Article

Effects and Externalities of Smart Governance

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Abstract: The concept of a smart city is widely implemented all over the world, and this fact creates both possibilities and new challenges for all participants and stakeholders of the process. This study examines the implementation of smart governance in the context of smart cities. The goal of the research is to distinguish between the effects and externalities of the smart governance domain, both positive and negative ones; the effects and externalities are elicited from the outcomes of smart governance implementation revealed from a review of scientific publications devoted to the results, barriers, and facilitators of smart governance functioning. The publications were selected according to a systematic review methodology, then the selected articles were analyzed and the factors that foster the processes of smart governance implementation (facilitators) or vice versa hamper the acquisition of results (barriers), as well as the outcomes of smart governance, were extracted. The extracted factors were attributed to six areas: Information, Efficiency, Citizen-Centricity, Transparency, Digital Divide, and Regulation. Further, the outcomes of smart governance implementation were distinguished as effects and externalities, which were both positive and negative.

Keywords: smart governance; effects; externalities; barriers; facilitators; drivers; efficiency; citizen-centricity; digital divide; transparency; regulation; information

1. Introduction

The smart city concept is attracting increasingly more attention in the contemporary world. Smart governance is one of the domains of smart cities [1–3], important for implementation of the smart city concept in life. According to [4–6], smart governance is oriented on establishing effective interaction and cooperation of various stakeholders via intelligent employment of ICT, resulting in the improvement of the decision-making process. Smart governance can be defined as an ability to use adaptive tools for making decisions [7,8]. The government becomes a "smart, open, and participatory" body implementing the process of decision-making on the basis of smart governance [9].

The primary goal of smart city governance is to improve the quality of the urban ecosystem through the application of new technologies. It should establish a firm link among technology, human capital, and governance as a provider for close cooperation, respectively, boosting openness and the potential of mass collaboration and involvement, which may drastically alter governance frameworks [10,11].

According to [9,12–16], smart governance presupposes the active use of technologies for implementation of digital initiatives, oriented on creating a new model of delivering public services; the main requirement towards this model is the capability of integrating the various environments existing within a smart city. However, researchers have also mentioned other components that are essential for smart governance: rethinking the entire process of government functioning; occurrence of open initiations [17], open data, and open action; transparency, collaboration, and participation [18,19]; and smart services [20]. The creation of such a governance structure with such diversified tasks assumes the existence of externalities, since the process of considering all implications and impacts

is very difficult and labor- and time-consuming. The complexity of smart governance implementation is facilitated by the fact that its functioning is directly related to the behavior of city residents, and the effect of human factor on all processes assumes increased unpredictability. Therefore, the determination of possible barriers to smart governance implementation or vice versa factors, supporting the functioning of smart governance, as well as the specification of positive and negative effects and externalities, are very important to ensure the effective functioning of the government within a smart city.

Studying the articles in the literature in the area of smart governance has demonstrated that they do not usually divide the outcomes of smart governance implementation into effects and externalities. The articles usually discuss changes in the society, economy, or other areas due to the investigated factors. However, the authors suppose that it is very important to understand that any activity results not only in effects but also in externalities, and these externalities should be taken into consideration in the decision-making process within a smart city. The authors consider effects as a planned and expected result, while externalities are the results that provide benefits (in case of positive externalities) or unpleasant experiences (in case of negative externality) to the groups unrelated to the producer [21,22].

The study of externalities appeared as a neoclassical critique of the market, and belongs to eternal topics, as discussed in the scientific literature. Pigou is usually assumed as a "father" of the scientific approach to externalities [23]. In the 1920s, he initiated the attempts to fight negative externalities, further supported by other scholars. Pigou developed the idea of special tax, further named "Pigouvian tax". This idea is supported even nowadays [24], and other ideas about regulation negative externalities have emerged [25]. Many scientists consider externalities as the responsibility of a producer, for example, [26,27], and this approach has become very popular, especially with the increased responsibility of people associated with a sustainable way of living.

The study considers the barriers to the approach of establishing smart governance, as well as the factors facilitating the operations of smart governance. Nevertheless, the most attention is paid to effects and externalities, both positive and negative, of smart governance implementation.

The goal of the research is to distinguish between the effects and externalities of the smart governance domain, both positive and negative ones; the effects and externalities are separated from the outcomes of smart governance implementation and revealed from a review of scientific publications devoted to the results, barriers, and facilitators of smart governance implementation.

The authors hope that this research integrates the existing studies on the results gained in smart governance area of the smart city. It will be a theoretical contribution to the development of the concept of a smart city. There are numerous studies showing the barriers or the factors facilitating the adoption of the smart governance system in a smart city. There are studies that demonstrate the advantages of smart governance or certain bottlenecks of the process. This research integrates the positive and negative outcomes, barriers, and facilitators of the process of integration of smart governance into a smart city, and distinguishes between effects and externalities.

Nevertheless, the study also contributes to the practical issues. Practitioners can find the integrated list of negative externalities of smart governance implementation and develop the strategy for minimizing the impact of them; simultaneously, the list of positive externalities enables the design of the strategy for facilitating their influence on smart governance.

- In Section 1, the authors explain the necessity of the research and set the goal of the study, as well as demonstrate the novelty and practical value of the research.
- In Section 2, the authors describe the methods and procedures for selecting the articles.
- In Section 3, the barriers and facilitators of smart governance implementation are attributed to six different domains, and the possible results of this implementation are divided into effects and externalities, which is the goal of this study.

- Section 4, presents the discussion of cases, the discussion of the impact of pandemic on smart governance, and also the limitations of the study. which are interesting for the study.
- Section 5 summarizes the results of the study.

2. Materials and Methods

A qualitative approach was used in order to gain better comprehension of the complexities of the framework of smart governance, barriers and facilitators for its implementation, and effects and externalities as a result of provision of smart governance in a smart city.

2.1. General Research Concept

The goal of the research is to distinguish between the effects and externalities of smart governance domain, both positive and negative ones; the effects and externalities are separated from the outcomes of smart governance implementation, which was revealed from a review of scientific publications devoted to the results, barriers, and facilitators of smart governance implementation. Therefore, the determination of the methodology for article selection is the basis of this research.

The authors implement traditional methods used by numerous researchers, providing literature reviews, for example, [28–31].

This research includes two almost independent literature studies: one is devoted to the determination of barriers for smart governance principles implementation and the facilitators (drivers) of this process; the second study deals with determination of positive and negative effects and externalities of smart governance implementations.

Each study is divided into six stages. The first stage of the research includes the determination of the study goal, the keywords relevant for the literature search, as well as the inclusion and exclusion criteria. The inclusion criteria for both studies are as follows: only full-text articles in English, available online and indexed in Scopus database. The exclusion criteria: full-text articles in English, books, and book chapters unavailable online.

Scopus database was chosen as a leading database with a great number of peer-reviewed studies in social sciences. The extensive choice of articles allows choosing the comprehensive set of peer-reviewed documents according to the stated goal. Web of Science, being a globally used scientific database, does not present such a wide choice of articles in social sciences as the Scopus database [32–34]. The studies on social sciences presented in the Web of Science database intersect with the articles presented in Scopus. Therefore, the authors decided to use only the Scopus database, since it allows the set goals to be achieved.

The second stage is a Boolean search for the articles in the Scopus Database according to the determined keywords. At this stage, primary selection is performed, and duplicated publications, books, book chapters, articles not in English, or not available online are excluded.

The third stage is a primary screening of the abstracts of the articles, selected at the second stage, for their relevance to the research goal. The exclusion of articles assumed as irrelevant to the research takes place.

At the fourth stage, the reading of full-text articles takes place. Articles which do not correspond to the research goal are excluded.

The fifth stage includes snowballing: the references of selected articles are checked, and the articles that seem to be the most interesting and promising for achieving the goal are selected, if available online in English and in full-text version. It should be noted that at this stage, book chapters are also considered if available for reading.

The sixth and final stage is a qualitative analysis of the articles selected at stages four and five.

2.2. Literature Study I: Barriers and Facilitators of Smart Governance Principles

There are six stages of this part of the research. At the first stage, the authors state the problem and the goal for this part of the study. The goal is to define the existing barriers to the implementation of smart governance principles and the facilitators of these processes on the basis of a systematic literature review. Correspondingly, keywords for searching the scientific articles were identified: smart AND governance OR smart AND government AND barriers OR facilitators. Only full-text articles in English from the Scopus database available online were considered in this study. The selection of the articles took place in October–November 2022, and the time span for articles was from 1991 to 2022.

In total, there were selected 687 articles for screening, and 108 of them were excluded from selection. The excluded publications were books or book chapters, or duplicated publications; some excluded sources were not available online (Stage 2). As a result, 579 articles were included for screening the abstracts.

At the third stage, i.e., screening the abstracts, 426 articles were excluded from further study. The reason for excluding these articles is their irrelevance to the set goal of this part of the study. Therefore, only 153 articles were selected for full-text reading. At the fourth stage, i.e., full text reading, 87 articles were excluded, and for further analysis only 66 articles were left. The fifth stage is the stage of applying snowballing approach. After reading the selected articles, the references were analyzed, and 36 articles were selected for qualitative analysis. At this stage, the available book chapters were also included in the study after snowballing. As a result, at the sixth stage, 102 articles were analyzed. The summary of this process is presented in Figure 1.
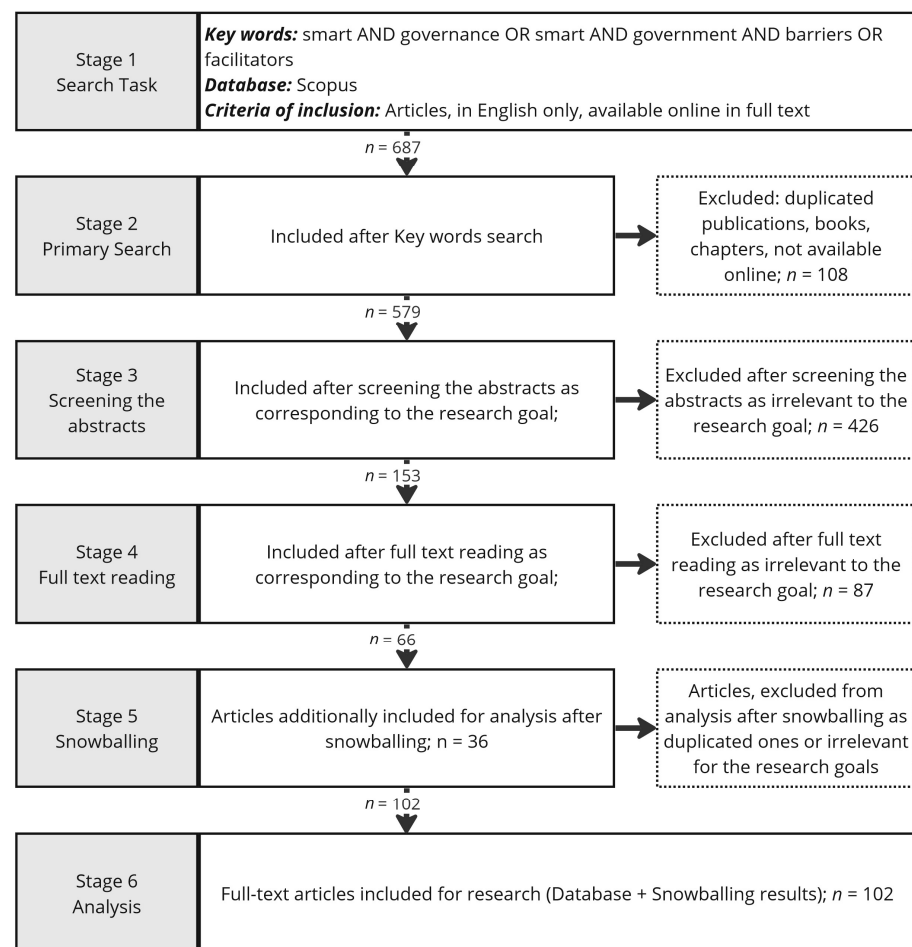

Figure 1. Procedure of selecting articles on barriers and facilitators for qualitative analysis. Source: generated by the authors.

2.3. Literature Study II: Positive and Negative Outcomes of Smart Governance Implementation

The methodology used at this stage of research is similar to the methodology described in the previous subsection.

The first stage includes setting the goal and choosing the corresponding operators for the Boolean search. The goal is to define the positive and negative effects and externalities of smart governance in a smart city. The related keywords were identified: smart AND governance OR e-governance AND externalities OR disadvantages OR impact. The same inclusion criteria were applied: only the full-text articles in English from Scopus database available online. The selection of the articles took place in October–November 2022, and the time span for articles was from 2014 to 2022.

In total, there were selected 307 articles for screening, and 64 of them were excluded from selection. The excluded publications were books or book chapters, or duplicated publications; some excluded sources were not available online (Stage 2). As a result, 243 articles were included for screening the abstracts.

