|
| Scopus              | TOPIC               | 608              | 257        | 674   |
| Web of Science      | "City Marketing" OR "City Brand" | 323              |            |       |
|                     | Time period: Every year |                 |            |       |
|                     | The date of the consultation was 07 Aug. 2021 |                 |            |       |

Source: Authors.
The network is composed of references (original documents and their references), where indicators as indegree, outdegree, and betweenness are generated. The co-citation network shows that the principal author is, with the highest number of citations and the highest number of connections within the network, followed by.

3.3. Knowledge tree

We studied the cluster relationship between the 1.292 references using Gephi, we found specific clusters, where references are assigned exclusively to one; clusters can be interpreted as a field of research in city brand and show a general overview of the knowledge tree used as a metaphor, creating taxonomy of knowledge structured and cited-based. The application of the clustering algorithm will allow us to identify four research fronts, which group 47% of the references in the network as follows: Perspective 1 (14%); Perspective 2 (13%), Perspective 3 (9%); and Perspective 4 (8%).

Figure 3 shows the four perspectives (clusters) and the four most relevant documents are highlighted (the greatest number of times referenced within the network).

The four perspectives (clusters) found in the analysis, establish the frontiers and trends. The most relevant documents are “City branding: An effective assertion of identity or a transitory marketing trick?” by Kavaratzis and Ashworth in 2005 (Citations: WoS 415 and Scopus 433); next “My city - my brand: the different roles of residents in place branding” by Braun, Kavaratzis, and Zenker in 2013 (Citations: WoS 223 and Scopus 251); and “Beyond the logo: Brand management for cities” by Ashworth and Kavaratzis in 2009 (Citations: WoS 160 and Scopus 190).

Figure 4 emerges from the main authors (based on the number of citations) in the network analysis considering the perspectives shown in Figure 3. The trunk is generated with documents with a high centrality of intermediation, it means, the shortest link paths between the references in the network and the references that have the most direct link with the other references in the network. Finally, the leaves are the latest developments and therefore the references that generate new research perspectives.
3.4. Tree of knowledge analyses

Following the logic of the tree of knowledge, the most cited authors of the perspectives that emerge from the analysis are described as follows: first the roots, the second trunk, and third the leaves or perspectives.

A. First documents or intellectual base – Roots

At the roots of the tree of knowledge are the articles that have been cited by other subsequent studies but that do not cite previous studies on the specific topic of the city brand, having in the first perspective is the publication with the most citations of [26] with 21 citations in a row, from another publication by the same author [27] with 19 citations, the book by [28] with 13 citations, followed by [29], with the same number [30], and finally the work of [31] with 11 citations. In the second perspective, the only author most cited as root is [32]. In the roots for the third perspective, she is the most cited author [33]. Finally for the fourth perspective [34], with seven citations.

B. Structural documents – Trunk

In this part of the tree, the structural or intermediation documents are located, being the ones that have most developed the current line of research in the city brand. Their importance lies in the fact that they cite and are at the same time cited by others, that is, they are the ones with the highest degree of mediation of the tree, connecting the classics (root) with the most recent (leaves) linking pioneering research with the themes of more specific research of the literature, as well as their inter-relationships. Only the 15 most relevant in bibliometric terms (citations) are taken.

In the first perspective, the main author at this level is [35] with 276 citations in the most cited paper, followed by another work of his authorship [6] with 222 citations, another important author in this theoretical perspective is [36] with 127 citations, followed by [1] 81 citations [37], with 14 citations, and [38] with 5 citations.

In the second perspective, the paper by [39] is located with 195 citations.

In the third perspective is the work of [5] with 16 citations, followed by [40] with 14 citations.

In the fourth perspective is located the paper of [34] with 7 citations.

C. Research Perspectives – Leaves

Finally, the references found in the leaves (high top tree) bring together the most recent documents that are cited by others, both in the knowledge base (roots) and in the general traditions (trunk) but have few references. These sheets show the research fronts or perspectives.

In the first perspective, the most cited work is [7] with 67 citations, followed by [41] with 21 citations.

In the second perspective, the papers by [42] with 40 citations.

In the third perspective and the fourth perspective the algorithm did not find relationships and the same authors of the trunk are maintained [5] and [43].

3.5. Research perspectives on city branding

The main contributions of each author in their respective perspective are presented below.

A. Perspective 1 – Marketing of City brand

This first perspective is related to the contributions from important authors of marketing and brand management theories applied for the first time to geographic locations and cities.

As one of the referring authors is [31], who makes a broad proposal on the marketing of places, relating the applicability of strategic marketing as a tool for the economic development of places. For his part [30], presents a series of cases of the use of marketing for the promotion and sale of places during the last 150 years. Likewise, [28] suggest the strategic planning of city marketing, likening the city to a product management.

