The Smart City and the Creation of Local Public Value

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Abstract The creation of public value in a financially sustainable way, which is the distinctive function of local authorities, is becoming increasingly complex. This is due to many reasons, and most notably to the roles played by different stakeholders, such as citizens, businesses, other public authorities and not-for-profit organizations. To address this difficulty, many local authorities state that they wish to become 'smart'. A smart city is meant to be actively engaged in improving the quality of life of its citizens and in pursuing sustainable growth, thanks to the wide use of ICT. The aim of this chapter is two-fold. On a theoretical level, it aims at contributing to the definition of smart city and at critically analyzing its role in the creation of public value. On a practical level, it assesses the adoption of the smart city model by a significant number of large and medium-size Italian cities, in order to draw useful recommendations for the future.

Keywords Smart city • Urban strategic planning • Creation of local public value

1 Introduction

The distinctive function of local authorities is the creation of public value in a financially sustainable way. In other words, they are expected to effectively meet the public needs of their citizens, to generate a positive spread between social benefits and costs and thus to contribute to the prosperity of their constituencies. At the same time, they are expected to pursue financial stability by efficiently using the increasingly scarce and therefore precious public resources [12, 34].

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The fulfillment of this function is very complex, due to both the growing proliferation of public needs and the progressive lack of available resources, but also because it is significantly affected by the roles played by many other actors, including citizens, businesses, other public authorities and not-for-profit organizations. These aspects are the main reasons for the wide and growing interest in urban strategic planning, which, in fact, may offer a useful contribution to local government, as long as it is set and carried out in an authentic and substantial way.

To face the difficulty of creating public value, the most innovative local authorities state in their urban strategic plans that they wish to become 'smart'. A smart city identifies an urban environment that is actively engaged in improving the quality of life of its citizens while pursuing sustainable socio-economic development, thanks to the wide use of information and communication technologies (ICT).

Although widely used, so far the concept of smart city has not displayed a consistent meaning and therefore needs to be deepened and better defined. To address this problem, the chapter seeks to clarify the definition of smart city and to identify fields of action in which the city can be smart. It does so by analyzing the potential benefits that a smart city brings to the quality of life, environmental protection and economic development of its community, and at the same time by looking into the possible obstacles and solutions that characterize the relationship between the local authority and other actors in the social system.

Another problem is that even the application of the smart city model displays a large variation. In this regard, the chapter aims at describing the state of the art of Italian regional capitals, seen as a significant sample of large and medium-size cities in the country. Specifically, the chapter tests whether or not the smart orientation is taken into account in their urban strategic plans, analyzes their common and different features, strengths and weaknesses, and suggests some solutions to overcome weaknesses and exploit strengths.

To sum up, the aim of this chapter is two-fold. On a theoretical level, it aims at contributing to the definition of smart city and critically analyzing the relationship between this concept and the creation of local public value. On a practical level, it assesses the adoption of the smart city model by a significant sample of large and medium-size Italian cities, in order to draw useful recommendations for the future. In essence, the chapter aims at providing a critical and empirically informed analysis of the potential success as well as possible failure of various smart city projects.

2 The Creation of Public Value Through Urban Strategic Planning

The creation of public value in a financially sustainable way, which is the distinctive function of local authorities, is becoming increasingly complex, starting with the possibility of divergence between the community socio-economic development and the institution equilibrium [19].

Indeed, creating a positive difference between the benefits that are produced for and the sacrifices that are required from citizens is not in itself guarantee of financial sustainability for the local authority. This is because benefits and sacrifices are partly economic, but mostly non-economic in nature [45] and also because they often correspond to accounting records of opposite sign.

After all, financial sustainability does not necessarily imply the creation of public value, due to the multiple modes of remuneration of local authorities, which only partly require users to pay the nominal value of the services they are offered. Most often, local authorities are rewarded through political prices or taxation, either direct or transferred [38].

Nevertheless, the creation of public value and financial sustainability need to be pursued jointly: the non-transitory absence of either one or the other would in fact deprive local authorities of their own reason or even possibility to exist. Hence, the need to achieve appropriate levels of effectiveness and efficiency, favored by the new public management model and essential to the reasonable satisfaction of public needs, on the one hand, and the convenient use of scarce public resources, on the other [3, 18, 40].

To continue, the creation of public value is characterized by the degree of operational diversification of local authorities [4]: let's just think of the plurality of functions performed and of the services produced, which are very significant in terms of areas and groups to be targeted, of content and modalities of intervention and, finally, of the multi-disciplinary and multi-sectorial skills and of the composite nature of the problems to be tackled (which often involve aspects that are at the same time environmental, social, economic and technical).