At the third stage, i.e., screening the abstracts, 107 articles were excluded from further study. The reason for excluding these articles is their irrelevance to the set goal of this part of the study. Therefore, only 136 articles were selected for full-text reading. At the fourth stage, i.e., full text reading, 76 articles were excluded, and for further analysis only 60 articles were left. The fifth stage is the stage of applying snowballing approach. After reading the selected articles, the references were analyzed, and 35 articles were selected for qualitative analysis. At this stage, the available book chapters were also included in the study after snowballing. As a result, at the sixth stage, 95 articles were analyzed. The summary of this process is presented in Figure 2.
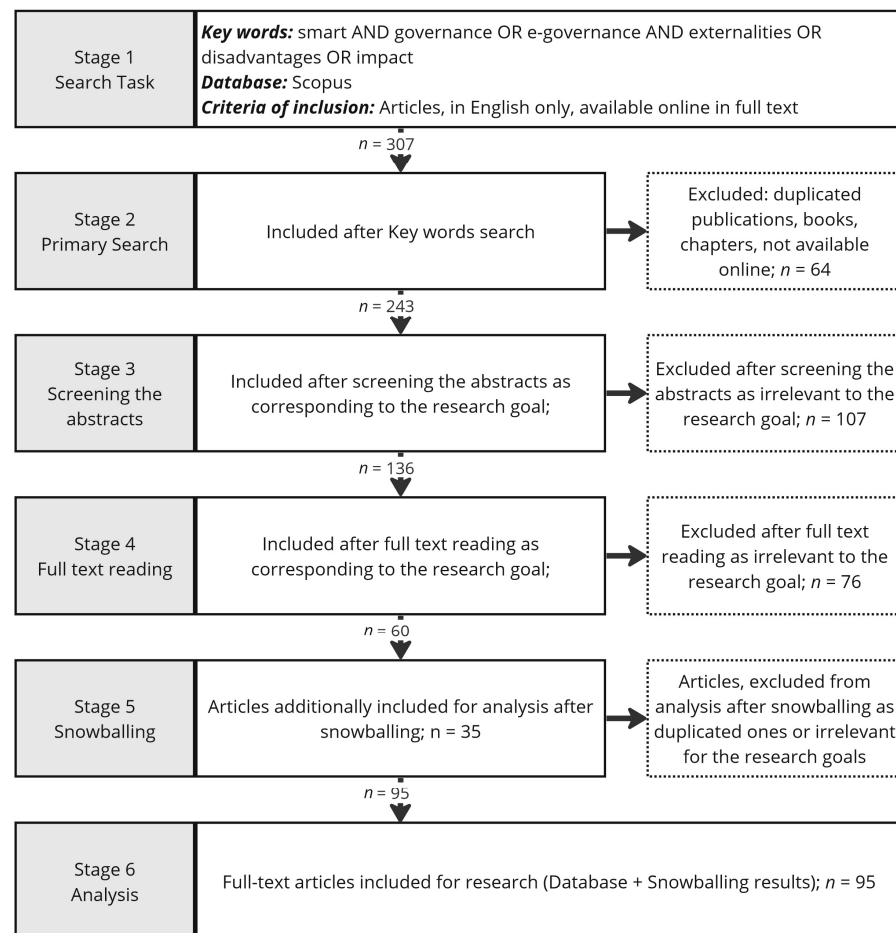

Figure 2. Procedure of selecting the articles on effects and externalities for qualitative analysis. Source: generated by the authors.

It is very important to note that some studies are relevant for both types of searches since they present both barriers/facilitators and positive and negative results of smart governance.

2.4. Analysis of Selected Publications

The selected publications were subjected to qualitative analysis. It is important to note that many studies are intersected in Literature Study I and Literature Study II, as well as in the results of snowballing. The barriers and drivers of smart city implementation were extracted from the selected publications (Literature Study I). These factors foster the processes of smart governance implementation in all forms or vice versa hamper the acquisition of results. Then, the results of smart governance functioning were determined (Literature Study II).

Once the factors were extracted, they were categorized according to six areas, including Information, Efficiency, Citizen-Centricity, Transparency, Digital Divide, and Regulation, which enabled the identification of outcomes, barriers, and drivers in each area.

Then, within each area, the outcomes of smart governance implementation were divided into effects (anticipated results) and externalities (unanticipated results, or results influencing not-intended groups of stakeholders). While this distinction is widely used in other areas of the economy, it represents a novel approach to the field of smart governance. According to the obtained results, the figures demonstrating the above-described division were done.

3. Results

In total the authors distinguished six different spheres of smart governance impact: Information, Efficiency, Citizen-Centricity, Transparency, Digital Divide, and Regulation.

3.1. Information

The graphical representation of the analysis of the area of Information is shown in Figure 3. The factors influencing the implementation of smart governance are in the central part, the effects are in the left column, and externalities are in the right column.
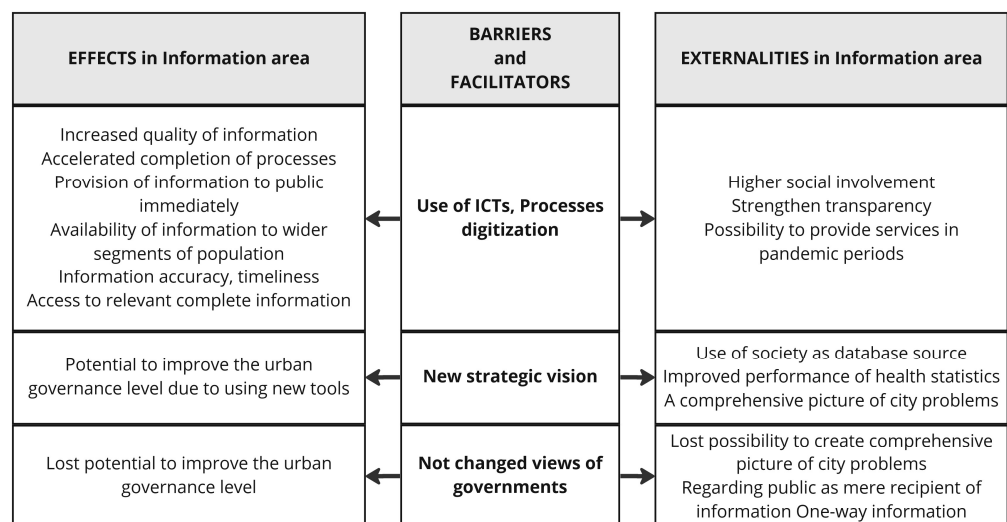

EFFECTS in Information area	BARRIERS and FACILITATORS	EXTERNALITIES in Information area
Increased quality of information Accelerated completion of processes Provision of information to public immediately Availability of information to wider segments of population Information accuracy, timeliness Access to relevant complete information	**Use of ICTs, Processes digitization**	Higher social involvement Strengthen transparency Possibility to provide services in pandemic periods
Potential to improve the urban governance level due to using new tools	**New strategic vision**	Use of society as database source Improved performance of health statistics A comprehensive picture of city problems
Lost potential to improve the urban governance level	**Not changed views of governments**	Lost possibility to create comprehensive picture of city problems Regarding public as mere recipient of information One-way information

Figure 3. Barriers or facilitators, effects, and externalities of smart governance implementation in the Information area. Source: generated by the authors.

Smart governance relies on effective information flow, and its primary task is to provide clear concise comprehensive information to citizens and businesses, and to exchange information with various levels of government. The high-quality information provision is based, first of all, on the digitalization of the processes within the governmental structures, and on the intensive usage of ICT. Investing in technological infrastructure, enhanced

data management services, and integration and the coordination of system design and workflows is crucial, according to [35–37]. Effective organization of these processes leads to timely and accurate information [38–41] that is available to a greater number of people [42,43]. As a result, governance at all levels receives the possibility of finalizing the processes very quickly and efficiently, since both public and other governmental structures receive these timeliness information flows. These outcomes of implementation of digitalization and ICT development for the governance services are expected, and are, therefore, considered as effects.

The externalities, which are not the anticipated result of smart governance implementation, are mostly positive. There appears to be a danger of Digital Divide, which is addressed in a separate section called "Digital Divide". Therefore, the first line of the "Information" section contains only positive externalities. Timely information availability enables citizen participation and promotes social involvement [44]. Simultaneously, sharing information enhances government transparency [42]. These are very important results; however, the possibility of providing governmental services even during the pandemic is crucial to ensure that citizens and businesses are provided with sufficient information and high-quality services [45–50].

However, to take full advantage of new technologies, members of the government should be ready to change the entire way of working with the public. In case the government uses all the advantages of smart governance, they obtain a real possibility of improving performance and increasing the level of governmental service provision [51]. Indeed, in this case, the result is anticipated. However, the changed attitude towards governance allows the authorities to take the population and businesses as database sources. Then, the government acquires considerable information from the public, and, as a result, can receive a thorough understanding of the challenges faced by cities and the potential for enhancing the level of urban governance [52,53]. One of these outcomes is full and comprehensive statistics [4]. These results are externalities, since the results are not as expected; however, they are very important for the success of smart governance.

Nevertheless, many researchers discuss the situation when authorities try to follow the strategies in which the public is taken as just the part which receives the information from the government [54–57]. They suppose this to be the normal situation, since they do not see the new possibilities created by two-direction flows of information [58–61], or do not want to change the style of governance. Treating citizens and businesses as mere information recipients and limiting the information flow from the government to the public leads to a loss of understanding regarding city issues, processes, and problems. This negatively impacts the government's ability to operate effectively in current circumstances and reduces the potential for process improvements. These negative externalities are especially dangerous for the urban authorities in the epoch of the open world.

3.2. Efficiency

Next researched area is Efficiency. The graphical representation of the analysis of this area is shown in Figure 4. The factors influencing the implementation of smart governance are in the central part, the effects are in the left column, and externalities are in the right column.

This field is represented by numerous effects and externalities put forward by the implementation of smart governance.

The first block of effects and externalities is based on the development of technologies and processes digitalization. The positive effects of integration of technological advances in smart governance are clear and distinct: all the services are delivered significantly faster and with higher quality, and the costs of services are also reduced correspondingly [4,16,43,62–66]. Due to implemented technologies, authorities can provide responses in a shorter time [4,37,63,67,68], and, in general, the communication between authorities and the public is promoted, and the conditions for active collaboration of these

