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Exploring the Interceptions Between Smart Cities and Digitalization for Urban Development - A Systematic Literature Review and Future Research Agenda

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Exploring the interceptions between Smart Cities and Digitalization for Urban Development – a Systematic Literature Review and future research agenda

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Abstract. Both scholars and practitioners attribute a strategic role to Smart Cities and Digitalization for Urban Development, witnessed by the extensive literature produced on the subject in the last decade. Thus, this growing interest involves the need to clarify the complexity deriving from the ongoing urbanization and digital transition processes.
This paper aims to provide a Systematic Literature Review (SLR) to tackle the relationship between the inputs generated by the Smart Governance policies and the output related to their enhancement. It offers an outline of the extant literature, framing the future research trajectories. A rigorous methodology will allow the reader to fully understand the nature of such a limited research area. Furthermore, the small number of contributions intersecting the two strands will represent the nuclear unit within which investigate the operational effects in the context of Urban Development.
Finally, the discussion of the findings will be aimed at drawing up a research agenda to improve smart government decision-making from a "smart citizen-centric" perspective.

Keywords: Smart Cities, Smart Governance, Digitalization, Urban development, Systematic Literature Review.

1 Introduction

Nowadays around the 55 percent of the world's population lives in cities, with an expected urbanization level close to 70 percent by 2050 and with 43 megacities with more than 10 million inhabitants by 2030 [1], and a pivotal role played in both government agendas and academic research by this global demographic trend.

In this sense, the United Nations [1] claims that urban development requires effective management by national and local authorities, including the Urbanization among the "major issues" to be tackled in the next future in their 75th-anniversary report. Thus, literature related to Smart Cities and Digitalization in the Urban Development field,

even though is relatively at its early stage, it has already generated a growing awareness among scholars and practitioners on the issue [2,3,4].

Furthermore, the request for effective management of the urban development initiatives led the debate towards a smart re-definition of cities' governance, in order to improve the quality of life by emphasizing citizens' role in the government decision-making through the intelligent use of ICTs (Information and Communication Technologies) [5]. In this sense, even the attempt to conceptualize Digitalization for Smart Cities led us to investigate the uncharted opportunities deriving from a dynamic, collaborative, and participating urban development [6,7]. In doing so, this study participates in the debate on the literature, arguing that smart citizens should be the starting point of any speculation according to a "smart citizen-centric" approach [6,7,8,9,10].

The aim of this Systematic Literature Review (SLR) is therefore to explore through a rigorous and replicable methodology the interceptions that exist between two adjacent research lines - the one on Smart Cities and the other on Digitalization- in order to identify the *trait d'union* that connects them, gaining important insights to be applied to the Urban Development field. This descriptive review offers an outline of the extant 2011-2022 literature and frames the future research trajectories on Digitalization and Smart Cities (RQ1), with a particular focus on the Urban Development policy implications (RQ2).

The analysis was conducted with a focus on 4 fundamental pillars, namely the three different "types of ideal-typical definitions" introduced by Meijer & Bolivar [11], smart technologies, smart people, and smart governance, implemented by a fourth element represented by the smart environment [12]. In the attempt to reach the aforementioned goal and to fill the relative gap in the literature, the previous reviews on the subject, from which this work draws its settings, have assumed a leading role from a methodological point of view [11, 13, 14, 15]. In doing so, the *trait d'union* that connected Smart Cities and Digitalization, is represented by the urgent need for an evolution towards a "smart citizen-centric" view. This need, as will be reported below, is evidenced by the demand for effective knowledge management, civic responsibility, sustainable urban development, e-participation, and social inclusion shared by practitioners and decision-makers.

Finally, this investigation expands the boundaries on Smart Cities and Digitalization in the Urban Development fields, starting from a nuclear final sample consisting of 46 studies obtained after applying very strict eligibility criteria to an initial one of 11,000 contributions, providing research trajectories and policies implications, useful for both scholars and practitioners. In particular, Section 2 will present the theoretical framework and Section 3 will provide a detailed description of the methodology used to obtain this systematic review. In Section 4 the Findings collected by the mapping of the extant literature will be reported and discussed in the following Section 5. In the Conclusions, reported in Section 6, we will try to answer to the questions left open, and

then discuss the policy impacts on Smart Cities deriving from the future research agenda.

2 Theoretical foundations

Until 2009, more people had lived in rural areas than in urban ones. Today, around 55 percent of the world's population lives in towns and cities, with an urbanization level that is projected to reach nearly 70 percent by 2050 [1]. Due to these demographic scenarios, the United Nations argues that "urban development requires effective management by national and local authorities"; so, starting from this urgency, the present work and the underlying research questions arise, laying the foundations for the entire research strategy.

The request for effective management of the urbanization process cannot be traced back to a mere "technological question" [11], however, a deep analysis of the question constitutes the starting point of any subsequent speculation. Thus, emerges the desire to explore the theoretical intersections between adjacent and connected research fields, such as Digitalization and Smart Cities, attributing to the final reference sample a pivotal role in the broader complex process of changing institutions and urban governance visions. In this regard, this literature review is firmly anchored to some important theoretical premises that should be highlighted to precise the work's context of the application.