Another great contribution is developed by [29], who proposes city marketing as a managerial tool that impacts on the construction and reinforcement of the brand identity, being one of the first contributions in the development of the city brand concept.

Table 3. Most relevant authors.

| Scopus | WoS |
|--------|-----|
| Author | Number of publications | Total times cited | H-Index | Author | Number of publications | Total times cited | H-Index |
| Zenker, Sebastian | 35 | 1,568 | 21 | Chan, Chung-Shing | 28 | 261 | 10 |
| Florek, Magdalena | 24 | 389 | 10 | Florek, Magdalena | 8 | 83 | 4 |
| Chan, Chung-Shing | 45 | 342 | 11 | Zenker, Sebastian | 29 | 1,393 | 21 |
| Kavaratzis, Mihalis | 39 | 2,218 | 17 | Herezniak, Marta | 8 | 22 | 3 |
| Braun, Erik | 26 | 1,193 | 13 | Merrilees, Bill | 90 | 2,524 | 28 |
| Inech, Andrea | 42 | 673 | 14 | Miller, Dale | 41 | 959 | 16 |
| Larsen, Henrik Gert | 7 | 46 | 3 | Augustyn, Anna | 6 | 20 | 3 |
| Merrilees, Bill | 108 | 3,389 | 31 | Bacic, Radovan | 65 | 274 | 10 |

Source: By Authors.
It could be said that the contributions that began the first decade of the 21st century broadly developed the concept of the city brand, maintaining in this perspective its strong alignment with the company’s classic marketing management. In this evolution, the proposal of [6, 27] analyze cities with respect to city brand management, analyzing how marketing is applied and giving importance to the influence groups of the city (citizens, companies, government).

Subsequently, a broader development of the city brand concept will be presented, having valuable contributions such as the “identity of the place” and its importance in the construction of the city brand [9, 35, 38, 39].
44], the positioning of the city brand in people [6, 41], the application of psychological and sociological theories with the self-concept of city by inhabitants and tourists with its impact on the attitude of city brand [39], to the evolution towards the concept of place brand equity [8], which integrates attributes and benefits of value that people grant to cities [45, 46].

The relation of advances in marketing like digital marketing and virtual social media marketing with city brand building is also presented [37]. [37] analyzes both the evolution of digital marketing in the construction of the city brand, as well as the use of digital tools for the construction, co-creation and development of the city brand are presented [47]. Finally [1, 7], makes the broadest theoretical studies of the city brand, categorizing the city brand literature in studies on the concept, processes and measurement, brand strategies, urban planning and city brand culture [7], likewise, two trends can be found, towards marketing (oriented to communication processes) and towards city planning (oriented towards development architecture) [1].

In general Marketing of City brand perspective could correspond to one of the interrelated themes that needs further exploration of the Service-Dominant (SD) logic development. It means marketing of City brand needs to be developed and pointing normative notions of investment in people, long-term relationships, and quality service flows to develop the Citi Brand construct gaining strength on this issue through deeper conceptualization and better city brand models [48].

B. Perspective 2 - Stakeholders and city brand

This perspective focuses on the studies that have examined the characteristics of the city brand, especially validating the interest groups of the cities as builders and validators of the city brand. Today have grand importance since recently various stakeholders have been included as fundamental actors of city branding. Its greatest exponent is [32], who analyzes how each type of citizen plays a crucial role in the place branding process [49, 50]. [39] emerge in which they delve into analyzing the complexity of cities and the attitude generated towards them by their stakeholders, being a permanent inhabitant, visitor (tourist or investor) [46], businessman and government officials.

Continuing this approach, it is also proposed that the residents of the city create an identity towards it and that this can give rise to an affective commitment, applying the social theory of identity in the construction of the city brand [42].

C. Perspective 3 - Governance of city brand

Focuses on analyzing the implications of government policies and management in cities and how, from the characterizations of infrastructure, industry, education, society, culture, among others, the city brand is generated [33]. This city brand approach focuses on analyzing the physical and cultural changes in cities from the government of the city, in the physical concept [51], develops the concept of Urbanization of Capital, related to the combination between capitalism and the development of cities through urbanization processes [33], suggests as relevant aspects the cultural capital and the symbolic economy supported by the civility and security of the city. A great contribution of [5], that characterizes the types of city brand that have been successful and argues on the need for government leaders to build attractive elements based on these city brand typologies so that they are competitive worldwide, proposing the concept of city attraction strategy, such as promotional and incentive activities (capital finance insurance, technology Know-how, Knowledge research education, art-culture-history, entertainment tourist well-being, exhibitions conferences hospitality, transport logistics warehousing and corporate intelligence business services) for interest groups (businessmen, tourists, etc.) to attract them to the city [52].

