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Smart City's Internationalization and International Management Strategies in the digital era: a Systematic Literature Review

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Abstract. The impact of the smart city concept in the urban landscape has been the subject of considerable attention over the last few years. Cities are changing their development strategies by trying to attract not only capital but also knowledge and talent. This change has led cities to turn increasingly to the outside world by developing international strategies and raising their internationalization process towards the global context. The purpose of the paper is to develop a systematic overview of the literature examining the relationship between smart cities and the internationalization process. Emphasis will be placed on global management strategies for the international development of smart cities. The study aims to examine existing research through the adaptation of the Systems Literature Review (SLR). As a result, new knowledge on the state of the art in policy, practice, and academia can be generated to identify significant theoretical insights and knowledge gaps for future research. We provide a descriptive analysis, a state of the art of research topic, and an integrative vision of the development of smart cities concerning international management and the internationalization process.

Keywords: Smart Cities, Internationalization, Systematic Literature Review, International Strategies

1 Theoretical background

The expression 'smart city' has recently become important in discussions about the city and urban development [1]. The term 'smart' has commonly been used to explain a new vision of city development. Harrison at al. [2] defines a smart city as a city that connects physical infrastructure, IT infrastructure, social infrastructure, and business infrastructure to leverage the collective intelligence of the city. As this paper explains, the Internet of Things (IoT), Information and communication technology (ICT) and the internationalization process are changing the way cities organize policy-making and urban growth [3].

Smart Cities base their international developing strategies on the adoption of IoT and ICT in several fields such as economy, environment, mobility, sustainability, citizens engagement, and governance to transform the infrastructure and services of the city [1].

In today's contemporary urban context, policymakers, and governance in cities around the world are increasingly seeking strategies through concepts and channels in the attempt to engage and connect with their stakeholders [4]. In particular, much hope is placed on the use of IoT, ICT, web 2.0 interactivity and, social media which for the first time provide channels for connecting the city governance to the various stakeholders such as company, citizens, entrepreneurs, and policymakers [5]. Consequently, smart cities strongly rely on international strategies and solutions enabled by ICTs directly involving local governments, citizens, and communities [6] and moving toward more comprehensive and global governance [7].

In recent years there has been an exponential growth of projects for the international development of the city [8]. For example, Barcelona has an established reputation as a pioneering European smart city and has integrated a series of municipal government initiatives to promote the intersection of "international promotion," "international collaboration," and "local projects" [9]. Furthermore, in a recent study related to the competitive urbanism, Taylor Buck at al. [10] combine information about firms and governments to find effective and transferable demonstrations of advanced urban technology. By examine initiatives by the UK national government focusing on London, Glasgow, Bristol and Peterborough, this study evaluates the urban technological innovation through a range of national and international strategies, particularly the TSB Future Cities Demonstrator Competition, to explore opportunities and tensions in the practical realization of the smart city concept.

For cities, the development through the evolution of IoT and ICT represents a fundamental driver for their economic growth [11]. This expansion highlights that cities are becoming more and more digitally dependent [12] and competitive in terms of social policies [13]. besides, the role of international management strategies and the internationalization process in the smart city context is still considered an unexplored theme as well as the impact of new technologies on smart city development in the digital era [14]. As for global businesses, cities' internationalization process requires strategies and planning to be globally competitive and attract knowledge, capital, and human capital [15]. To fill this gap in the literature, this article reviews the impact of international management strategies on the smart city over 11 years (2009–2020) by aiming to provide a more comprehensive understanding of the role played by city management strategies in the smart city context. The objectives of this paper are to develop a systematic review on the theme in order to review the existent research, provide new knowledge on the state of art for policies, practitioner, and academics, and finding the relevant theoretical insights for future research. As a main part of our work, to gasps the relationship among international management strategies and the development of smart cities, we consider the widely accepted classification of international management research highlighted by Pisani [15, 16] as a central element of our work.

Based on this view, we aim to systematically review the existing literature and discuss the different potential implications for researchers, managers and policymakers with concrete suggestions for this field. In doing this, our manuscript is structured as follows. We begin with a analysis and discussion of the key methodological options used in our review. We explain the research criteria such as database sources, keywords, inclusion and exclusion criteria, and the main steps used to identify the final sample of studies. Following that procedure, we also provide qualitative information on journal details, year of publication, and field of research.

We rely on the widely accepted classification of international management research highlighted by Pisani [15, 16] to group articles and have a clear picture of the current publications. This led to a better understanding of the main city's international management strategies and their relationship to the development of smart cities. The last section provides the theoretical and practical implications that arise from studies that consider and advise other topics for future research.