Firstly, an important clarification must be done about the concept of smartness. The reference point in the literature on Smart Cities [10,16] is represented by the "terminology analysis" reported by Dameri & Rosenthal [17]. This lexical explanation aims to avoid misunderstanding between the concepts of Smart City and Digital City. The first refers to a well-defined geographical area, where high technologies -such as ICT- cooperate to create benefits for citizenship, in terms of well-being, inclusion, participation, and environmental quality, and where the government is driven by a group of subjects, who state rules and policies for the urban development [18,19]. The latter, instead, is defined as an open, complex, and adaptive system based on a computer network and urban information resources, which forms a virtual digital space for a city [20,21]. In essence, therefore, the digital perspective lacks in terms of proactivity, and the idea of improving the citizenship quality of life is not explicitly set. Otherwise, smartness, net of the pivotal role played by digital technology, is closely linked to aspects, such as cooperation, inclusion, and participation [17].

In this view, several definitions of Smart Cities have been processed over the last decade, and by 2011, the framework spread in the literature identified 6 (common) pillars of Smart Cities [8,9,10]. However, this work condensed this approach by referring to 4 fundamental pillars, focusing on the three different "types of ideal-typical definitions" introduced by Meijer & Bolivar [11], namely smart technologies (technological

focus), smart people (human resource focus), and smart collaboration (governance focus), implemented by a fourth element represented by the smart environment (sustainability focus) [12]. In particular, as regards the governance pillar, the "key point" for obtaining the aforementioned smartness will be the intelligent use of ICT, to improve quality of life by emphasizing citizens' role in government decision-making [22]. The choice of these specific lenses depended on the willingness to set the analysis on pillars with a broader and non-overlapping spectrum, thus excluding smart mobility and smart living.

Secondly, concerning the concept of Digitalization, through this review, we want to overcome the definition as common as abstract of the Gartner Glossary [23] which describes it as a process capable "to provide new revenue and value-producing opportunities" [24,25]. More concretely, this work aims to lay the foundations for further discussions on the implications of conceptualizing Digitalization for Smart Cities, namely the uncharted opportunities deriving from the analysis and measurement of the data that cities produce, and from the need for data openness for a dynamic, collaborative and participated urban development [6,7]. As argued by Finger & Razaghi [6], dealing with Digitization in the context of Smart Cities has three main implications to be addressed, represented by the management of urban infrastructure systems, the provision of urban services, and the governance of the metropolitan area. These implications play a pivotal role in Urban Development and are the reasons that led us to explore the intersection between different yet adjacent research strands.

Considering these premises, in the present investigation the resulting research questions are determined as follows:
RQ1. Which are the interceptions between Smart Cities and Digitalization within the literature?
RQ2. Which are the research implications in the field of Urban Development?

In coherence with the research questions previously set and following the path designed by the two "tracks" of the research, this SLR was taken into consideration only the contributions that dealt with issues related to Smart Cities through a digital perspective and attributable to broader reflections on Urban Development governance. Precisely for this reason, works that, although widely cited over the years and/or in line with the eligibility criteria of the top peer-reviewed journals, were excluded from the final sample [18,26,27].

3 Methodology

3.1 Systematic Literature Review (SLR)

This work uses a rigorous and replicable methodology to allow the reader to fully understand the nature of such a limited research area. For this reason, the choice fell on a

Systematic Literature Review (SLR) able to "provide several critical discussions […] by integrating extant literature, synthesizing prior studies, and identifying knowledge gaps" [28,29].

The rigor, replication, and scientific reliability of this contribution derive from a strict research protocol composed of four standardized steps [30,31]. Firstly, in this SLR we used Scopus as a database because it is representative of more than 20 thousand peer-reviewed journals and it comprises also the 97% of articles indexed in the Web of Science (WoS) [14,32,33,34]. Secondly, the search formula was determined by using the strings selected from two specific contributions, milestones of the present paper, as SLRs published in 3ABS-peer-reviewed journals (Association of Business Schools), and comprehensive theoretical collections on Smart Cities, Digitalization, and Urban Development [13,15]. Furthermore, the final search formula has been implemented by adding keywords, which are commonly associated with the Smart Cities pillars [10], or with the investigation of Information Communication Technologies (ICTs) [13].