parties are created [15,69–72]. The author takes these phenomena as effects of new technologies implementation since these results are anticipated directly.
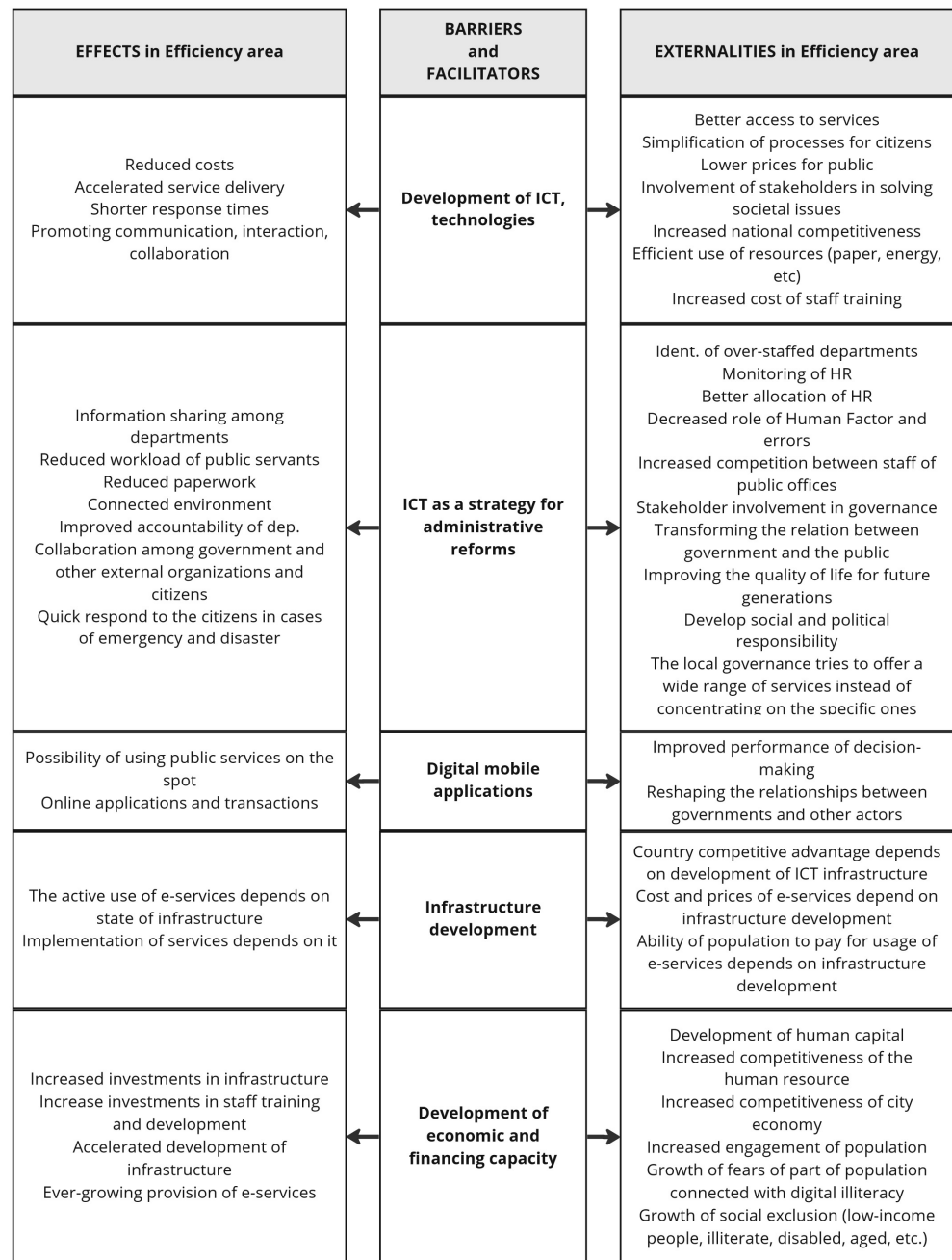
EFFECTS in Efficiency area	BARRIERS and FACILITATORS	EXTERNALITIES in Efficiency area
Reduced costs Accelerated service delivery Shorter response times Promoting communication, interaction, collaboration	Development of ICT, technologies	Better access to services Simplification of processes for citizens Lower prices for public Involvement of stakeholders in solving societal issues Increased national competitiveness Efficient use of resources (paper, energy, etc) Increased cost of staff training
Information sharing among departments Reduced workload of public servants Reduced paperwork Connected environment Improved accountability of dep. Collaboration among government and other external organizations and citizens Quick respond to the citizens in cases of emergency and disaster	ICT as a strategy for administrative reforms	Ident. of over-staffed departments Monitoring of HR Better allocation of HR Decreased role of Human Factor and errors Increased competition between staff of public offices Stakeholder involvement in governance Transforming the relation between government and the public Improving the quality of life for future generations Develop social and political responsibility The local governance tries to offer a wide range of services instead of concentrating on the specific ones
Possibility of using public services on the spot Online applications and transactions	Digital mobile applications	Improved performance of decision-making Reshaping the relationships between governments and other actors
The active use of e-services depends on state of infrastructure Implementation of services depends on it	Infrastructure development	Country competitive advantage depends on development of ICT infrastructure Cost and prices of e-services depend on infrastructure development Ability of population to pay for usage of e-services depends on infrastructure development
Increased investments in infrastructure Increase investments in staff training and development Accelerated development of infrastructure Ever-growing provision of e-services	Development of economic and financing capacity	Development of human capital Increased competitiveness of the human resource Increased competitiveness of city economy Increased engagement of population Growth of fears of part of population connected with digital illiteracy Growth of social exclusion (low-income people, illiterate, disabled, aged, etc.)

Figure 4. Barriers or facilitators, effects, and externalities of smart governance implementation in the Efficiency area. Source: generated by the authors.

However, this block contains numerous externalities, and, since in this section we discuss efficiency only, almost all of these externalities are positive. These phenomena have been referred to as externalities since the achievement of these results was not planned and occurred as additional outcome of smart governance implementation. Additionally, first of all, we discuss better access to services due to new technological possibilities [43,51,65,73]. Moreover, the processes become significantly simpler for the public; the price of governmental services decreased for citizens and businesses [4,43,63–65]. Another factor of efficiency is the decision-making process, and the stakeholders are involved in the solutions of various social problems [74,75]. Another factor which can be considered as an

externality on the macro-level is increased national competitiveness due to active adoption of innovations [43,76–80]. We can also discuss the contribution to sustainable development as an externality—smart governance, facilitated by technological development and digital processes, contributes to the efficient use of resources (paper, energy, etc.) [15,81]. Nevertheless, the researchers note one phenomenon, which can be considered a negative externality. Since the adoption of technological innovations in smart governance require active upgrading of staff skills, governance institutions begin spending significantly more money on staff training [82].

The following considered block refers to strategies of administrative reforms. When governmental structures follow the way of adoption of new strategies, they perceive all the processes from another aspect. They start using ICT with the purpose of changing not services only but, first, the principles of government functioning. As a direct result (effects) of changed strategy, we observe increased administrative efficiency and increased operability [43,63,64,83], facilitated transformations of administrative functions [83], exchange with information between different departments and structures of organization/institution [16,84,85], and reduced workload and paperwork within governmental structures [43,63,64]. The streamlined internal processes [51,66,73] created due to the environment, which is interconnected [70], contribute to the improved cooperation of governmental structures and external institutions and the public [65,75]. Moreover, the new approach allows the authorities to increase the accountability of governmental structures [43]. Another very important effect of changing the strategic approach is the possibility to control the situation in the city and to give a response to the public immediately in case of a dangerous situation, or a disaster [86].

Change of strategy has many externalities which are positive for both parties: authorities and the public. A significant part of externalities is related to human resources used by governing structures. The situation when authorities introduce technological innovations not only for producing online services for the public, but also primarily for changing the intergovernmental relations for creating common inter-department environment [4,63,67] allows monitoring human resources with high efficiency and identifying the departments which have more employees than is necessary by department functionality [67], and then it becomes possible to allocate human resources more rationally [14–16,84–86]. As a result, the competition between employees increases, and it is supposed that the increased competition will increase labor productivity and the quality of work [63,68]. Another interesting externality is the decreased number of errors which usually appear due to human factors; the role of human factors decreases, and as a result, the error number also decreases, while the accuracy of information and data increase [65,87]. The importance of human factors decreases, since increasingly more functions are transferred from people to technological solutions, and in many positions, the employees become just operators without an active participation in decision-making processes. The next group of externalities refers to the social sphere. Since many functions are transferred from employees to technological solutions, the authorities are ready to transform the existing relationships between governmental structures and the public [88–93]. The public receives the possibility to control the authorities, and as a result, the residents' responsibility for many events in social and political spheres increases [71,94]; people are ready to take part in the decision-making process [66] and an increasing number of stakeholders are involved the governing process [43,65,74,75]. Moreover, the conscious and deliberate switching of authorities to the new strategy creates additional possibilities for future generations [86,92,95]. However, Bokhari and Myeong [96] mentions that quite often under the pressure of public opinion, the authorities try to offer as wide a range of services as possible; therefore, quite often the specific sectors suffer from insufficient attention.

The next group of effects and externalities appears due to the possibility of using digital mobile applications. One of the most evident effects is the possibility for the public to receive the service immediately at the moment when there is a need, and from any place (covered by the Internet); as a result, the popularization of online services takes place, and

increasingly more applications are submitted online, and increasingly more transactions are undertaken in online mode [65,87,97–100].

The externalities of using mobile applications are, first of all, the better performance of public participation in the decision-making process (people are responsive and active from any place and at any moment) [101–104] and the changed roles between all actors of the governance process [37,105–107]: the public becomes more active, more functions are transferred from employees to smart solutions, and so on.

The following group of effects and externalities in the Efficiency area depends on the level of infrastructure development. It is not possible to estimate whether they are positive or negative; in case the level of development of infrastructure is high, we consider them as positive, and vice versa. In effects here we can mention the possibility to use e-services and the level of e-service implementation, how the data are managed, and what soft- and hardware is available [35–37,108].

The externalities include both micro- and macro-factors. For example, the competitive advantage of a country significantly depends on the efficiency of the governing structure to use the infrastructure developed. On the micro-level, infrastructure development influences the cost and correspondingly the price of e-services for the population, as well as the ability of the population to pay for these services [4,43,66,67,109].

The next group of effects and externalities in the area of Efficiency is based on the development of economic and financing capacity. This group is very interesting since it is reflected in other areas. So, if the economic and financing capacity is high and enhancing, we will see an increased investments in infrastructure [35–37] and staff training [110]; the increased investments will result in an accelerated development of state-of-the-art technologies [11,101,111–117] and the ever-growing production of online governmental services [43,68,94]. These effects received as a result of growing economic capacity will serve as facilitators of other effects and externalities in other areas.

Economic enhancement also fosters externalities, such as the development and increased competitiveness of human capital [110], the public becoming more engaged in city affairs [85,118–122], and the increase in the competitiveness of the city and its economy [76,78,80]. These positive externalities are very important for the general development of a smart city environment. Nevertheless, an enhanced economic capacity promotes the development of online governmental services, and the majority of the population are happily involved in the life of a smart city. However, part of the population, due to low income, a low level of education, age, and so on, are excluded from the social life, and this exclusion increases with the growing amount of e-services [60,123,124]; it can be explained by digital illiteracy, since even people with a good general education sometimes feel uneasy with digitalized processes.

3.3. Citizen-Centricity

Further, we consider the Citizen-Centricity area. The graphical representation of the analysis of this area is shown in Figure 5. The factors influencing the implementation of smart governance are in the central part, the effects are in the left column, and externalities are in the right column.

In general, the epoch of democracy puts forward the people-centric approach as one of the main requirements in all areas. Smart governance also implements this approach. The effects of applying this approach are in creating the system when citizens are not only recipients of information provided by authorities, but also serve as a database and source of information for authorities [4,101,125–127]. If authorities concentrate on people, the number of contacts increases, communication is more active, and authorities receive the possibility to collect feedback from citizens for improving the services [4,68,101,128]. All the effects are positive.
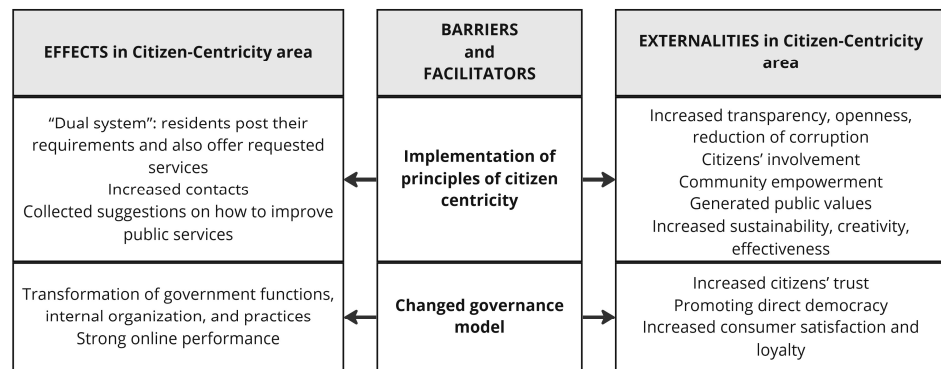
Figure 5. Barriers or facilitators, effects, and externalities of smart governance implementation in the Citizen-Centricity area. Source: generated by the authors.

The externalities are also positive, and they include higher citizens' involvement in all processes [64,71,126,129], due to which it is possible to discuss increased transparency and openness, and the reduction of corruption [63,130–135]. Moreover, the possibility to participate in city life facilitates the generation of public values [11,76,101,136] and increases the general level of efficiency, sustainability, and creativity [76,86,95,137].

If the governing structures are implementing the people-centric approach, they are to change the total model of government. All the functions are transformed to satisfy the adopted approach, and the entire structure and organization of processes changes [75,138,139]. As a result, strong online performance becomes especially important, and authorities apply special efforts to advance the online functions [140,141]. As a result of the changed model of governance, the citizens' trust increases, and if the public trust the authorities, the satisfaction of the public with the authorities also grows, and authorities receive the loyalty of the public [86,142,143]; it is possible to discuss the promotion of direct democracy [138].

3.4. Transparency

Next researched area is Transparency. The graphical representation of the analysis of this area is shown in Figure 6. The factors influencing the implementation of smart governance are in the central part, the effects are in the left column, and externalities are in the right column.
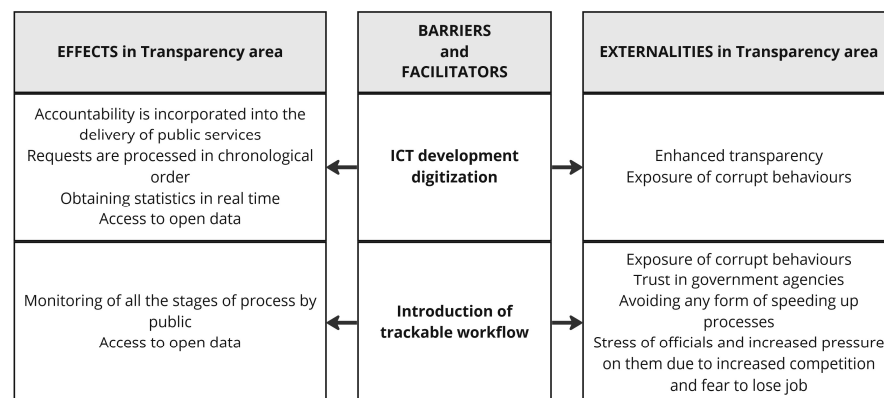

Figure 6. Barriers or facilitators, effects, and externalities of smart governance implementation in the Transparency area. Source: generated by the authors.