The systematic literature review is motivated by a defined research question, from which the search strategy for identifying the related articles is determined based on a dialogue between the authors as regards to: the identification of the research gaps; the evaluation of the role of a new field such as international management strategies in smart city development, and the importance to underline a comprehensive overview of the topic. To achieve this research aim, we undertake a systematic literature review of international strategies into the smart cities development and pose the following research question: "*How do internationalization and international management influence the smart city development into the global panorama*?"

Through a systematic process of research, this review contributes to provide policy advice, practice and theoretical recommendations and future avenues that governments of smart cities, practitioners and scholars could use for the smart cities development into internationalization process.

2 Methodology

In this manuscript, we used the systematic literature review methodology in reviewing existing research, as it considered a robust method to review key findings of large and multifaceted research area [18]. Adding to this, it provides the method to identify, select, analyze and synthesize existing literature in a rigorous and replicable manner, and permit us to provide robust conclusions about the outcomes as well as a depth analysis of the reviewed area itself [19], [20].

To conduct the analysis, we relied on EBSCOhost's Business Source Premier database as the main source of research as it offers solid coverage of key reference journals [21]. Following the literature review practice, we performed a keyword search on the study titles, abstracts, and subject terms [22]. Our keyword selection is based on an analysis of previous literature reviews published in major reference journals concerning international strategies also used in other literature review [22, 23] and the notion of Smart Cities [25]. We have chosen to use the city's international marketing strategies (which include keywords on internationalization) to gain a wider understanding of the city's international strategies. Follow the previous protocol, 1608 potentially relevant studies emerged from this research.

To better understand the international dimension of smart cities, we decided to exclude national studies. Thus, our research was redesigned to include studies focusing on the international vision of smart cities and the process of internationalization of the city itself due to improve our understanding of smart city development strategies on the international scene. Finally, we determined the exclusion and inclusion criteria by referring to the key practices used in the systematic reviews [26].

We excluded non-academic and non-peer-reviewed articles, articles written in a language other than English as well as articles not related to the economic and managerial context. Concerning the time frame, our research considered the timeline from 2009 to 2020. We established a cutoff point from 2009, following the evolution of the smart city concept at global level and due to the international development of the smart city policy and strategies [27]. Starting from this point, an increasing number of studies followed, which used the smart city concept into the city context as we intend it now. [1, 27].

The application of these exclusionary criteria limited the results of our sample to 630 selected studies. Based on these 630 studies, we used a quality criterion to better identify our sample. Manuscripts were identified by leading international journals to capture the main components of our research question [22]. In particular, we considered only the studies published in a top journal to ensure a high level of quality. Thus, we only considered studies published in rating 3, 4, and 4* journals of all categories in the 2018 academic guide of the Association of Business Schools (www.charteredabs.org).

Using this criterion, 53 articles with classification 3, 4 and, 4 * were identified. Further analysis was done by reading the abstracts, introductions, and conclusions of the identified studies to asset the topic of the international management field and to ensure the rigorous procedure. This process yielded a total of 42 studies. Of these, 10 were subsequently excluded on the basis of the reading of the integral text, leaving 32 relevant articles. In addition, we also adopt the cross-references analysis [29] to make sure we did not ignore any articles checking each reference in the selected studies. This additional process added 9 items to our sample. The identified articles were reviewed and eligibility for inclusion was determined through the same process as previously. Following this step, 9 articles were found to be in line with our research process, highlighting a final sample of 41 articles.

Figure 1: Search strategy



3 Results

Using the SLR methods in this paper we provide a descriptive analysis, a state of the art about the research topic, and an integrative vision of the development of smart cities concerning international management and the internationalization process. Moreover, this paper captures the evolution of scientific production at the intersection of smart cities and internationalization strategies by systematically tracking the evolution of these topics in the selected documents.

3.1 Descriptive analysis

Since 2009, the number of articles published over the years, except the first period due to the not clear understanding of the smart city concept, had an increasing trend. Table 2 shows a growing trend, with a peak of the number of articles published during the last years in 2018 (N=7), 2019 (N=4) and in the first part of 2020 (N=7 until 31 August).

Even though this research domain was initiated in the past decades, the findings show that as a research area especially in terms of IoT and Information Communication Technology ICT is at a youth stage and grows to a fast degree. More specifically, the findings in Table 1 show that scholarly research has intensified in the second half of the past decade (2015), which is the reference period for the existence of this stream of research. Interestingly, 71% of papers were published in journals in the past five years and 41% of papers were published in the last three years.

Furthermore, as we can see in figure 1, extant research had been published in a wide array of publication outlets (15 journals ranked 3,4 and 4* ABS) from various disciplines, including different research are such as Regional Studies, Planning and Envi-

ronment (N=14), Information Management (N=13), Operations and Technology Management (N=3), General Management, Ethics, Gender and Social Responsibility, Innovation and Public Sector and Health Care (N=4) and Economics, Econometrics and Statistics (N=1). This reflects a growing interest in regional and city development as well as its managerial interpretation and the spread of publications on the field of information management in recent years. This conception takes on increasing importance in the development and strategies of cities, which broaden their national and international development field through internationalization strategies.