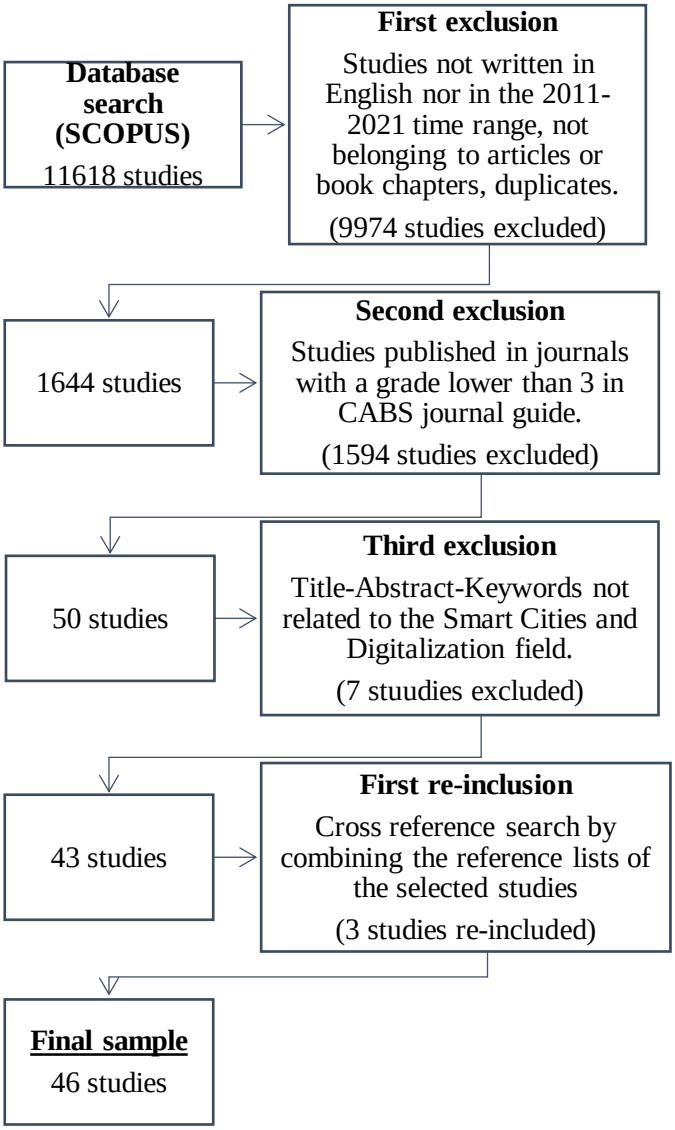
The third step of this research protocol coincides with the identification of the exclusion-inclusion criteria to be applied to the raw dataset obtained from Scopus. According to the SLR's most common practices, the refining of the initial sample takes place by excluding all the studies that are not written in English, that do not belong to articles or book chapters or are duplicates. Then, the studies published in journals with a lower grade than 3 of the Chartered Association of Business Schools (CABS) journal guide, and finally the works with Title-Abstract-Keywords which are not related to the Smart Cities and Digitalization field [29,35,36,37]. Lastly, the final sample was manually refined by a cross-reference search through the so-called "snowballing method" [38,39].

3.2 Search design and final sample definition

The choice of the database fell on Scopus, as a tool capable to deliver an omni-comprehensive overview of the world's research output in most of the human knowledge [32,40] without choosing a specific reference area. Furthermore, the keywords selection wanted on the one hand to take as a reference point the terms used in previous contributions published in 3ABS-peer-reviewed journals [13,15], and on the other to enrich the search keyword formula with terms widely used in titles and abstracts related to these research lines.

In light of this, the final search string includes a series of keywords both related to Smart Cities and to Digitalization.

Such a wide search formula produced a large initial sample, that exceeded 11 thousand contributions and was skimmed and refined by applying the exclusion and (re)inclusion criteria in a logical-chronological order, summarized in the Figure 1.



(**Figure 1**. Search design)

In April, the authors completed this selection following the protocols commonly used in the most important international literature reviews, applying exclusion and inclusion criteria to the initial sample [11,15,36,41]. For example, as regards the exclusion of studies, took place on three fundamental levels. The first exclusion concerned all those contributions that did not respect the basic parameters of adequacy and therefore studies not written in English, not belonging to articles or book chapters, or duplicates. Furthermore, the attention of this research focused at a temporal level on a precise time

range, from 2011 to the present day, as 2011 represents the starting point of the discussion around Smart Governance, even if only from 2013 onwards, it has been considered among the "Smart Cities pillars" [8,10,42].

The second exclusion led us to a detailed analysis of more than 1600 studies aimed at excluding from the collection all those contributions that were not published in 3ABS-peer-reviewed journals, to ensure the high level of content to process the analysis [13,15,43]. The third and last exclusion, on the other hand, occurred after a careful reading of Title-Abstract-Keywords that do not relate to the Smart Cities and Digitalization field [29,35,37,44], keeping aside those contributions that, after the second reading, seemed potentially re-included later on. These three "skimmings" reduced the starting sample by almost 11 thousand units, for an intermediate sample of 43 studies.

Lastly, the search strategy included a final phase aimed at the re-inclusion of works consistent with the eligibility criteria applied along the way. The re-inclusion took place by applying a cross-reference search by manually combining the reference lists of the selected studies, for a final core sample that counts 46 studies and plays the role of the theoretical "foundations" of this paper [15,38].

4 Findings

The present section reports the results obtained in the attempt to answer the RQ1 of this study: Which are the interceptions between Smart Cities and Digitalization within the literature?