Also the targeted geography is variable and often does not correspond to the administrative boundaries. One classical example is to be found in the field of transport but also in the public services of water distribution or tourism promotion.

Even more important, in terms of operational complexity, is the framework of relationships of opposite sign, sometimes co-operative sometimes competitive, that come into play. To begin with, the governing bodies of local authorities are the expression of the ideas, values and claims of only one section of the community. Secondly, in many cases there is no overlap between the citizens who use the services and products of a given local authority and those that contribute to their funding. Finally, even among the actors that use those services there are often divergent interests, which are functionally antagonistic (e.g. consumers and businesses, pedestrians and motorists) or compete in the allocation of scarce resources. The systemic process of bringing together different expectations is therefore a fundamental and critical condition for the creation of local public value.

Another element of complexity is the dynamism that significant changes in the socio-economic, scientific-technological, and political-cultural domains impress on public needs and public policies [2]. This means that the true identity of the city, of the territory and of the local community is often questioned, if not completely doubted, because of phenomena that give it uncertainty and discontinuity. At the same time, local authorities are assuming roles and features that are more and more composite: the productive role that pertains to them in their quality of

service units, the directing role that belongs to them in their quality of public holdings, and the regulatory role that fits them in their quality of local governing bodies.

No less significant are the complementary institutional, political and business dimensions of local authorities [6]. The institutional dimension refers to the set of rules that constitute its statutory principles, defining both the areas of activity and the degree of autonomy [50]. The political dimension refers to the systematic search for consensus that characterizes all government entities, which has to be harmonized with the managerial function expressed by the administrative and technical structure [18, 35, 48]. Both affect the business dimension, influencing both the form of financial sustainability and the creation of local public value.

Last but not least, it should be noted that socio-economic development only partially depends on local authorities. The roles played by other actors in the system—citizens, businesses, other public authorities and not-for-profit organizations—are equally determinant, as well as the contributions they make in terms of resources, expertise, ideas and actions [28]. They constitute a rather fragmented framework, but their attitudes and behaviors nevertheless affect the output produced by local authorities and more generally the process of creation of public value. It is therefore critical that local authorities adopt a public governance approach, namely, a willingness and an ability to play the important role of attracting, involving, monitoring, and promoting the activities of other social actors. They need to facilitate and positively orient, in a collaborative and synergistic sense, the individual and collective development of these actors, thus contributing to generate and at the same time draw upon the social capital of the whole community [39, 42].

The above-mentioned aspects of specificity and complexity that characterize the distinctive function of local authorities are the main reasons for the wide and growing interest in urban strategic planning [33].

Urban strategic planning, in fact, may offer a useful contribution to local government, as long as it is set and carried out in an authentic and substantial way. It is necessary that the plan does not limit itself to only internal and external analyses—even if they are to a degree indispensable. It also needs to identify a fair model of development that is guided by a long-term and far-reaching vision and is able to make clear the meaning of its foundational choices and, on this basis, identify possible courses of action, projects to be given priority and related operational solutions.

More specifically, the effectiveness of the urban strategic plan requires some appropriate conditions for both the object and the subjects of planning.

With regards to the contents of the plan, it is necessary to have a selective and integrated approach, which is both far-reaching and perspective, sustainable and flexible [43, 46].

A selective approach, limited to a few themes, objectives and projects that are relevant to the socio-economic development of the territory and the community, is essential to focus attention and actions on crucial and decisive issues, those that are able to have a greater impact on future scenarios, and to avoid instead dispersion of energies and dissipation of resources.

At the same time, an integrated approach that is mindful of the interdependence and co-determination of the various policy interventions is essential to make them consistent and coordinated, to generate useful synergies and to create systemic value. From a space-time perspective, a far-reaching and long-term horizon is necessary to take account of complementarities (both as sources of constraints and opportunities) between different regions and various levels of government, to achieve important goals, to coagulate significant resources, and to enable innovative processes, overcoming the shortsightedness and constraints of each single administrative mandate.

Further key features to take into account are the sustainability and flexibility of the contents of the urban strategic plan. The former, which is the result of the beneficial correlation between goals and resources, makes the urban strategic plan rational and realistic, at once ambitious and feasible, avoiding idealistic temptations as well as the propensity to give up. The latter, which corresponds to the dynamism of the context, makes the plan adaptive and constantly updated (both in terms of geographical and operational contents).