The most important driver for this area, as for smart governance in general, is the technological development, ICT, and digitalization of all processes. The effects are positive. This way of development allowed all the processes to become more evident via increased accountability [43,130,144]. Due to the implementation of technologies, the documents are processed chronologically, in the order they have been submitted. The officials do

not determine the order of materials processing and cannot speed up the procedure [43]. Another great effect is statistics, shared between the departments in real-time [43]. The effect for the public is access to open data [40,41,145].

All these effects turn into externalities such as enhanced transparency and exposure of corruption or corrupted behavior of officials [41,43,65,87,146,147].

The development of technologies allowed introducing features such as trackable workflow [146]. Due to this possibility, the public receive access to open data [40,130] and can monitor the processes step-by-step [146,148,149]. These effects are positive for the public; nevertheless, they create additional challenges for government officials, since they should change the model of behavior (see Sections 3.2 and 3.3), enter in competition with colleagues, undergo additional stress due to increased pressure from the government, and the fear of losing jobs [43]. These factors can be considered as negative externalities. However, these externalities, which are negative for officials, turn into positive externalities for the public, since they increase the quality of services [76–78,94], expose corrupt behavior of officials [65,87,147], avoid any form of speeding up the processes [43], and result in increased trust in the authorities and their activities [86,142,145].

3.5. Digital Divide

The graphical representation of the analysis of the Digital Divide area is shown in Figure 7. The factors influencing the implementation of smart governance are in the central part, the effects are in the left column, and externalities are in the right column.
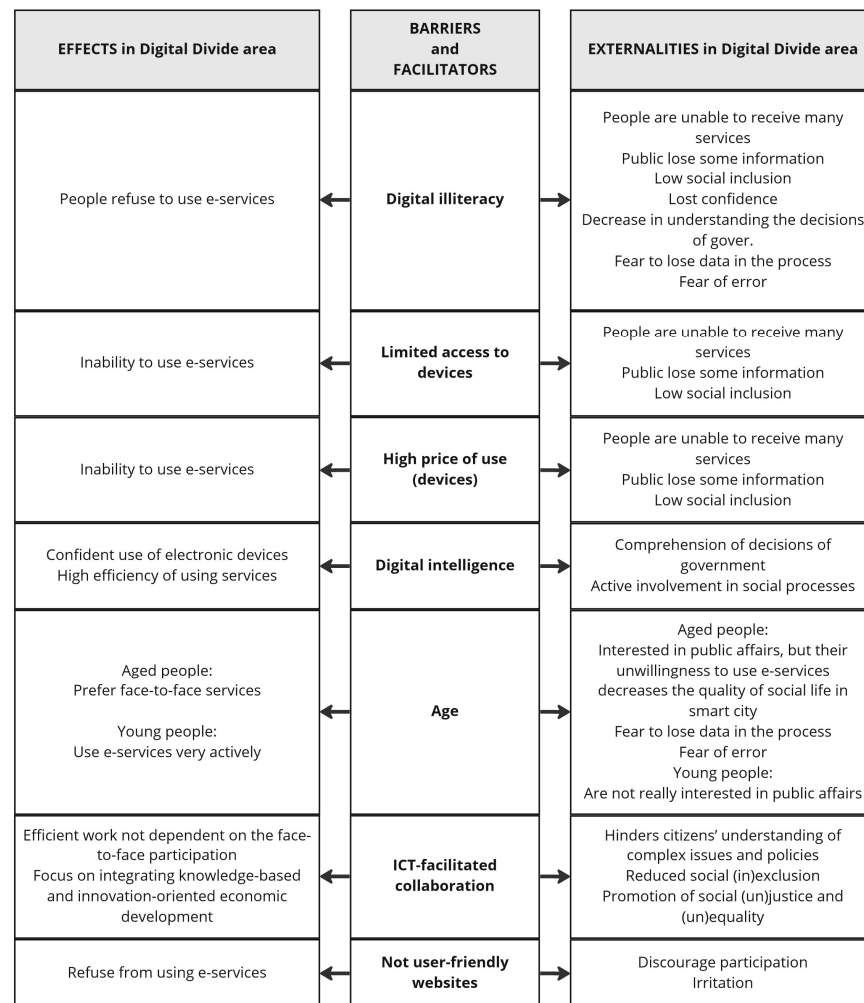
EFFECTS in Digital Divide area	BARRIERS and FACILITATORS	EXTERNALITIES in Digital Divide area
People refuse to use e-services	Digital illiteracy	People are unable to receive many services Public lose some information Low social inclusion Lost confidence Decrease in understanding the decisions of gover. Fear to lose data in the process Fear of error
Inability to use e-services	Limited access to devices	People are unable to receive many services Public lose some information Low social inclusion
Inability to use e-services	High price of use (devices)	People are unable to receive many services Public lose some information Low social inclusion
Confident use of electronic devices High efficiency of using services	Digital intelligence	Comprehension of decisions of government Active involvement in social processes
Aged people: Prefer face-to-face services Young people: Use e-services very actively	Age	Aged people: Interested in public affairs, but their unwillingness to use e-services decreases the quality of social life in smart city Fear to lose data in the process Fear of error Young people: Are not really interested in public affairs
Efficient work not dependent on the face-to-face participation Focus on integrating knowledge-based and innovation-oriented economic development	ICT-facilitated collaboration	Hinders citizens' understanding of complex issues and policies Reduced social (in)exclusion Promotion of social (un)justice and (un)equality
Refuse from using e-services	Not user-friendly websites	Discourage participation Irritation

Figure 7. Barriers or facilitators, effects, and externalities of smart governance implementation in the Digital Divide area. Source: generated by the authors.

This section presents the effects and externalities which are negative.

The first section refers to barriers for smart governance implementation such as digital illiteracy [150]. The effect is only one: people who do not know how to act in a digital environment refuse to use e-services. As a result, the public faces externalities such as the impossibility to receive governmental services [54,120] since authorities try to switch to a digital way of service provision and gradually forego the face-to-face services [43]. This becomes especially urgent during and following a pandemic. Another externality is not received information, which decreases the possibilities for the public to participate in the processes [55,60,151]. It turns into a low inclusion of people in social affairs [152–157]. If people do not participate in the social life of the city, they lose their confidence in the authorities since they do not understand the decisions made [158]. Other important externalities of digital illiteracy are growing stress due to the fear of making a mistake or losing data in the process of receiving e-services [98,159].

The next two blocks refer to different barriers, but the effects and externalities are the same. Limited access to devices and the high price of devices/services results in the effect of the inability to use e-services. Certainly, it refers to only a small part of society; however, such people do exist. The externalities are the same as in the previous case: lost information and social exclusion [150,160–162].

The following block refers to people with a high level of education and high digital intelligence. This group has positive effects and positive externalities due to smart governance implementation. They are confident in the use of electronic devices and use services the most efficiently [52]. The externalities are as follows: comprehension of governmental decisions [48,158,163] and active involvement in social processes [158,163].

Age is a notable factor in the way individuals interact with smart governance. Older adults tend to prefer face-to-face services [55,106,120,124], which is not always connected with digital illiteracy, since many of them have a good education and can utilize the devices [98]. However, they are very interested in public affairs and consider them to be very important [55,106]. As a result, refusing face-to-face communication, the authorities often lose the possibility to improve the social life in the city. Aged people often have a fear of making a mistake or losing data in the process of online communication with authorities [98]. In contrast, younger people actively use e-services, but may not prioritize improving the city's social life [164].

Next is ICT-facilitated collaboration [15,70,81]. The evident effects of such a collaboration are a high efficiency of work, which does not depend on face-to-face communication and concentration on the development of economy based on knowledge and innovation implementation [85,139,152,153]. The effects are obviously positive. Nevertheless, the externalities are both positive and negative. As positive ones, we can mention reduced social exclusion, since all groups of population can participate in online collaboration, and the promotion of social justice and equality [43,109]. Simultaneously, it creates the opposite situation: increased social exclusion and injustice and inequality for people who have no possibility to collaborate online [124,155]. Another negative externality is the lack of understanding of governmental policies if they involve complex collaboration [157,165].

The next group is especially important for aged people, i.e., digital illiteracy, which can influence the general wish to use e-services. This issue does not involve a user-friendly interface. Although local authorities try to implement user-friendly services [96], some groups of population can still fully refuse to use e-services, which can then irritate people and discourage participation in social processes [54,98,154,166].

3.6. Regulation

The graphical representation of the analysis of the Regulation area is shown in Figure 8. The factors influencing the implementation of smart governance are in the central part, the effects are in the left column, and externalities are in the right column.
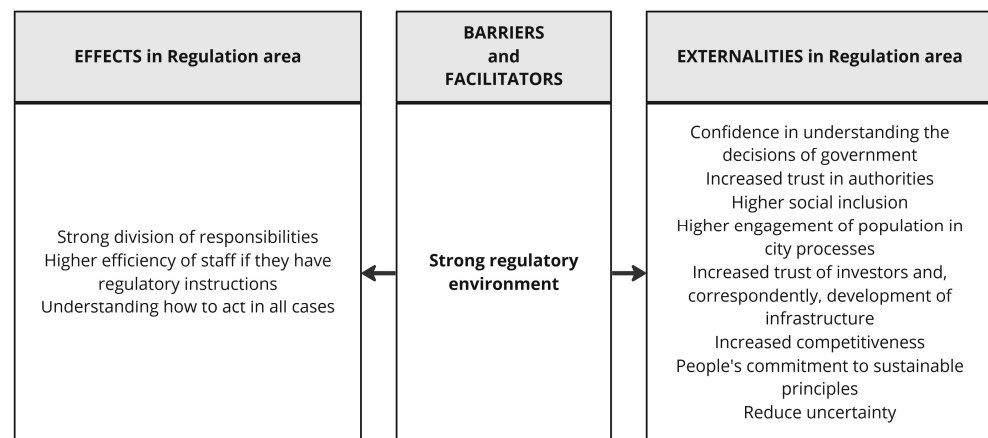
Figure 8. Barriers or facilitators, effects, and externalities of smart governance implementation in Regulation area. Source: generated by the authors.

Very few researchers consider this area of smart governance. Nevertheless, the authors have found some studies devoted to this issue or that very briefly discuss them. So, the facilitator or barrier for smart governance implementation is the existence or absence of a strong regulatory environment [40,69,167–169]. The effects of the urban environment, which is well regulated, are a strong division of responsibilities within the authorities, the efficiency of staff if they have regulatory instructions, and understanding how to act in all cases. We discuss efficiency and interoperability [63,72]. As we see, the effects are inside the structure of authorities, which directly influences the processes inside governing units. If the authorities act according to regulating acts, the activities are predictable, the public can follow the process of decision-making [146], all participants understand the causes and reasons of all decisions, and, as a result, we see a higher confidence in governmental decisions [122,137,169–173] and an increased trust in the authorities [143,153]. Then, people feel a reduced uncertainty [82,143], they are engaged in city processes, and the social inclusion increases. Another externality of a strong regulatory environment is an increased trust of investors [122,137,142,169–173] and, correspondingly, the development of infrastructure, which, in turn, results in human capital growth and increased competitiveness [110,167–169,172,174,175]. Another externality is people's commitment to sustainable principles [176,177].

4. Discussion

The issue of smart governance is very important for the development of the smart city concept and for all processes within a smart city. Scholars started investigating the smart governance sphere almost together with the appearance of the smart city concept, and continue these studies. They study the impact of smart governance in spheres such as Information, Efficiency, Citizen-Centricity, Transparency, Digital Divide, and Regulation. The authors have summarized the ideas demonstrated by scholars in their studies and related them to factors which can hinder or foster the implementation of smart governance.

However, the scientists also distinguish risks of general nature. One of them is the fact that the public (people and businesses) do not think a lot about participating in the creation of the urban landscape; they have apathy towards public affairs [55,108,178]. Simultaneously, other authors mention that the concern of the urban population about municipal facilities is increasing [179]. Possibly, the behavior and attitude of people regarding participation in life of a city and decision-making processes relates to factors different from governance. It might depend on standard of living, national economy, cultural habits, and attitudes. This issue requires additional study. Many authors put into direct dependence the availability of resources and smart governance projects implementation [180]. In total, the economic substantiation of smart city solutions requires active economic studies [3,29],

and in this term, the possibility to implement smart city solutions under the condition of limited resources is a prospect for further research.