The following descriptive analysis is structured into five main parts: the first aims at providing a preliminary overview of the selected contributions sample, and at outlining the evolution of the studies in the time range considered. The second identifies the reference journals; the third geographically locates the studies examined, and the fourth focuses on the most cited ones. Lastly, in the fifth, the previous collections are crossed with the methodological analysis of the contributions to chart a complete mapping of the existing literature on the subject of Smart Cities and Digitalization in the Urban Development field [14,15]. The graphs are shown in the following Figure 2, Figure 3, Figure 4, and Figure 5 were created using the "Biblioshiny" software.

4.1 A preliminary overview

The final sample was obtained after 3 steps of exclusion, followed by a manual re-inclusion and, as can be seen in the Table 1, it consists of 46 studies published by 23 different sources along a timespan ranging from 2014 to the end of 2021. Despite the decision lied on the timeframe 2011-today (as it represents the starting point of the

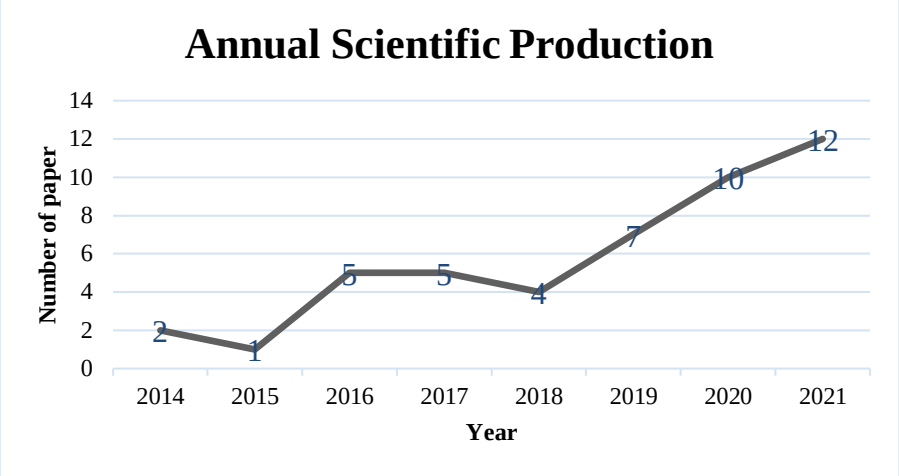
discussion around Smart Governance [8,42], the years 2011, 2012, 2013 and 2022 remain excluded from this review as no contributions have been produced on the topic that meet the eligibility criteria previously described.

The “Average years from the publication” are about 3, the “Average citations per document” are close to 44 per contribution and only 2 studies out of 46 (4.35%) were made by “Authors of single-authored documents” for a total of 144 authors involved.

(**Table 1.** Main information)

MAIN INFORMATION ABOUT DATA	***Results***
Timespan	2014:2021
Sources	23
Documents	46
Average years from publication	3.04
Average citations per document	43.74
AUTHORS	
Authors	144
Authors of single-authored documents	2
Authors of multi-authored documents	142

Furthermore, Figure 2 shows how the trend of the articles published in the timespan 2014-2021 has seen two main moments: in the first phase (2014-2018) the growth of the “Annual Scientific Production" was moderate, with a peak of 5 contributions published in the years 2016 and 2017. While, the second phase (from 2018) represented a “rebound” of the curve, starting from which the studies published in 3ABS-peer-reviewed journals registered a surge up to 12 papers produced in the year of 2021. This trend shows how the literature related to Smart Cities and Digitalization in the Urban Development field is at a relatively early stage, but in spite of this, it is producing a growing awareness of practitioners and academics on the issue, demonstrated by the high number of papers over time frame 2018-2021 [2,3,4].



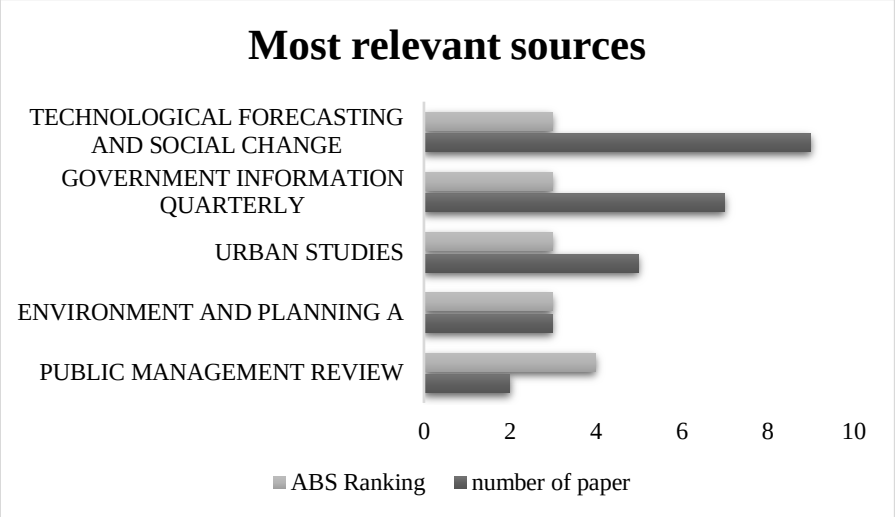
(**Figure 2.** Papers' evolution in time)