D. Perspective 4 - Impact of city brand

This perspective is the smallest, It even derives from the previous perspectives but focuses on the use of the brand city as a tool, analyzes the characteristic that generates it is the analysis of the social and economic impact of the city brand [34, 43, 53, 54]. This line of research focuses on the establishment of neoliberal economic models in the management of the city brand and how then it is prioritized in the planning, management and measurement of objectives with economic impact of the city brand under a symbiotic model of relationship between the public sector and the private sector, a trend that began at the end of the last century, consequently this perspective proposes that the city brand is built only if it will strategically generate a positive and profitable effect in the short, medium and long term.

4. Discussion and conclusions

Research on city branding will continue to exist as a field of study in the future to a greater extent because of tourism's increasing importance and stressed by the post COVID-19 economic recovery [55]. The aim of this paper was to present a scientific mapping study of city brand research, including bibliometric and network analysis to identify the evolution, emerging research trends and the research agenda. The findings from this analysis resulted in four possible perspectives in the research on city brand.

The first contains the developments that have been examined from the classic marketing perspective regarding the marketing of places and cities, marketing mix, brand image and brand strategy, among others. The second perspective focuses on the characterisation of the city space, its complexity and the role of residents in the city brand; other sciences are involved in this context with individual and social behavioural theories as the basis of these investigations, and the contributions have allowed to legitimise the city brand process as unique and different from classic branding. The third perspective, which emerged from the previous two, focuses on characterising the city brand and how governance is key to its generation and strategy. Finally, a possible fourth perspective is detected that analyses the social and economic impact of the city brand.

However, perspectives form a unit of study, and it has been detected that all perspectives are connected by the discovery of the importance of city stakeholders in the entire city brand process, where citizens, companies, investors, visitors, tourists and rulers play a fundamental role in the city brand.

The scientific contributions of this study to city brand research lie in the novelty of the bibliometric analysis tool used and in the results generated, offering another understanding of how the evolution of this line of research has allowed researchers to visualise a clear understanding of the entire panorama that has developed in the face of city brand research (see future research agenda). On the other hand, this paper proposes new methodologies to complement bibliometric analyses for future research.

4.2. Managerial implications

The present work will help marketers to have a better understanding of the city brand construct in which they will identify its conceptual roots and its evolution, this study has shown that city brand construct is complex and cannot be minimized to classic elements of the business brand. The practical contributions of this research lie in the discovery of the positive implications of the construction and management of the city brand as a strategic and necessary element in modern cities (e.g.: the
importance of including the city brand in government plans, the need to co-create the city brand with all stakeholders, especially with citizens, the proper choice and management of the brand or brands for the same city, the measurement of other non-financial indicators of the impact of city brand management).

Likewise, the findings indicate that the construction of the city brand is a complex process that cannot be schematized or modelled simply or based on the brand marketing of the traditional company, but it requires the participation of various sciences and professionals who develop a process in which all city stakeholders must be involved, even those that do not seem to be considered in all processes. Finally, the city brand generation processes must be supported by processes of co-creation, participation, measurement and constant evolution given the living nature of the city.

4.3. Limitations

Despite its contributions and rigor, this study is not free of limitations from which possibilities for future research are generated. First, the search was limited to publications included in the Web of Science and Scopus databases. Although these two are among the largest and most recognized worldwide databases, they do not contain all the relevant publications, so the data set used, despite being comprehensive, is not exhaustive. From the above, it is recommended to expand this analysis by including other databases.

Secondly, the bibliometric analysis carried out is based on quantitative methods. Although the scientific community has validated their techniques and tools, it is limited because the content and quality of the publications cannot be studied. It implies the possibility that some of the publications included in the analysis address issues that are not intrinsically or directly related to AE.

Finally, the study carries out a different analyse of the research on City Brand until December 31, 2020, so the contributions of this study are greater than the classic bibliometric review articles on this topic research.

5. Future research agenda

Finally, this section presents a way of recommending future research trends that the resulting perspectives present. Figure 5 presents some possible questions to be answered in future research based on the combination of theoretical perspectives and current trends in research on the city brand.

5.1. Critical theoretical development of the city brand

Although it is true that studies on city branding have been going on for several decades, a number of authors have criticised the adaptation of the theory and modelling of classic marketing to city marketing because the marketing theories of the company are applied to the city, although the contexts are different [1, 6, 36]. Regarding this, some authors consider that a true theoretical orientation towards the city brand is required, which takes into account the real context. For example, some authors criticise traditional marketing applied to the city as superficial, artificial and far from reality, since cities are not merchandise or products. Likewise, city branding omits economic, social and cultural aspects

Perspective 1 (Marketing—City Brand)

- Critical theoretical development:
  What city brand theories and models can this context explain? What is the optimal process in the construction and management of the city brand? What strategic factors allow a city brand to position itself depending on its characteristics?
- Stakeholders of the city brand:
  Who are the fundamental stakeholders in the city brand? What are the relationships, influences, effects of influence groups on the city brand?
- Single city brand identity versus multiple city brand identities
  City sub-brand models versus under single city brand?
- Technologies, social trends and evolution of cities
  Are the new trends in management and marketing suitable for the city brand? How can new technologies build a city brand?