The issues of staff load and staff training have become very urgent. Many authors consider the requirements towards staff and efficient allocation of resources [16,63]; however, some scholars consider the psychological pressure on employees and the increased stress due to growth of competition among employees and the fear of losing jobs [43].

Numerous studies are connected with the importance of social media. Social media, possessing great power in contemporary conditions, is capable of creating dangerous situations related to ergonomic configuration and changes in behavior [181,182]. Moreover, additional risks appear, connected with privacy, illegal content, and the impact on reputation. There, it is possible to speak about raising political campaigns for or against authorities or their decisions. Another issue closely connected with social networking is intellectual property [181,182]. It is also possible to speak about inequality, since online services are not available in the same amount in all countries [183]. Then, issues regarding the protection of data, such as personalization features and access rights, cybersecurity, and control, also require attention [184,185].

According to [185–187], there is a shortage of studies examining the integration of both transactional and inclusive services within online services. Currently available studies do not provide empirical evidence for the connection between citizens' utilization of online services and their plan to utilize e-government services. However, ref. [98] demonstrates empirical proof of existing connection between these factors. The relationship between the management of e-participation services and the experience of citizens has not been fully investigated [188]. Many citizens have a growing distrust in national and EU institutions, which can affect their willingness to trust the government as the provider of e-government services [61,120,123,124,189,190]. Instead, they tend to trust the functional aspects of the technology, as they believe it to be more objective and reliable [191]. Nevertheless, refs. [41,163,192–196] mention that very often local governments produce a greenwashing effect, but do not think about supporting the dialogue with population. This can happen due to unwillingness of authorities to share their power with the public [163,192,195,197,198]. However, the relationship between the administration of e-participation services and citizen experience is still not fully explored [54,166,188]; due to a variety of reasons, the effects of government action is not always directly perceived by citizens [101,105]. These factors need more research and analysis.

As we see, there are a great number of studies devoted to the e-governance implementation. Researchers specify the areas of investigation, and many of them demonstrate contradictory result. The importance of the topic requires continuing to research the field. It would be interesting to study the effects and externalities of smart governance implementation in a specific country.

4.1. COVID-19

The new push for smart governance was implemented during a pandemic. Before COVID-19, the existence and successful functioning of smart governance were the subject of discussion; its implementation was not considered a way of survival for the population and businesses. The pandemic redistributed the priorities, and in all countries, the development of smart governance became a very important and vital task. Countries with well-developed technological infrastructure and a high level of digitalization of society were able to adjust to the situation easier, and, as a result, the impact of the pandemic was not as detrimental [199]. The timely organization of online service delivery and the applied efforts of authorities allowed citizens to be provided with sufficient information [46,48,50]; application of state-of-the-art technologies made it possible to provide "proactive information exchange," which, in turn, supported the population in understanding the situation [200]. Considering the pandemic from the aspect of externalities, which is the point of this study, the revolutionary development of smart governance after 2019 can be considered an externality of the pandemic.

4.2. Research Limitations

The topic of this research is so vast, complicated, and popular that it is not possible to cover it in one article. Therefore, it has numerous limitations. We consider the limitations, which could refer not to smart governance in general but specifically to the investigation of the effects and externalities of smart governance implementation.

The search for articles was performed according to the specified keywords; if the choice of keywords is different, the obtained results of the search might also be different.

A serious limitation is the usage of only the Scopus database for the selection of articles; however, the set of articles resulting from the search was sufficient for this study. Moreover, there is an explanation in Section 2 why the authors did not use the Web of Science database. Nevertheless, the search in other respectful databases could also change the obtained results.

The study was not limited to a timeframe. However, for a more deliberate search of articles, it could be useful to set certain periods.

5. Conclusions

For decades, scholars have studied the implementation of smart governance, as well as its barriers and drivers. During this time, they have discussed the same issues related to smart governance: the technologies, capable of facilitating its implementation; the change of attitudes towards the roles of authorities and the public; and various outcomes of its implementation. The areas of impact of drivers or barriers to smart governance implementation are almost the same over all these years: Information, Efficiency, Citizen-Centricity, Transparency, Digital Divide, and Regulation.

However, the impact of the existing barriers or facilitators in smart governance is not divided into the anticipated results and externalities. Researchers have only described the possible outcomes of smart governance implementation. This study provides a division of these outcomes into effects and externalities.

This research includes a systematic literature review of barriers and facilitators of smart governance implementation within a smart city. The review is undertaken according to standard methods for this type of research. As a result, 111 sources were reviewed for barriers and facilitators, and 111 sources were considered for the results of the appearance of these barriers or facilitators. It is important to note that many articles presented both types of information: barriers/facilitators and results.

Nevertheless, no studies considered the results from the aspect of effects and externalities. Therefore, the contribution of this study is that it considers not only the effects, but also the externalities of smart governance implementation. Recognition of the fact that unanticipated results of smart governance can be both positive and negative should influence the decisions of policymakers, authorities of various levels, and people working in technical and technological support of smart governance implementation. All parties of the smart city are the stakeholders of smart governance—residents, authorities, businesses, and it is necessary to realize how they can influence the life of all stakeholders.

There were also areas considered that still create a certain risk for smart governance implementation, do not have great coverage in the scientific literature yet, or do not present comprehensive statistical support for the idea. These fields are the directions of future studies.

The relations between the factors are multi-directional. One and the same effect or externality can be the result of various factors. Therefore, they appear in various areas, and as a result of the impact of various factors. Moreover, the outcomes appeared due to one barrier or facilitator entering the process as barriers or facilitators for other results, for example, economic growth facilitates the development of technologies, which become the facilitator of other processes within smart governance and increase the economic growth.

The researched sources in the literature do not divide the results of the impact of facilitators or barriers based on effects and externalities. However, it is important to comprehend that the efforts for smart governance implementation and development cannot

have only the expected outcomes; externalities are always created, of both positive and negative nature, and it is important to consider them when the authorities make decisions.

References

1. Vinod Kumar, T.M.; Dahiya, B. Smart Economy in Smart Cities. In *Advances in 21st Century Human Settlements (ACHS)*; Springer: Berlin/Heidelberg, Germany, 2017; pp. 3–76.
2. Giffinger, R.; Fertner, C.; Kramar, H.; Meijers, E. *Smart Cities: Ranking of European Medium-Sized Cities*; Final Report; Vienna University of Technology: Vienna, Austria, 2007.
3. Popova, Y.; Popovs, S. Impact of Smart Economy on Smart Areas and Mediation Effect of National Economy. *Sustainability* **2022**, *14*, 2789. [CrossRef]
4. Pereira, G.V.; Parycek, P.; Falco, E.; Kleinhans, R. Smart governance in the context of smart cities: A literature review. *Inf. Polity* **2018**, *23*, 143–162. [CrossRef]
5. Albino, V.; Berardi, U.; Dangelico, R.M. Smart Cities: Definitions, Dimensions, Performance, and Initiatives. *J. Urban Technol.* **2015**, *22*, 3–21. [CrossRef]
6. Garcia Alonso, R.; Lippez-De Castro, S. Technology Helps, People Make: A Smart City Governance Framework Grounded in Deliberative Democracy. In *Smarter as the New Urban Agenda A Comprehensive View of the 21st Century City*; Gil-Garcia, J.R., Pardo, T.A., Nam, T., Eds.; Springer: Berlin/Heidelberg, Germany, 2016; pp. 333–347.
7. Scholl, H.J.; AlAwadhi, S. Creating Smart Governance: The key to radical ICT overhaul at the City of Munich. *Inf. Polity* **2016**, *21*, 21–42. [CrossRef]
8. Scholl, H.J.; Alawadhi, S. Smart governance as key to multi-jurisdictional smart city initiatives: The case of the eCityGov Alliance. *Soc. Sci. Inf.* **2016**, *55*, 255–277. [CrossRef]
9. Scholl, H.J.; Scholl, M.C. Smart Governance: A Roadmap for Research and Practice. In *iConference 2014 Proceedings*; iSchools: Grandville, MI, USA, 2014.
10. Meijer, A. Smart City Governance: A Local Emergent Perspective. In *Smarter as the New Urban Agenda: A Comprehensive View of the 21st Century City (Public Administration and Information Technology, 11)*; Gil-Garcia, R.J., Pardo, T.A., Nam, T., Eds.; Springer: Berlin/Heidelberg, Germany, 2016; pp. 73–85.
11. Meijer, A.; Bolívar, M.P.R. Governing the smart city: A review of the literature on smart urban governance. *Int. Rev. Adm. Sci.* **2015**, *82*, 392–408. [CrossRef]
12. Schedler, K.; Guenduez, A.A.; Frischknecht, R. How smart can government be? Exploring barriers to the adoption of smart government. *Inf. Polity* **2019**, *24*, 3–20. [CrossRef]
13. Estevez, E.; Lopes, N.; Janowski, T. Smart Sustainable Cities: Reconnaissance Study. 2016. Available online: http://collections.unu.edu/eserv/UNU:5825/Smart_Sustainable_Cities_v2final.pdf (accessed on 30 November 2022).
14. Gil-Garcia, J.R.; Helbig, N.; Ojo, A. Being smart: Emerging technologies and innovation in the public sector. *Gov. Inf. Q.* **2014**, *31*, I1–I8. [CrossRef]
15. Estevez, E.; Janowski, T. Electronic Governance for Sustainable Development—Conceptual framework and state of research. *Gov. Inf. Q.* **2013**, *30*, S94–S109. [CrossRef]
16. Gil-Garcia, J.R. Towards a smart State? Inter-agency collaboration, information integration, and beyond. *Inf. Polity* **2012**, *17*, 269–280. [CrossRef]
17. Jimenez, C.E.; Solanas, A.; Falcone, F. E-Government Interoperability: Linking Open and Smart Government. *Computer* **2014**, *47*, 22–24. [CrossRef]
18. Gascó-Hernandez, M. Building a smart city. *Commun. ACM* **2018**, *61*, 50–57. [CrossRef]
19. Gascó, M. Special Issue on Open Government. *Soc. Sci. Comput. Rev.* **2014**, *33*, 535–539. [CrossRef]
20. Guenduez, A.A.; Mettler, T.; Schedler, K. Citizen Participation in Smart Government: A Conceptual Model and Two IoT Case Studies. In *Beyond Smart and Connected Governments*; Springer: Berlin/Heidelberg, Germany, 2020; pp. 189–209. [CrossRef]
21. Kenton, W.; Westfall, P.; Munichello, K. Externality: What It Means in Economics. Available online: https://www.investopedia.com/terms/e/externality.asp#toc-overcoming-externalities (accessed on 26 November 2022).

22. CFI Team. Externality. Available online: https://corporatefinanceinstitute.com/resources/economics/externality/ (accessed on 27 November 2022).

23. Pigou, A.C. *Welfare and Economic Welfare*; Macmillan and Co.: London, UK, 1920.

24. Kaplow, B.L. Optimal Control of Externalities in The Presence of Income Taxation. *Int. Econ. Rev.* **2012**, *53*, 487–509. [CrossRef]

25. Kolstad, C.D.; Ulen, T.S.; Johnson, G.V. Ex Post Liability for Harm vs. Ex Ante Safety Regulation: Substitutes or Complements? In *The Theory and Practice of Command and Control in Environmental Policy*; Routledge: London, UK, 2018; pp. 331–344.