4.2 Studies sources

As can be seen in Table 2 and Figure 3, only 7 out of the total 46 contributions were published in 4 ABS-peer-reviewed journals (15.22%). Instead, the largest production concerned two 3 ABS-peer-reviewed sources represented by Technological Forecasting and Social Change (9 articles, 19.57%) and Government Information Quarterly (5 articles, 10.87%), which together collect almost the 30% of the works that compose the final sample analysed.

(**Table 2.** Top 10 journals included in the sample per relevance and ABS ranking)

Sources	***Articles***	***ABS Ranking***
PUBLIC MANAGEMENT REVIEW	2	4
EUROPEAN JOURNAL OF OPERATIONAL RESEARCH	1	4
HUMAN RELATIONS	1	4
INFORMATION SYSTEMS JOURNAL	1	4
INTERNATIONAL JOURNAL OF OPERATIONS AND PRODUCTION MANAGEMENT	1	4
REGIONAL STUDIES	1	4
TECHNOLOGICAL FORECASTING AND SOCIAL CHANGE	9	3
GOVERNMENT INFORMATION QUARTERLY	7	3
URBAN STUDIES	5	3
ENVIRONMENT AND PLANNING A	3	3



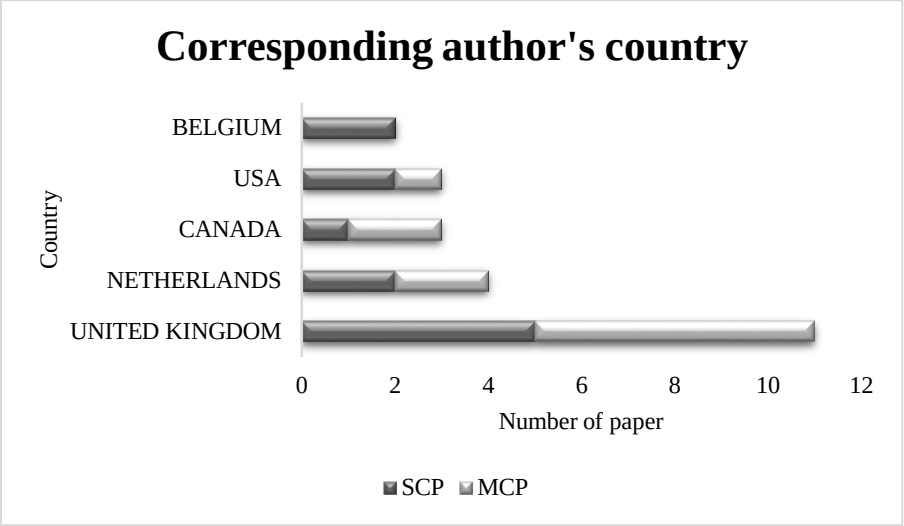
(**Figure 3.** Top 5 most relevant journals by number of contributions)

In particular, the papers published in the two most relevant journals focus on smartness in Smart Cities Development [45,46], and on citizen participation in the concerned governmental processes [47,48,49]. As for the articles published by the top ABS-peer-reviewed journals, there is a markedly practical focus, as in the case of the outlets for Public Management Review, European Journal of Operational Research, Human Relations and International Journal of Operations and Production Management [50,51,52,53,54]. This demonstrates the request for connection with operational case studies by international top journals [55,56].

4.3 Studies' geography

To analyse the studies' geography, as can be seen in Figure 4, we considered the top 5 corresponding authors' countries geo-location, according to the number of papers produced along with the time range. The countries mainly involved in this flow of theoretical contributions are Belgium, the USA, Canada, the Netherlands and the United Kingdom, listed in ascending order.

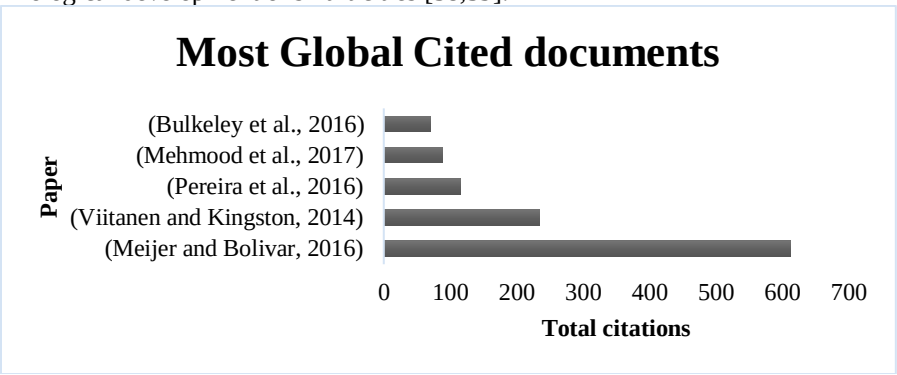
Furthermore, Figure 4 shows two different research approaches can be identified in this top 5: the Belgian one, an example based on intra-nation works (Single Country Publications, SCP), and the British one, radically different, devoted to the inter-nation partnership between various research institutions (Multiple Country Publications, MCP), which records a predominance of MCPs over SCPs (6 out of 11 total contributions) and which makes the United Kingdom an international reference point for research in Smart Cities and Digitalization field [57].