	REGIONAL. STUDIES, PLAN. AND ENV.	INFO MAN	ETHICS- CSR- MAN	INNOVATION	OPS & TECH	PUB SEC	ECON	Tot
2009	1							1
2010								
2011		1						1
2012		1						1
2013	2							2
2014	3	1		1	1			6
2015	4					1		5
2016		1	3			1		5
2017	2	2						4
2018		2		1	1	2		6
2019	1	3						4
2020	1	2		1	1		1	6
Tot	14	13	3	3	3	4	1	41

Tab. 1 Research area and years of publication

3.2 International Management perspective in Cities

To understand the relation between smart cities strategies and international management strategies, we considered a widely accepted classification of international management research, as reported, and briefly summarized in Table 2, and coded articles accordingly. In the following classification, we used 12 categories to organize and group works related to International Management (IM) research [16, 29, 30]. The list is quite comprehensive because it includes all the principal aspects of international management. While it should not be considered a conclusive classification of IM research, it can be regarded as a well-organized framework to categorize articles in this field and it is still used in numerous researches in the most important journals [16, 30]. Table 3 briefly synthesize the outcomes of the classification of our sample according to the 12 categories of international management research.

Tab 2: Categories of International Management Research

Global business environment	Global economy, global markets, political and regulatory environments, and international risk
Internationalization	Description and measurement of internationalization, antecedents, and consequence of internationalization
Entry mode decisions	Predictors of entry mode choices, predictors of international equity ownership levels and consequences of entry mode decision
International joint ventures	International joint venture partner selection, partner relations, and consequences of in ternational joint ventures
Foreign direct investment	The timing, motivations, location of foreign direct investment, and firm and host coun try consequences
International exchange	International exchange, determinants of exporting, export intermediaries, and conse quences of exporting
Transfer of knowledge	Antecedents of knowledge transfer, processes of knowledge transfer, and conse quences of knowledge transfer
Strategic alliances and net- works	Strategic alliance relationships, networks of strategic alliances, and outcomes of strategic alliances
Multinational enterprises	Multinational enterprise strategies and policies, and models and descriptions of th multinational enterprise
Subsidiary-headquarters re- lations	Subsidiary role (including subsidiary strategies and typologies), subsidiary control, an subsidiary performance
Subsidiary and multinational team management	Subsidiary human resource management practices, subsidiary behaviours, multina tional negotiations, and multinational team management
Expatriate management	Expatriate human resource management, issues for expatriates, and expatriate and re patriate reactions

As we can see in table 3, the principal international management categories observed are global business environment (51% N = 21) [3], e.g [32], [33] by evaluating the "global economy, global markets, political and regulatory environments, and international risk" represent one of the most important areas to connect international management and smart city governance.

It is also interesting looking at the categories "transfer of knowledge" and "Internationalization" which represent respectively 22% (N=9) and 19% (N=8) of our sample. Several papers looking at the relation between smart city context and stakeholder [34], e.g. [35] by focusing on the development and implementation of the knowledge process in the city itself. Besides, the internationalization process represents a key element of growth and development of the smart city concept by following the impact of IoT and Communication technologies into the smart city policy [35–37], e.g. [38].

The rest of the studies rely on "entry mode decision" (5%) and "strategic alliance and networks" (3%). No articles were grouped in the other categories although these perspectives may also be relevant for smart city research. For instance, the international exchange could be an interesting field of research in terms of city network and international management strategies between smart city dynamics.

Consequently, the government and policymakers must consider not only the internal management of the city but also the global competition and well-defined international management strategies [40] based on the currently existing tools such as IoT and ICT. These findings indicate the importance of the role played by policymakers and government in the life of smart cities and the close relationship between smart city governance and city stakeholders.

Categories	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	TOT
Global business environment					2	3	2	2	3	3	3	3	21
Internationali- zation				1		1	1			3	1	1	8
Transfer of knowledge	1		1				2	1	1	1		2	9
Entry mode de- cisions								1				1	2
Strategic alli- ances and net- works								1					1
Multinational enterprises													0
Subsidiary- headquarters relations													0
Subsidiary and multinational team manage-													0
ment Expatriate													0
management International joint ventures													0
Foreign direct investment													0
International exchange													0
	1	0	1	1	2	6	5	5	4	6	4	6	41

Table 3: International management categories per years

3.3 Methodology applied in the international management area

The present section proceeds to evaluate the principal methodologies implemented in our sample by the categories of international management.