26. Simkovic, M. Limited Liability and the Known Unknown. *SSRN Electron. J.* **2018**, *68*, 275. [CrossRef]

27. Hansmann, H.; Kraakman, R. Toward Unlimited Shareholder Liability for Corporate Torts. *Yale Law J.* **1991**, *100*, 1879. [CrossRef]

28. Van Wee, B.; Banister, D. How to Write a Literature Review Paper? *Transp. Rev.* **2015**, *36*, 278–288. [CrossRef]

29. Popova, Y. Transport and Telecommunication Institute Economic or financial substantiation for smart city solutions: A literature study. *Econ. Ann.-XXI* **2020**, *183*, 125–133. [CrossRef]

30. Butler, L.; Yigitcanlar, T.; Paz, A. Barriers and risks of Mobility-as-a-Service (MaaS) adoption in cities: A systematic review of the literature. *Cities* **2020**, *109*, 103036. [CrossRef]

31. Kankanamge, N.; Yigitcanlar, T.; Goonetilleke, A.; Kamruzzaman. Can volunteer crowdsourcing reduce disaster risk? A systematic review of the literature. *Int. J. Disaster Risk Reduct.* **2019**, *35*, 101097. [CrossRef]

32. Vujković, P.; Ravšelj, D.; Umek, L.; Aristovnik, A. Bibliometric Analysis of Smart Public Governance Research: Smart City and Smart Government in Comparative Perspective. *Soc. Sci.* **2022**, *11*, 293. [CrossRef]

33. Falagas, M.E.; Pitsouni, E.I.; Malietzis, G.; Pappas, G. Comparison of PubMed, Scopus, Web of Science, and Google Scholar: Strengths and weaknesses. *FASEB J.* **2007**, *22*, 338–342. [CrossRef]

34. Mongeon, P.; Paul-Hus, A. The journal coverage of Web of Science and Scopus: A comparative analysis. *Scientometrics* **2016**, *106*, 213–228. [CrossRef]

35. Gottschalk, P. Maturity levels for interoperability in digital government. *Gov. Inf. Q.* **2009**, *26*, 75–81. [CrossRef]

36. Klievink, B.; Janssen, M. Realizing joined-up government—Dynamic capabilities and stage models for transformation. *Gov. Inf. Q.* **2009**, *26*, 275–284. [CrossRef]

37. Zissis, D.; Lekkas, D. Securing e-Government and e-Voting with an open cloud computing architecture. *Gov. Inf. Q.* **2011**, *28*, 239–251. [CrossRef]

38. Dragulanescu, N.-G. Social Impact of the "Digital Divide" in a Central–Eastern European Country. *Int. Inf. Libr. Rev.* **2002**, *34*, 139–151. [CrossRef]

39. Vien, N.K. Modelling The Relationship of Perceived Quality, Destination Image, And Tourist Satisfaction at The Destination Level. *Int. J. Appl. Inf. Manag.* **2021**, *1*, 165–172. [CrossRef]

40. Mellouli, S.; Luna-Reyes, L.F.; Zhang, J. Smart government, citizen participation and open data. *Inf. Polity* **2014**, *19*, 1–4. [CrossRef]

41. Bonsón, E.; Royo, S.; Ratkai, M. Citizens' engagement on local governments' Facebook sites. An empirical analysis: The impact of different media and content types in Western Europe. *Gov. Inf. Q.* **2015**, *32*, 52–62. [CrossRef]

42. Bertot, J.C.; Jaeger, P.T.; Grimes, J.M. Using ICTs to create a culture of transparency: E-government and social media as openness and anti-corruption tools for societies. *Gov. Inf. Q.* **2010**, *27*, 264–271. [CrossRef]

43. Zumofen, R.; Kakpovi, B.G.; Mabillard, V. Outcomes of government digitization and effects on accountability in Benin. *Transform. Gov. People Process Policy* **2022**, *16*, 305–317. [CrossRef]

44. Ding, J.; Xu, J.; Weise, T.; Wang, H. Community Services and Social Involvement in COVID-19 Governance: Evidence from China. *Int. J. Environ. Res. Public Health* **2022**, *19*, 15279. [CrossRef]

45. Gupta, D.; Bhatt, S.; Gupta, M.; Tosun, A.S. Future Smart Connected Communities to Fight COVID-19 Outbreak. *Internet Things* **2020**, *13*, 100342. [CrossRef]

46. Yang, S.; Chong, Z. Smart city projects against COVID-19: Quantitative evidence from China. *Sustain. Cities Soc.* **2021**, *70*, 102897. [CrossRef] [PubMed]

47. Lye, G.X.; Cheng, W.K.; Tan, T.B.; Hung, C.W.; Chen, Y.-L. Creating Personalized Recommendations in a Smart Community by Performing User Trajectory Analysis through Social Internet of Things Deployment. *Sensors* **2020**, *20*, 2098. [CrossRef]

48. Alharbi, N.S.; AlGhanmi, A.S.; Fahlevi, M. Adoption of Health Mobile Apps during the COVID-19 Lockdown: A Health Belief Model Approach. *Int. J. Environ. Res. Public Health* **2022**, *19*, 4179. [CrossRef]

49. Pudzis, E.; Krutova, U.; Geipele, S.; Kalinka, M.; Auzins, A. Smart and sustainable local communities in global COVID-19 pandemic conditions. *Landsc. Arch. art* **2021**, *17*, 78–88. [CrossRef]

50. Rajan, D.; Koch, K.; Rohrer, K.; Bajnoczki, C.; Socha, A.; Voss, M.; Nicod, M.; Ridde, V.; Koonin, J. Governance of the COVID-19 response: A call for more inclusive and transparent decision-making. *BMJ Glob. Health* **2020**, *5*, e002655. [CrossRef]

51. Lindgren, I.; Madsen, C.; Hofmann, S.; Melin, U. Close encounters of the digital kind: A research agenda for the digitalization of public services. *Gov. Inf. Q.* **2019**, *36*, 427–436. [CrossRef]

52. Qi, L.; Guo, J. Development of smart city community service integrated management platform. *Int. J. Distrib. Sens. Networks* **2019**, *15*, 1550147719851975. [CrossRef]

53. Olatokun, W.M. Gender and National ICT Policy in Africa: Issues, strategies, and policy options. *Inf. Dev.* **2008**, *24*, 53–65. [CrossRef]

54. Zheng, Y. Explaining Citizens' E-Participation Usage. *Adm. Soc.* **2016**, *49*, 423–442. [CrossRef]

55. Yetano, A.; Royo, S. Keeping Citizens Engaged. *Adm. Soc.* **2016**, *49*, 394–422. [CrossRef]

56. Edelmann, N.; Höchtl, J.; Sachs, M. Collaboration for Open Innovation Processes in Public Administrations. In *Empowering Open and Collaborative Governance: Technologies and Methods for Online Citizen Engagement in Public Policy Making*; Charalabidis, Y., Koussouris, S., Eds.; Springer: Berlin/Heidelberg, Germany, 2012; pp. 21–37. ISBN 978-3-642-27219-6.

57. Lee, J.; Kim, S. Active Citizen E-Participation in Local Governance: Do Individual Social Capital and E-Participation Management Matter? In Proceedings of the 2014 47th Hawaii International Conference on System Sciences, Waikoloa, HI, USA, 6–9 January 2014; pp. 2044–2053.

58. Royo, S.; Yetano, A. "Crowdsourcing" as a tool for e-participation: Two experiences regarding CO_2 emissions at municipal level. *Electron. Commer. Res.* **2015**, *15*, 323–348. [CrossRef]

59. Cruickshank, P.; Ryan, B.; Smith, C.F. Hyperlocal E-Participation'? Evaluating Online Activity by Scottish Community Councils. In *Conference for E-Democracy and Open Government*; MV-Verlag: Krems, Austria, 2014; pp. 74–84.

60. Molinari, F.; Ferro, E.; Boella, M. Framing Web 2.0 in the Process of Public Sector Innovation: Going Down the Participation Ladder. *Eur. J. ePractice* **2010**, *9*, 20–34.

61. Edelmann, N.; Hoechtl, J.; Parycek, P. eParticipation for Adolescent Citizens (in Austria). In Proceedings of the 1st International Conference on Electronic Participation, Linz, Austria, 1–3 September 2009; pp. 163–174. [CrossRef]

62. Ayanso, A.; Chatterjee, D.; Cho, D.I. E-Government readiness index: A methodology and analysis. *Gov. Inf. Q.* **2011**, *28*, 522–532. [CrossRef]

63. Sandoval-Almazan, R.; Gil-Garcia, J.R. Are government internet portals evolving towards more interaction, participation, and collaboration? Revisiting the rhetoric of e-government among municipalities. *Gov. Inf. Q.* **2012**, *29*, S72–S81. [CrossRef]

64. Rose, J.; Persson, J.S.; Heeager, L.T. How e-Government managers prioritise rival value positions: The efficiency imperative. *Inf. Polity* **2015**, *20*, 35–59. [CrossRef]

65. Hamner, M.; Al-Qahtani, F. Enhancing the case for Electronic Government in developing nations: A people-centric study focused in Saudi Arabia. *Gov. Inf. Q.* **2009**, *26*, 137–143. [CrossRef]

66. Elisei, P.; D'Orazio, A.; Prezioso, M. Smart Governance Answers to Metropolitan Peripheries: Regenerating the Deprived Area of the Morandi Block in the Tor Sapienza Neighbourhood (Rome). In Proceedings of the REAL CORP 2014 Tagungsband, Vienna, Austria, 21–23 May 2014; Schrenk, M., Popovich, V.V., Zeile, P., Elisei, P., Eds.; Real Corp: Vienna, Austria, 2014.

67. Kayisire, D.; Wei, J. ICT Adoption and Usage in Africa: Towards an Efficiency Assessment. *Inf. Technol. Dev.* **2015**, *22*, 630–653. [CrossRef]

68. Janssen, M.; Estevez, E. Lean government and platform-based governance—Doing more with less. *Gov. Inf. Q.* **2013**, *30*, S1–S8. [CrossRef]

69. Prybutok, V.; Zhang, X.; Ryan, S.D. Evaluating leadership, IT quality, and net benefits in an e-government environment. *Inf. Manag.* **2008**, *45*, 143–152. [CrossRef]

70. Chun, S.A.; Luna-Reyes, L.F.; Sandoval-Almazán, R. Collaborative e-government. *Transform. Gov. People Process Policy* **2012**, *6*, 5–12. [CrossRef]

71. Lambert, F. Seeking electronic information from government resources: A comparative analysis of two communities' web searching of municipal government websites. *Gov. Inf. Q.* **2013**, *30*, 99–109. [CrossRef]

72. Irani, Z.; Love, P.E.D.; Montazemi, A.R. E-Government: Past, Present and Future. *Eur. J. Inf. Syst.* **2007**, *16*, 103–105. [CrossRef]

73. Evans, O. Digital Government: ICT and Public Sector Management in Africa. Munich Personal RePEc Archive. 2019. Available online: https://mpra.ub.uni-muenchen.de/91628/1/MPRA_paper_91628.pdf (accessed on 5 April 2023).

74. Alawadhi, S.; Scholl, H.J. Smart Governance: A Cross-Case Analysis of Smart City Initiatives. In Proceedings of the 2016 49th Hawaii International Conference on System Sciences (HICSS), Washington, DC, USA, 5–8 January 2016; IEEE: Piscataway, NJ, USA, 2016; pp. 2953–2963.

75. Hariguna, T.; Rahardja, U.; Sarmini. The Role of E-Government Ambidexterity as the Impact of Current Technology and Public Value: An Empirical Study. *Informatics* **2022**, *9*, 67. [CrossRef]

76. Nam, H.; Nam, T.; Oh, M.; Choi, S. An Efficiency Measurement of E-Government Performance for Network Readiness: Non-Parametric Frontier Approach. *J. Open Innov. Technol. Mark. Complex.* **2022**, *8*, 10. [CrossRef]

77. Khalil, O.E. e-Government readiness: Does national culture matter? *Gov. Inf. Q.* **2011**, *28*, 388–399. [CrossRef]

78. Menna, A.; Walsh, P.R.; Ekhtari, H. Identifying enablers of innovation in developed economies: A National Innovation Systems approach. *J. Innov. Manag.* **2019**, *7*, 108–128. [CrossRef]

79. Pillania, R.K. Competitiveness and emerging markets. *Bus. Strat. Ser.* **2009**, *10*, 90–95. [CrossRef]

80. Kharlamova, G.; Vertelieva, O. The International Competitiveness of Countries: Economic-Mathematical Approach. *Econ. Sociol.* **2013**, *6*, 39–52. [CrossRef]

81. Maheshwari, D.; Janssen, M. Reconceptualizing measuring, benchmarking for improving interoperability in smart ecosystems: The effect of ubiquitous data and crowdsourcing. *Gov. Inf. Q.* **2014**, *31*, S84–S92. [CrossRef]

82. Rana, N.P.; Luthra, S.; Mangla, S.K.; Islam, R.; Roderick, S.; Dwivedi, Y.K. Barriers to the Development of Smart Cities in Indian Context. *Inf. Syst. Front.* **2018**, *21*, 503–525. [CrossRef]

83. Dobrolyubova, E.; Klochkova, E.; Alexandrov, O. Digitalization and Effective Government: What Is the Cause and What Is the Effect? In *International Conference on Digital Transformation and Global Society*; Springer: Cham, Switzerland, 2019; pp. 55–67.