(**Figure 4.** Top 5 Corresponding author's countries geolocation)

4.4 Theoretical cornerstones

In the fourth subsection, in the Figure 5 we highlight the top 5 globally highly cited contributions by the number of total citations received. As widely predicted, the cornerstones contributions belonging to the final sample were produced in the first phase of the timespan considered (2014-2017) and all exceed 100 citations, in particular with a contribution which, due to its theoretical approach, represents the milestone of smart urban governance literature [11]. The other highly cited papers deal respectively with the potential deriving from data [22,50], and the political questions deriving from the technological development of smart cities [58,59].



(Figure 5. Top 5 most global cited contributions)

4.5 A Methodological cluster

Lastly, to chart a complete mapping of the existing top ABS journals literature on Smart Cities and Digitalization in the Urban Development field [14,15], the investigation lenses of the previous sections have been condensed along the "vertical axis" of the following Table 3, crossing with a methodological survey. Below, it is possible to read the findings of this work aimed at exploring the interception between Smart Cities and Digitalization for Urban Development clustered by the methodology used (Theoretical or Empirical), years (2014-2021), most relevant sources, and highly cited contributions.

(**Table 3**. Extant research mapping per years, sources, documents and methodology)

	Methodology					
	Theoretical		*Empirical*			
	Framework	Review	Quantitative	Qualitative	Mixed Methods	Total
Years						
2014	1				1	2
2015				1		1
2016	2	1		1	1	5
2017	1		1	1	2	5
2018	1			2	1	4
2019			3	1	3	7
2020	4		1	2	3	10
2021	3		2	3	4	12
Total Methods	12	1	7	11	15	46
Methods %	26,09	2,17	15,22	23,91	32,61	100
Top 5 most relevant Journals						
PUBLIC MANAGEMENT REVIEW	1				1	2
ENVIRONMENT AND PLANNING A	3					3
URBAN STUDIES	1			2	2	5
GOVERNMENT INFORMATION QUARTERLY			2	2	3	7
TECHNOLOGICAL FORECASTING AND SOCIAL CHANGE	2	1	1	1	4	9
Total Methods	7	1	3	5	10	26
Methods %	26,92	3,85	11,54	19,23	38,46	100
Top 5 most Global Cited documents						
(Meijer and Bolivar, 2016)		X				
(Viitanen and Kingston, 2014)	X					
(Pereira et al., 2016)					X	
(Mehmood et al., 2017)			X			
(Bulkeley et al., 2016)				X		

As can be seen in the Table 3, more empirical studies than theoretical ones were produced along the timespan analysed (33 out of the 46 total belonging to the final sample, over 70%), among which, the papers created using mixed methods (both qualitative and quantitative) represent almost a third of the total number of selected papers. This trend is also confirmed in relation to the most 5 relevant journals among the 23 over 3 ABS-peer-reviewed sources taken into consideration. Among these, it is found a clear preference for contributions made with an empirical approach (again over 70% of the total), with implementation using mixed methods (also in this case present largely than the qualitative and quantitative approaches). On the other hand, as regards the top 5 highly cited documents, clustering highlights a uniform distribution of each of the involved methodologies.

This need for contributions goes beyond mere theoretical assumptions and, anchored to operational case studies, it has been reinforced year by year from 2016 onwards [55,56]. This demonstrates once again how the literature related to Smart Cities and Digitalization in the Urban Development field, despite being at a relatively early stage, has already produced both for scholars and practitioners a growing awareness on the challenges arising from the issue [2,3,4].

5 Discussion and directions for future research

In this section, we discuss the results obtained from the thematic clustering analysis [14,15] carried out on the final sample collected. This type of analysis was set up taking into account the theoretical cornerstones -previously enunciated in Section 2 [5,17]. Therefore, the papers were grouped according to 4 fundamental drivers: the three different "types of ideal-typical definitions" introduced by Meijer & Bolivar [11], namely smart technologies, smart people, and smart governance, implemented by a fourth element represented by the smart environment [12].

In addition, two specific research focuses have been defined, represented by Urban Development implications and Research trajectories, in order to create through this SLR a *vademecum* useful for both scholars and practitioners. Finally, from a macro-level perspective, and as a framework of this approach, we focused on the uncharted opportunities deriving from a dynamic, collaborative, and participating urban development in the attempt to conceptualize Digitalization for Smart Cities [6,7]. For a summary of these and other contents refer to Tables 4-a and 4-b.