Perspective 2 (Stakeholders—City Brand)

- Critical theoretical development:
  Towards which interest groups should the city brand position itself?
- Stakeholders of the city brand:
  Who are the fundamental stakeholders in the city brand? What are the relationships, influences, effects of influence groups on the city brand? What are the optimal co-creation processes of the city brand with the influence groups?
- Single city brand identity versus multiple city brand identities
  What city sub-brands are of interest to each stakeholder?
- Technologies, social trends and evolution of cities
  What will the needs and requirements of the stakeholders be in future cities?

Perspective 3 (Governance - City Brand)

- Critical theoretical development:
  What are the governance models that build the city brand?
- Stakeholders of the city brand:
  How to deploy city brand programs from public governance?
  - Single city brand identity versus multiple city brand identities
    City sub-brand models versus single city brand?
  - Technologies, social trends and evolution of cities
    How to manage social, cultural and technological changes regarding the city brand?

Perspective 4 (Impact—City Brand)

- Critical theoretical development:
  How and what should be measured in the city brand?
- Stakeholders of the city brand:
  What is the impact of the city brand on the different interest groups?
  - Single city brand identity versus multiple city brand identities
    What impact do the city sub-brands have versus under single city brand?
  - Technologies, social trends and evolution of cities
    What technological, social and cultural changes have the greatest impact on the construction, management and projection of the city brand?

Figure 5. Proposed questions for future city brand research. Source: By Authors.
These possible approaches to the research must start from the proposal that the city brand is the consequence behind it [6, 32, 56] and questions the very concept of the brand and the theories behind it [8].

5.2. Stakeholders of the city brand

The evolution in the studies on the city brand increasingly shows the importance and need to consider all the influence groups of the city—stakeholders [1, 40]—whose analysis, on the one hand, relies on other sciences such as anthropology, sociology, psychology, economics, demography, and who, are participating actors in research [36, 41, 57]. By reinforcing the correct use of research methodologies that allow their active participation, the city brand is required to generate a positive commitment from all stakeholders [50, 58, 59] and to value all groups equally without excluding possible minorities. This is where ethics becomes highly important for future research [1, 7, 42]. Likewise, it is suggested to study other interest groups that previously were not considered to be involved in the construction of the city brand, such as political opposition groups and public officials [60].

5.3. Single city brand identity versus multiple city brand identities

In recent studies, the question has arisen as to whether cities build and generate a single brand identity or if, on the contrary, they can build and generate different brand identities that complement each other and are aimed at different interest groups [2, 3, 36, 39, 61, 62]. Regarding this, the latest studies have proposed that the city brand should be demystified as a unidirectional strategy from city governments towards their stakeholders since the relationship is bidirectional [63], in which influence groups are also participants in creating sub-brands [64]. Future research must start from the proposal that the city brand is the consequence of different diverse trajectories (sub-brands) that are intertwined into one (city brand) [6, 32, 56, 65]. These possible approaches to the city brand still require studies to identify, compare and analyse this question for future cities.

5.4. Indicators and measurement tools of the city brand

Although it is true that some authors have already developed and proposed some measurement tools and indicators to examine the city brand in planning [66] such as categorisation, perception, identification, communication and impact among others [4, 7, 39, 43, 47, 67], it is still necessary to carry out future research on more effective tools and indicators to measure the construction of the city brand. For example, research could continue with measurements of stakeholder perceptions of cities (activities, history, culture and other possible value characteristics) [9] and could also include other types of impacts, such as the positive relationship which has been found for the impact of the city brand on the image of the country and the achievement of strategic objectives at the national level [68].

5.5. Technologies, social trends and the evolution of cities

Finally, there are few studies that examine disruptive changes at the technological, social, political and economic levels in the evolution of future cities and their involvement with the city brand [67]. The new smart city trend in which sustainable cities are projected to be supported by all technological developments in clean energy [59, 70]. A high quality of life for citizens, automated management, green industry, sustainable habitats, optimal management of public resources and participatory management [71, 72] among others are the new paradigms of the city brand. The new smart city trend [67] in which sustainable cities [69, 70] are projected to be supported by all technological developments in clean energy. A high quality of life for citizens, automated management, green industry, sustainable habitats, optimal management of public resources and participatory management [71, 72] among others are the new paradigms of the city brand.

Declarations

Author contribution statement

Edison Jair Duque-Oliva, Javier A. Sánchez-Torres, Juan Sebastian Sanabria-Niño: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

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