84. Yang, T.-M.; Maxwell, T.A. Information-sharing in public organizations: A literature review of interpersonal, intra-organizational and inter-organizational success factors. *Gov. Inf. Q.* **2011**, *28*, 164–175. [CrossRef]

85. Viale Pereira, G.; Cunha, M.A.; Lampoltshammer, T.J.; Parycek, P.; Testa, M.G. Increasing collaboration and participation in smart city governance: A cross-case analysis of smart city initiatives. *Inf. Technol. Dev.* **2017**, *23*, 526–553. [CrossRef]
86. Gil-Garcia, J.R.; Zhang, J.; Puron-Cid, G. Conceptualizing smartness in government: An integrative and multi-dimensional view. *Gov. Inf. Q.* **2016**, *33*, 524–534. [CrossRef]
87. Hung, S.-Y.; Chang, C.-M.; Kuo, S.-R. User acceptance of mobile e-government services: An empirical study. *Gov. Inf. Q.* **2013**, *30*, 33–44. [CrossRef]
88. Sandoval-Almazan, R.; Gil-Garcia, J.R. Towards cyberactivism 2.0? Understanding the use of social media and other information technologies for political activism and social movements. *Gov. Inf. Q.* **2014**, *31*, 365–378. [CrossRef]
89. Criado, J.I.; Sandoval-Almazan, R.; Gil-Garcia, J.R. Government innovation through social media. *Gov. Inf. Q.* **2013**, *30*, 319–326. [CrossRef]
90. Ferro, E.; Loukis, E.N.; Charalabidis, Y.; Osella, M. Policy making 2.0: From theory to practice. *Gov. Inf. Q.* **2013**, *30*, 359–368. [CrossRef]
91. Kleinhans, R.; Van Ham, M.; Evans-Cowley, J. Using Social Media and Mobile Technologies to Foster Engagement and Self-Organization in Participatory Urban Planning and Neighbourhood Governance. *Plan. Pract. Res.* **2015**, *30*, 237–247. [CrossRef]
92. Porwol, L.; Ojo, A.; Breslin, J.G. An ontology for next generation e-Participation initiatives. *Gov. Inf. Q.* **2016**, *33*, 583–594. [CrossRef]
93. Porwol, L.; Ojo, A.; Breslin, J.G. Social Software Infrastructure for e-Participation. *Gov. Inf. Q.* **2018**, *35*, S88–S98. [CrossRef]
94. Awoleye, O.M.; Ojuloge, B.; Ilori, M.O. Web application vulnerability assessment and policy direction towards a secure smart government. *Gov. Inf. Q.* **2014**, *31*, S118–S125. [CrossRef]
95. Jansson, Å. Reaching for a sustainable, resilient urban future using the lens of ecosystem services. *Ecol. Econ.* **2013**, *86*, 285–291. [CrossRef]
96. Bokhari, S.A.A.; Myeong, S. Artificial Intelligence-Based Technological-Oriented Knowledge Management, Innovation, and E-Service Delivery in Smart Cities: Moderating Role of E-Governance. *Appl. Sci.* **2022**, *12*, 8732. [CrossRef]
97. Jaeger, P.T. The endless wire: E-government as global phenomenon. *Gov. Inf. Q.* **2003**, *20*, 323–331. [CrossRef]
98. Popova, Y.; Zagulova, D. UTAUT Model for Smart City Concept Implementation: Use of Web Applications by Residents for Everyday Operations. *Informatics* **2022**, *9*, 27. [CrossRef]
99. Popova, Y.; Cernisevs, O. Smart City: Sharing of Financial Services. *Soc. Sci.* **2022**, *12*, 8. [CrossRef]
100. Cernisevs, O.; Popova, Y. ICO as Crypto-Assets Manufacturing within a Smart City. *Smart Cities* **2022**, *6*, 40–56. [CrossRef]
101. Castelnovo, W.; Misuraca, G.; Savoldelli, A. Smart Cities Governance. *Soc. Sci. Comput. Rev.* **2016**, *34*, 724–739. [CrossRef]
102. Al Athmay, A.A.A.R.A. Demographic factors as determinants of e-governance adoption. *Transform. Gov. People Process Policy* **2015**, *9*, 159–180. [CrossRef]
103. Hu, G.; Shi, J.; Pan, W.; Wang, J. A hierarchical model of e-government service capability: An empirical analysis. *Gov. Inf. Q.* **2012**, *29*, 564–572. [CrossRef]
104. Boyd, O.P. Differences in eDemocracy parties' eParticipation systems. *Inf. Polity* **2008**, *13*, 167–188. [CrossRef]
105. Castelnovo, W. A Stakeholder Based Approach to Public Value. In Proceedings of the 13th European Conference on eGovernment, Como, Italy, 14 June 2013; pp. 94–101.
106. Wijnhoven, F.; Ehrenhard, M.; Kuhn, J. Open government objectives and participation motivations. *Gov. Inf. Q.* **2015**, *32*, 30–42. [CrossRef]
107. Zissis, D.; Lekkas, D.; Papadopoulou, A.-E. Competent Electronic Participation Channels in Electronic Democracy. *Electron. J. e-Gov.* **2009**, *7*, 195–208.
108. Xiong, N.; Zang, H.; Lu, H.; Yu, R.; Wang, J.; Feng, Z. Performance Analysis of Smart City Governance: Dynamic Impact of Beijing 12345 Hotline on Urban Public Problems. *Sustainability* **2022**, *14*, 9986. [CrossRef]
109. Mabillard, V.; Kakpovi, B.G.; Cottier, B. Access to information in Benin: A case study. *Int. Rev. Adm. Sci.* **2018**, *86*, 134–151. [CrossRef]
110. Mishra, A.K. Henry George and Mohring–Harwitz Theorems: Lessons for Financing Smart Cities in Developing Countries. *Environ. Urban. ASIA* **2019**, *10*, 13–30. [CrossRef]
111. Yigitcanlar, T.; Kamruzzaman; Buys, L.; Ioppolo, G.; Sabatini-Marques, J.; da Costa, E.M.; Yun, J.J. Understanding 'smart cities': Intertwining development drivers with desired outcomes in a multidimensional framework. *Cities* **2018**, *81*, 145–160. [CrossRef]
112. Allam, Z.; Dhunny, Z.A. On big data, artificial intelligence and smart cities. *Cities* **2019**, *89*, 80–91. [CrossRef]
113. Bibri, S.E. The IoT for smart sustainable cities of the future: An analytical framework for sensor-based big data applications for environmental sustainability. *Sustain. Cities Soc.* **2018**, *38*, 230–253. [CrossRef]
114. Bibri, S.E. On the sustainability of smart and smarter cities in the era of big data: An interdisciplinary and transdisciplinary literature review. *J. Big Data* **2019**, *6*, 25. [CrossRef]
115. Silva, B.N.; Khan, M.; Han, K. Towards sustainable smart cities: A review of trends, architectures, components, and open challenges in smart cities. *Sustain. Cities Soc.* **2018**, *38*, 697–713. [CrossRef]
116. Habibzadeh, H.; Nussbaum, B.H.; Anjomshoa, F.; Kantarci, B.; Soyata, T. A survey on cybersecurity, data privacy, and policy issues in cyber-physical system deployments in smart cities. *Sustain. Cities Soc.* **2019**, *50*, 101660. [CrossRef]
117. Ruhlandt, R.W.S. The governance of smart cities: A systematic literature review. *Cities* **2018**, *81*, 1–23. [CrossRef]

118. Jamal, S.; Sen, A. Prospect of Faridabad as a Smart City: A Review. In *Making Cities Resilient*; Sharma, V.R., Chandrakanta, Eds.; Springer International Publishing: Cham, Switzerland, 2019; pp. 39–50. [CrossRef]

119. Lu, H.; de Jong, M.; Heuvelhof, E.T. Explaining the variety in smart eco city development in China-What policy network theory can teach us about overcoming barriers in implementation? *J. Clean. Prod.* **2018**, *196*, 135–149. [CrossRef]

120. Joia, L.A.; Kuhl, A. Smart City for Development: A Conceptual Model for Developing Countries. In *Information and Communication Technologies for Development. Strengthening Southern-Driven Cooperation as a Catalyst for ICT4D*; Springer: Berlin/Heidelberg, Germany, 2019; pp. 203–214. [CrossRef]

121. Liu, J.; Low, S.P.; Wang, L.F. Critical success factors for eco-city development in China. *Int. J. Constr. Manag.* **2017**, *18*, 497–506. [CrossRef]

122. Chatterjee, S.; Kar, A.K. Effects of successful adoption of information technology enabled services in proposed smart cities of India. *J. Sci. Technol. Policy Manag.* **2017**, *9*, 189–209. [CrossRef]

123. Geana, M.V.; Greiner, K.A. Health information and the digital divide. *J. Manag. Mark. Health* **2011**, *4*, 108–112. [CrossRef]

124. Friemel, T. The digital divide has grown old: Determinants of a digital divide among seniors. *New Media Soc.* **2014**, *18*, 313–331. [CrossRef]

125. Kassim, N.M.D.; Yeap, J.A.L.; Nathan, S.; Hashim, N.H.; Ramayah, T. A Conceptual Paper of the Smart City and Smart Community. In *Eurasian Economic Perspectives*; Springer: Cham, Switzerland, 2019; pp. 39–47. [CrossRef]

126. Nadeem, O.; Saeed, M.S.; Tahir, M.A.; Mumtaz, R. A Survey of Artificial Intelligence and Internet of Things (IoT) Based Approaches against COVID-19. In Proceedings of the 2020 IEEE 17th International Conference on Smart Communities: Improving Quality of Life Using ICT, IoT and AI (HONET), Charlotte, CA, USA, 14–16 December 2020; IEEE: Piscataway, NJ, USA, 2020; pp. 214–218.

127. Chen, F.; Li, R. A Straw Shows Which Way the Wind Blows: New Media in the Context of Community Governance. *J. Sociol. Stud.* **2019**, *34*, 170–193.

128. Helbig, N.; Gil-García, J.R.; Ferro, E. Understanding the complexity of electronic government: Implications from the digital divide literature. *Gov. Inf. Q.* **2009**, *26*, 89–97. [CrossRef]

129. Lim, Y.; Edelenbos, J.; Gianoli, A. Dynamics in the governance of smart cities: Insights from South Korean smart cities. *Int. J. Urban Sci.* **2022**, *27*, 183–205. [CrossRef]

130. Janowski, T.; Pardo, T.A.; Davies, J. Government Information Networks–Mapping Electronic Governance cases through Public Administration concepts. *Gov. Inf. Q.* **2012**, *29*, S1–S10. [CrossRef]

131. Macintosh, A.; Smith, E. Citizen Participation in Public Affairs. In *Electronic Government*; Springer: Berlin/Heidelberg, Germany, 2002; pp. 256–263.

132. Navarro-Galera, A.; Alcaraz-Quiles, F.J.; Ortiz-Rodríguez, D. Online dissemination of information on sustainability in regional governments. Effects of technological factors. *Gov. Inf. Q.* **2016**, *33*, 53–66. [CrossRef]

133. Misuraca, G.; Broster, D.; Centeno, C. Digital Europe 2030: Designing scenarios for ICT in future governance and policy making. *Gov. Inf. Q.* **2012**, *29*, S121–S131. [CrossRef]

134. Ubaldi, B. *Open Government Data–Towards Empirical Analysis of Open Government Data Initiatives*; OECD Working Papers on Public Governance; OECD: Paris, France, 2013.

135. Elbahnasawy, N.G. E-Government and Corruption: A Review. In *Handbook on the Geographies of Corruption*; Edward Elgar Publishing: Cheltenham, UK, 2018; pp. 120–130.

136. Meijer, A.J.; Gil-Garcia, J.R.; Bolívar, M.P.R. Smart City Research. *Soc. Sci. Comput. Rev.* **2016**, *34*, 647–656. [CrossRef]

137. Gil-Garcia, J.R.; Aldama-Nalda, A. Smart City Initiatives and the Policy Context. In Proceedings of the 7th International Conference on Theory and Practice of Electronic Governance, Seoul, Republic of Korea, 22–25 October 2013; ACM: New York, NY, USA, 2013; pp. 234–237.

138. Stamati, T.; Papadopoulos, T.; Anagnostopoulos, D. Social media for openness and accountability in the public sector: Cases in the Greek context. *Gov. Inf. Q.* **2015**, *32*, 12–29. [CrossRef]

139. Guedes, A.L.A.; Alvarenga, J.C.; Goulart, M.D.S.S.; Rodriguez, M.V.R.Y.; Soares, C.A.P. Smart Cities: The Main Drivers for Increasing the Intelligence of Cities. *Sustainability* **2018**, *10*, 3121. [CrossRef]

140. Smith, S.C.; Blair, S.N.; Bonow, R.O.; Brass, L.M.; Cerqueira, M.D.; Dracup, K.; Fuster, V.; Gotto, A.; Grundy, S.M.; Miller, N.H.; et al. AHA/ACC guidelines for preventing heart attack and death in patients with atherosclerotic cardiovascular disease: 2001 Update: A statement for healthcare professionals from the American Heart Association and the American College of Cardiology. *J. Am. Coll. Cardiol.* **2001**, *38*, 1581–1583. [CrossRef]

141. Khan, G.F.; Park, H.W. The e-government research domain: A triple helix network analysis of collaboration at the regional, country, and institutional levels. *Gov. Inf. Q.* **2013**, *30*, 182–193. [CrossRef]

142. Reddick, C.G.; Roy, J. Business perceptions and satisfaction with e-government: Findings from a Canadian survey. *Gov. Inf. Q.* **2013**, *30*, 1–9. [CrossRef]

143. Reddick, C.G.; Chatfield, A.T.; Jaramillo, P.A. Public opinion on National Security Agency surveillance programs: A multi-method approach. *Gov. Inf. Q.* **2015**, *32*, 129–141. [CrossRef]

144. Lührmann, A.; Marquardt, K.L.; Mechkova, V. Constraining Governments: New Indices of Vertical, Horizontal, and Diagonal Accountability. *Am. Politi- Sci. Rev.* **2020**, *114*, 811–820. [CrossRef]

145. Linders, D.; Liao, C.Z.-P.; Wang, C.-M. Proactive e-Governance: Flipping the service delivery model from pull to push in Taiwan. *Gov. Inf. Q.* **2018**, *35*, S68–S76. [CrossRef]

146. Shim, D.C.; Eom, T.H. E-Government and Anti-Corruption: Empirical Analysis of International Data. *Int. J. Public Adm.* **2008**, *31*, 298–316. [CrossRef]

147. Shenkoya, T. Can digital transformation improve transparency and accountability of public governance in Nigeria? *Transform. Gov. People Process Policy* **2022**, *17*, 54–71. [CrossRef]

148. Kuriyan, R.; Bailur, S.; Gigler, B.-S.; Park, K.R. Technologies for Transparency and Accountability. In *Open Development Technology Alliance*; World Bank: Washington, DC, USA, 2011; pp. 1–67.