5.1 Urban Development implications

The attempt to answer to the RQ2 of this study (Which are the research implications in the field of Urban Development?) led us to several specific key findings from which important policy insights in the Urban Development field derive.

From a smart technologies point of view, the increasingly constant search for sustainable urban development through Public-Private Partnerships, aimed at achieving societal value and a better quality of life for citizens through an effective knowledge management [26,60,61], has emerged over the years. To the present demand for collaborative networks, the smart people perspective adds the concept of Digitalization and Urbanization as "a fuel of smart city initiatives". All these aspects, according to the human resource focus, are strictly dependent on the civic empowerment and dynamic capabilities of smart citizens [62,63,64,65].

In line with this, the smart governance focus argues that smart cities problems largely depend on the scarcity of policies to foster e-participation and social inclusion in response to the technological implications in the urban development field, for city administrators and citizens [48,66,67,68]. Finally, the need for a more holistic view on the subject of Smart Cities emerges from the smart environment perspective, aimed at avoiding the misconception according to which all smart city concepts incorporate the goals of sustainable urban development [69].

5.2 Research trajectories

The thematic clustering analysis draws up several research trajectories, defining the future research agenda. From a common point of view to both smart technologies and smart people drivers, emerges a request for more equitable ways of planning and developing cities aimed at reducing digital divide and paying greater attention to engage with marginalized communities. Thus, scholars require a switch in mind, re-thinking the Digitalization within the Urban development field, as a demand-pull phenomenon rather than a technology-push one, through a human-centric vision that considers people as citizens and not only as mere consumers [6,26,70,71].

In this sense, in relation also with the smart governance perspective, we find a *trait d'union* that connects Urban Development policies and future research trajectories, considering the role of the citizen as pivotal. Therefore, smart cities must invest more resources in engaging citizens and ensuring that progress can be accessible to all, understanding which new types of information and information systems could be developed to facilitate the evaluation and management of the smart environmental perspective sustainability priorities [52,72].

Finally, we close these discussions by sharing the insights deriving from the following question, to which we try to answer in the conclusions of this work: who stands to gain and lose in the race towards such an urban future [54,73]?

(**Table 4-a.** Research focus, Urban Development implications and Research trajectories)

		Urban Development implications	***Research trajectories***
Drivers	**Smart Technologies**	Knowledge cities can be considered in the context of encouraging and nurturing locally focused innovation as a way to strive towards a more viable, vibrant and sustainable form of urban development (Makkonen & Inkinen, 2014). Cities around the world are faced by the challenge of reconciling competitiveness with long-term sustainable urban development (Paskaleva 2011). In this perspective smart city development is proposed as a potential model for cities of information and knowledge era (Yigitcanlar, 2015). The key to the success of a smart city is the promise of societal value, in the form of a better quality of life and a more human-centric approach to urban innovations (Albino et al., 2015; Brock et al, 2019). There are three dominant imaginaries that depict urban smart grid technologies as (a) environmental solution, (b) economic imperative and (c) exciting experimental challenge (Quitzow & Rohde, 2021).	How can we find more equitable ways of planning and developing cities and settlements in an electronically mediated knowledge age? (Yigitcanlar, 2015). The smart city and digitalization phenomena are technology push or demand pull? Are we dealing with consumers or citizens? (Finger & Razaghi, 2017). Future research may concentrate on the impact of the investments on regional ICT contexts, in terms of reducing existing digital divides in access and use of digital infrastructure (Reggi & Gil-Garcia, 2021).
	Smart People	Civic empowerment has played a dominant role in the justification and naturalisation of the smart city as the dominant paradigm for urban development (Cardullo & Kitchin; 2018 Zandbergen & Uitermark, 2020). More recent urban development initiatives like […] introduce the idea of smart city through design, a concept that encapsulates all technological promises attached to smart cities from the lifestyle and well-being of its citizens, to sustainable energy sources, environmental protection and economic prosperity (Curşeu et al., 2021). Digitalization and urbanization fuel smart city initiatives. Dynamic ecosystem capabilities lie at the core of orchestrating collaborations involving multiple actors (e.g. companies, municipalities and citizens) (Linde et al., 2021).	Smart citizenship differentiates between sensing citizens, to whom digital infrastructures and data matter in different ways. This means that it may be more difficult than previously anticipated to foster empowerment and to question sanitised conceptions of the city (Zandbergen & Uitermark, 2020). Urban studies scholars must pay attention to the implications of smart cities subject formation, largely- although not exclusively- by engaging with marginalized communities (Burns & Andrucki, 2021).