The theoretical articles capture about 30%. As consequence, the majority of paper are empirical (63%) especially focusing on the qualitative method (48%), followed by mixed methods (13%) and quantitative methods (7%). The rest of the paper are a literature review (7%). Moreover, the distribution of these methodologies over the years is particularly appealing.

The research evolution beginning with qualitative methods and theoretical publications as we can see in table 4. In this sense, the peak of publications within the years, 2015-2016 were theoretical and qualitative research, (25%). Thus, because of the great development of the concept of smart city is in the following years as quantitative studies have been implemented in this research area. likewise, there is a strong increase in terms of quantitative (20%) studies in recent years.

Categories	Theoretical	Review		Total			
			Quantitative	Qualitative	Mixed-Methods	No. %	
Global business environment	7	2	1	10	1	21	
Transfer of knowledge	3			3	3	9	
Internationalization	2		1	5		8	
Entry mode decisions			1	1		2	
Strategic alliances and networks	1					1	
International joint ventures						0	
Foreign direct investment						0	
International exchange						0	
Multinational enterprises							
Subsidiary-headquarters relations							
Subsidiary and multinational team management							
Expatriate management						0	

Table 4: International management categories per methodology

This short description has made the case that smart city research is at a relatively early stage regarding its theoretical development and empirical understanding. While the term has increased popular traction amongst academics, businesses, government and media, the concept itself tends to be more theoretical than practice and need futures empirical evidence in the next years. Given how quickly the smart city concept has gained traction and been translated into different forms of networked urbanism, reshaping city administration and urban economic development it is important to push the research stream into the practice of smart city.

As noted previously, the "Global business environment" encompasses most of the research that emerged in our sample. Research in this category is mainly theoretical and qualitative, with a large number of interviews and case studies. In the "Transfer of knowledge" category, theoretical, qualitative, and mixed methods are implemented by the research equally. In the "Internationalization" and "Entry mode decisions" categories, the first qualitative studies were carried out mainly in recent years.

These data show that the relationship between international marketing and smart cities is still in a preliminary stage, where theoretical and qualitative studies attempt to study this phenomenon. Interestingly, recent empirical demonstrations combined with the theoretical framework produced by academics and practitioners provide evidence of the central role of internationalization strategies in the development of smart cities.

4 Conclusion and Discussion

Our analysis shows a growing development of the relation between international management and the development of smart cities underlying the strong openness of cities to the international context. The international context leads cities to compete in different areas such as human capital, knowledge, financial capital, tourism, and innovation. This work provides an initial overview of the role of international management in the development of smart cities.

The existing literature shows that international city management strategies are currently in a preliminary phase. Even though cities are evolving towards a digital and increasingly competitive environment, the development of international strategies is still embryonic. This awareness is confirmed by the analysis of the literature that demonstrates mainly theoretical and qualitative papers combined, only in recent years, by growing empirical research on the subject. From this perspective, the principal drivers emerging from this analysis mainly concern three categories: Global business environment, Internationalization, and Transfer of knowledge, which summarize the current need for cities to move from a local to an international and competitive context in order to attract knowledge, human and financial capital.

Cities should build their smart city models from an entrepreneurial point of view with well-defined strategies to be competitive and develop on a national and international level [23, 39].

This study is a valuable insight into the development and implementation of international strategies to promote smart cities. Strategies can drive this new wave of change in redefining the relationship between the city and its stakeholders nationally and internationally [41]. To increase synergy and push towards a development increasingly aimed at international openness, professionals in the sector must improve coordination between policymakers and the various actors involved using technological and innovative tools increasingly present in Smart Cities [42], [43].

The emerging picture shows a growing corporate vision of the city and its need to be developed, supported, and promoted both locally and internationally [44]. Moreover, this study provides valuable information to policymakers and government by illustrating the effective impact of international management strategies on the opening of smart cities in the global panorama. Therefore, government and policymakers must invest in ICT and IoT to sustain national and international strategies and improve relationships with our stakeholders.

This research, like any other systematic review, is subject to structural limitations. Firstly, we privileged reading in an international key, to the exclusion of some valid articles that did not fall within the concept of international development. Secondly, the use of keywords in the search formula and the use of specific databases may have resulted in a lack of potentially relevant literature. However, we believe firmly that the identified publications are representative of the current literature on the subject.

Moreover, the perspective of international management is still in a rather preliminary phase. Although the concept of internationalization and international strategies of the city has attracted scholars and practitioners in recent years, there is still no univocal vision regarding the management and development of smart cities' strategies from a managerial point of view. For this reason, we have decided to implement a widely accepted classification at the academic level to consider cities as companies that compete in the global landscape. Future research could study this emerging relationship not only by assessing the relationship between governance and the city's international development but also in terms of emerging global competitiveness. In addition, as emerges from our sample, future research should focus on quantitative research that is useful for confirming, modifying, or consolidating the essentially theoretical developments observed so far.

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