149. Bovens, M. Analysing and Assessing Accountability: A Conceptual Framework. *Eur. Law J.* **2007**, *13*, 447–468. [CrossRef]

150. Pérez-Morote, R.; Pontones-Rosa, C.; Núñez-Chicharro, M. The effects of e-government evaluation, trust and the digital divide in the levels of e-government use in European countries. *Technol. Forecast. Soc. Chang.* **2020**, *154*, 119973. [CrossRef]

151. Gabrys, J. Programming Environments: Environmentality and Citizen Sensing in the Smart City. *Environ. Plan. D Soc. Space* **2014**, *32*, 30–48. [CrossRef]

152. Khan, Z.; Ludlow, D.; Loibl, W.; Soomro, K. ICT enabled participatory urban planning and policy development. *Transform. Gov. People Process Policy* **2014**, *8*, 205–229. [CrossRef]

153. Chatfield, A.T.; Reddick, C.G.; Brajawidagda, U. Government surveillance disclosures, bilateral trust and Indonesia–Australia cross-border security cooperation: Social network analysis of Twitter data. *Gov. Inf. Q.* **2015**, *32*, 118–128. [CrossRef]

154. Hong, S. Citizen Participation in Budgeting: A Trade-Off between Knowledge and Inclusiveness? *Public Adm. Rev.* **2015**, *75*, 572–582. [CrossRef]

155. Burkhardt, D.; Nazemi, K.; Zilke, J.R.; Kohlhammer, J.; Kuijper, A. Fundamental Aspects for E-Government. In *Standards and Standardization*; IGI Global: Hershey, PA, USA, 2015; pp. 52–68.

156. Picazo-Vela, S.; Gutiérrez-Martínez, I.; Luna-Reyes, L. Understanding risks, benefits, and strategic alternatives of social media applications in the public sector. *Gov. Inf. Q.* **2012**, *29*, 504–511. [CrossRef]

157. Yigitcanlar, T.; Lee, S.H. Korean ubiquitous-eco-city: A smart-sustainable urban form or a branding hoax? *Technol. Forecast. Soc. Chang.* **2014**, *89*, 100–114. [CrossRef]

158. Taipale, S. The use of e-government services and the Internet: The role of socio-demographic, economic and geographical predictors. *Telecommun. Policy* **2013**, *37*, 413–422. [CrossRef]

159. Popova, Y.; Sproge, I. Decision-Making within Smart City: Waste Sorting. *Sustainability* **2021**, *13*, 10586. [CrossRef]

160. Tchamyou, V.S.; Erreygers, G.; Cassimon, D. Inequality, ICT and financial access in Africa. *Technol. Forecast. Soc. Chang.* **2018**, *139*, 169–184. [CrossRef]

161. Nastjuk, I.; Trang, S.; Papageorgiou, E.I. Smart cities and smart governance models for future cities. *Electron. Mark.* **2022**, *32*, 1917–1924. [CrossRef]

162. Kraemer, T.; Weiger, W.H.; Trang, S.; Trenz, M. Deflected by the tin foil hat? Word-of-mouth, conspiracy beliefs, and the adoption of innovative public health apps. *J. Prod. Innov. Manag.* **2022**, *40*, 154–174. [CrossRef]

163. Colesca, S.; Dobrica, L. Adoption and use of E-Government services: The case of Romania. *J. Appl. Res. Technol.* **2008**, *6*, 204–217. [CrossRef]

164. Ertiö, T.-P. Participatory Apps for Urban Planning—Space for Improvement. *Plan. Pract. Res.* **2015**, *30*, 303–321. [CrossRef]

165. Capra, C.F. The Smart City and Its Citizens. In *Smart Cities and Smart Spaces*; IGI Global: Hershey, PA, USA, 2019; pp. 1407–1427.

166. Zheng, Y.; Schachter, H.L. Explaining Citizens' E-Participation Use: The Role of Perceived Advantages. *Public Organ. Rev.* **2016**, *17*, 409–428. [CrossRef]

167. Vadgama, C. Smart Funding Options for Developing Smart Cities: A Proposal for India. *Indian J. Sci. Technol.* **2015**, *8*, 1–12. [CrossRef]

168. Kummitha, R.K.R.; Crutzen, N. Smart cities and the citizen-driven internet of things: A qualitative inquiry into an emerging smart city. *Technol. Forecast. Soc. Chang.* **2019**, *140*, 44–53. [CrossRef]

169. Chatterjee, S.; Kar, A.K.; Gupta, M.P. Alignment of IT Authority and Citizens of Proposed Smart Cities in India: System Security and Privacy Perspective. *Glob. J. Flex. Syst. Manag.* **2017**, *19*, 95–107. [CrossRef]

170. Tan, S.; Taeihagh, A. Smart City Governance in Developing Countries: A Systematic Literature Review. *Sustainability* **2020**, *12*, 899. [CrossRef]

171. Vu, K.; Hartley, K. Promoting smart cities in developing countries: Policy insights from Vietnam. *Telecommun. Policy* **2018**, *42*, 845–859. [CrossRef]

172. Chen, Y.; Ardila-Gomez, A.; Frame, G. Achieving energy savings by intelligent transportation systems investments in the context of smart cities. *Transp. Res. Part D Transp. Environ.* **2017**, *54*, 381–396. [CrossRef]

173. Joshi, S.; Saxena, S.; Godbole, T.; Shreya. Developing Smart Cities: An Integrated Framework. *Procedia Comput. Sci.* **2016**, *93*, 902–909. [CrossRef]

174. Malodia, S.; Dhir, A.; Mishra, M.; Bhatti, Z.A. Future of e-Government: An integrated conceptual framework. *Technol. Forecast. Soc. Chang.* **2021**, *173*, 121102. [CrossRef]

175. Zhan, C.; de Jong, M. Financing eco cities and low carbon cities: The case of Shenzhen International Low Carbon City. *J. Clean. Prod.* **2018**, *180*, 116–125. [CrossRef]

176. Popova, Y.; Zagulova, D. Aspects of E-Scooter Sharing in the Smart City. *Informatics* **2022**, *9*, 36. [CrossRef]

177. Popova, Y.; Fesyuk, A. Factors Affecting the Growth of Demand on Carsharing Services Within Smart City. *Transp. Telecommun. J.* **2022**, *23*, 252–261. [CrossRef]

178. Minkoff, S.L. NYC 311. *Urban Aff. Rev.* **2015**, *52*, 211–246. [CrossRef]

179. O'Brien, D.T.; Sampson, R.J.; Winship, C. Ecometrics in the Age of Big Data. *Sociol. Methodol.* **2015**, *45*, 101–147. [CrossRef]

180. Amagoh, F. An Assessment of E-Government in a West African Country. *Int. J. Public Adm. Digit. Age* **2015**, *2*, 80–99. [CrossRef]

181. Banday, M.T. Social Media in E-Governance: Challenges and Opportunities. In *Trends, Prospects, and Challenges in Asian E-Governance*; IGI Global: Hershey, PA, USA, 2016; pp. 160–191.

182. Banday, M.T.; Mattoo, M.M. Social Media in e-Governance: A Study with Special Reference to India. *Soc. Netw.* **2013**, *02*, 47–56. [CrossRef]

183. Chircu, A.M. E-government evaluation: Towards a multidimensional framework. *Electron. Gov. Int. J.* **2008**, *5*, 345–363. [CrossRef]

184. Lee, T.H.; Kim, T.H.; Moon, J.H.; Lee, S.H.; Choi, H.J.; Hwangbo, Y.; Hyun, J.J.; Choi, J.-H.; Jeong, S.; Kim, J.H.; et al. Bilateral versus unilateral placement of metal stents for inoperable high-grade malignant hilar biliary strictures: A multicenter, prospective, randomized study (with video). *Gastrointest. Endosc.* **2017**, *86*, 817–827. [CrossRef]

185. Duarte, N.; Llanso, E.; Loup, A. Mixed Messages? The Limits of Automated Social Media Content Analysis. In Proceedings of the 1st Conference on Fairness, Accountability and Transparency, New York, NY, USA, 23–24 February 2018; Friedler, S.A., Wilson, C., Eds.; PMLR: New York, NY, USA, 2018; Volume 81, p. 106.

186. Hair, J.F., Jr.; Sarstedt, M.; Ringle, C.M.; Gudergan, S.P. *Advanced Issues in Partial Least Squares Structural Equation Modeling*; SAGE Publications: Thousand Oaks, CA, USA, 2017.

187. Glasmeier, A.K.; Nebiolo, M. Thinking about Smart Cities: The Travels of a Policy Idea that Promises a Great Deal, but So Far Has Delivered Modest Results. *Sustainability* **2016**, *8*, 1122. [CrossRef]

188. Zheng, Y.; Capra, L.; Wolfson, O.; Yang, H. Urban Computing. *ACM Trans. Intell. Syst. Technol.* **2014**, *5*, 1–55. [CrossRef]

189. Torcal, M.; Christmann, P. Congruence, national context and trust in European institutions. *J. Eur. Public Policy* **2018**, *26*, 1779–1798. [CrossRef]

190. Tomor, Z.; Meijer, A.; Michels, A.; Geertman, S. Smart Governance For Sustainable Cities: Findings from a Systematic Literature Review. *J. Urban Technol.* **2019**, *26*, 3–27. [CrossRef]

191. Sweeney, A.D.P. Electronic Government-Citizen Relationships. *J. Inf. Technol. Politics* **2008**, *4*, 101–116. [CrossRef]

192. Janowski, T. Digital government evolution: From transformation to contextualization. *Gov. Inf. Q.* **2015**, *32*, 221–236. [CrossRef]

193. Washington, V. Commentary: Local Government, the Internet, and Sustainability. *Public Adm. Rev.* **2013**, *74*, 99–100. [CrossRef]

194. Royo, S.; Yetano, A.; Acerete, B. Perceptions About the Effectiveness of E-Participation: A Multistakeholder Perspective. In *Measuring E-government Efficiency*; Springer: Cham, Switzerland, 2014; pp. 257–275. [CrossRef]

195. Royo, S.; Yetano, A.; Acerete, B. E-Participation and Environmental Protection: Are Local Governments Really Committed? *Public Adm. Rev.* **2013**, *74*, 87–98. [CrossRef]

196. Evans, A.M.; Campos, A. Open Government Initiatives: Challenges of Citizen Participation. *J. Policy Anal. Manag.* **2012**, *32*, 172–185. [CrossRef]

197. Paskaleva, K.A. E-Governance as An Enabler Of The Smart City. In *Smart Cities. Governing, Modelling and Analyzing the Transition*; Deakin, M., Ed.; Routledge: Abingdon, UK, 2014; pp. 33–51.

198. Bifulco, F.; Tregua, M.; Amitrano, C.C.; D'Auria, A. ICT and sustainability in smart cities management. *Int. J. Public Sect. Manag.* **2016**, *29*, 132–147. [CrossRef]

199. Spulbar, C.; Anghel, L.C.; Birau, R.; Ermiș, S.I.; Treapăt, L.-M.; Mitroi, A.T. Digitalization as a Factor in Reducing Poverty and Its Implications in the Context of the COVID-19 Pandemic. *Sustainability* **2022**, *14*, 10667. [CrossRef]

200. Bokhari, S.A.A.; Myeong, S. Use of Artificial Intelligence in Smart Cities for Smart Decision-Making: A Social Innovation Perspective. *Sustainability* **2022**, *14*, 620. [CrossRef]