(**Table 4-b.** Research focus, Urban Development implications and Research trajectories)

		Urban Development implications	***Research trajectories***
Drivers	**Smart Governance**	The authors highlight social issues such as the importance of business-led urban development, the social inclusion agenda, the role of creative industries in urban growth, the importance of social capital in urban development and urban sustainability (Mejier & Bolivar). Recently, e-gov initiatives, along with technology and innovation literature, have been connected to urban development to raise a new approach to make cities smarter (Nam & Pardo 2011; Meijer & Bolívar 2015; Pereira et al., 2017). An applied understanding of the opportunities and challenges of smart urbanism is needed, as the discourse currently lacks 'critical reflection on the wider implications of technologically rooted entrepreneurial urban development, or the consequences of networked urbanism, for city administrators and citizens' (Kitchin, 2015; Kong & Woods, 2018). City officials and mangers can, at least in part, address a city's urban problems by engaging more public e-participation in order to monitor government performance (Allen et al., 2020).	Need to explore challenges associated with citizen-generated data (Allen et al., 2020). If the resarch really want to fulfil the potential of smart cities to become a new datapolis characterized by a participatory economic and political public governance (Meijer 2018), smart cities must invest more resources in engaging citizens and ensuring the initiatives are accessible to all (Sancino & Hudson, 2020). Who stands to gain and lose in the race towards such an urban future? (Hollands, 2015; Timeus et al., 2020). How might digital democracy in itself militate against city halls present or future using citizens' zeal for participation in sensing, planning and governance to brand 'smart citizenship' for bio-political, urban-entrepreneurial ends once again? (Charnock et al., 2021).
	Smart Environment	Many eco-cities globally have indeed become an expression of the entrepreneurial approach to urban development and a vehicle for interurban competition (Wu, 2012; Viitanen & Kingston, 2014). A common mistake is the assumption and misconception that all smart city concepts incorporate the goals of sustainable urban development (Akande et al., 2019).	What new types of information and information systesms can be developed to facilitate the evaluation and management of heterogeneous competing sustainability priorities that address both local priorities and global challenges? (Corbett & Mellouli, 2017). For future work, it would be interesting to expand the research to better capture the relationship be-

			tween ICT and environmental sustainability on a global stage (Akande et al., 2019).

6 Conclusions

The main objectives of this SLR were to analyse extant literature, key constructs, empirical methods, and research trajectories to determine a future research agenda based on those insights [29].

The results obtained highlight that the literature related to Smart Cities and Digitalization in the Urban Development field, despite its relatively early stage, has already produced, for both scholars and practitioners, a growing awareness on the challenges arising from the issue [2,3,4]. Moreover, a clear academic need for contributions anchored to operational case studies (over 70% of the studies are empirical) emerges from the methodological mapping [55,56]. From the sources analysis carried out on the final sample, it is clear that there is a more markedly practical focus, as in the case of the outlets for Public Management Review, European Journal of Operational Research, Human Relations and International Journal of Operations and Production Management [50,51,52,53,54], even in relation to the articles published by the top ABS-peer-reviewed journals.

Once the interceptions between Smart Cities and Digitalization within the literature had been explored (RQ1), our work then has tried to outline the policy implications in the field of Urban Development (RQ2) and the related research trajectories, clustering them according to 4 fundamental drivers represented by smart technologies, smart people, smart governance and smart environment [11,12].

The *trait d'union* that connects both RQ1 with RQ2, as well as the research line on Smart Cities and Digitalization, is represented by the urgent need for an evolution towards a "smart citizen-centric" view, by considering the role of the citizen as pivotal in the next Urban Development [22]. This hyphen also metaphorically “contains” the answer to the question left hanging in the Discussions: who stands to gain and lose in the race towards such an urban future [54,73]? In our opinion, therefore, the citizens.

Thus, we would underline the lack, for both practitioners and scholars, on aspects, such as civic empowerment and the dynamic capabilities of smart citizens [7,62,63,64,65] cooperation, social inclusion and digital divide reduction, collaborative

and participated urban development [6,17], that slow down the smart government decision-making evolution towards a collaborative perspective [5,11]. Ultimately, there is no future for Smart Cities if smart citizens do not become the starting point of the debate.

More concretely, this work recognizes the participation in decision-making and transparent governance, social and cultural plurality, entrepreneurship and innovation of ICT infra-structures, pollution degree and energy management, as the elements that could harm citizens in the context of Digitization and Smart cities, and which must be carefully monitored by policymakers [87]. In this view, the future research agenda that emanates from this contribution, addresses the research trajectories of the debate concerning:

- more equitable ways of planning and developing cities aimed at reducing the digital divide and engaging marginalized communities;
- re-thinking the Digitalization within the Urban development field, as a demand-pull phenomenon rather than a technology-push one and in line with the smart environmental perspective sustainability priorities.

This work suffers from constraints that must be highlighted to inspire scholars and researchers for further contributions. Firstly, the choices regarding the eligibility criteria to determine the final search string, and related to the search engine to be used, although this comprises 97% of articles indexed in the Web of Science (WoS) [14,32,33,34], may have resulted in missing potentially relevant literature. Secondly, the validity of the results collected is limited to the timespan taken into consideration (2011-2022). Nonetheless, we hope that this SLR can provide a good comprehension of the literature on Smart Cities and Digitalization and at the same time indicate to the reader interesting practical insights useful for advancing research in the Urban Development field.

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