In summary, all these characters of the urban strategic plan allows to identify (1) the areas in which the city, on the basis of its identity, vocation and resources can (and should) try to excel autonomously, (2) the areas in which, in order to be successful, the city must weave collaborative relationships with other entities (and on which it would be appropriate to invest), and, finally, (3) the areas where the city does not have or can acquire the conditions to play a significant role (and which it would be reasonable to give up).

As for the role of the actors involved in the planning process, the principles of openness, partnership and leadership are fundamental [14, 41].

The drafting and subsequent implementation of the urban strategic plan requires an open and transparent approach, which is at time relational and communicative, engaging and participatory. This would promote the fruitful interaction of the plurality of key public and private subjects and prevent both the self-referential attitude of the former and the opportunism, indifference or exclusion of the latter. In this way, it is possible to strengthen democratic participation as well as the accountability of local authorities, to balance all powers involved, to positively deal with conflicts of interest, and to promote mutual trust and a sense of belonging of all different actors, thus encouraging collaborative and proactive approaches.

Growing importance is also attributed to the development of partnership relationships between public and private actors. These alliances, which are the result of voluntary agreements governed by fair rules and by negotiation skills, allow for a clear distribution of responsibilities, tasks, risks and benefits among all relevant stakeholders.

What is essential, in any case, is the exercise of the function of leadership by local authorities, which presupposes their competence and legitimacy and results in the construction of truly shared and consensual scenarios.

Under these conditions, the plan can be a real and high-impact instrument for public governance and strategic management, able to dynamically integrate the

needs for economic development and social and environmental protection with the management tools that are necessary to achieve the shared goals, on which it is then possible to gravitate interests, generate resources and promote the assumption of responsibilities [8, 21].

3 The Smart City Model for the Creation of Public Value

In the previous section we showed how the creation of local public value in a financially sustainable way is a very complex function, which can find a useful governance tool in the urban strategic plan.

To address this complexity, many local authorities state that they wish to become smart. A smart city is meant to be actively engaged in improving the quality of life of its citizens and in pursuing sustainable socio-economic development, thanks to the wide and innovative use of ICT.

However, so far the concept of smart city, although widely used, does not have a consistent meaning and therefore needs to be deepened and better defined.

The concept of smart city was first mentioned in the mid-90s [5], although its use became prominent at the beginning of the third millennium, due, on the one hand, to the interests of multinational companies operating in the ICT sector, such as IBM and Cisco, and, on the other hand, to the attention that international bodies such as the European Commission and the OECD devoted to the subject [23, 25].

It is no coincidence that, even in the scientific literature on the subject, different schools of thought have developed around the concept of smart city [11, 13, 36, 44].

Among the most prominent of these schools of thoughts, there is the one that focuses on ICT applied to the redesign of every aspect of urban life. In this sense, the smart city is considered an urban environment at the same time equipped, interconnected and intelligent [26]. An appropriate hardware, software, and network equipment composed of sensors, kiosks, personal devices, smartphones, tablet PCs, GPS devices, the web, social networks, etc. can detect massive amount of data on the life of the city in real-time [37]. Their interconnection, that is, their integration on a platform of enterprise computing, allows for the exchange of information between the various municipal services [31]. The intelligent use of such information allows to perform complex analyzes, to develop conceptual models, and to visualize and optimize critical processes, in order to take the most rational operational decisions [49].

This meaning of smart city can be seen as an extension and evolution of other concepts of the city, such as the ‘digital city’ and the ‘ubiquitous city’.

The digital city, the most dated among these concepts, was created to refer to any digital initiative undertaken by a city, starting with the provision of Internet access (in this case we also refer to the ‘wired city’) up to the 3D representation of the city (the so-called ‘cyber city’). In the most general sense, the digital city is identified as an information system that collects digital information on the real city and makes it available in a virtual public space, where citizens can consult it, but

also interact with the system and with other users (hence the oftentimes used term of 'intelligent city') [16, 32].

The ubiquitous city (also referred to as 'U-city') further develops the idea of the digital city, creating a new generation of urban space, which results from the convergence between physical world and virtual reality. The U-city is defined as an innovative model designed to improve the management of the city, the quality of life and economic development by identifying the critical success factor in the attention given to the end user. Nonetheless, there are projects that focus only on certain categories of citizens (e.g. young people), which mitigates the user-centric nature of the ubiquitous city [10, 29].

In addition to the current of thought that focuses on ICT, another one worth mentioning defines smart cities as those cities that thoroughly innovate their governance and their own conditions of socio-economic development. This meaning, although it does not renounce the support that comes from a wide and innovative use of ICT, focuses on the proper fulfillment of the needs of citizens, businesses and other organizations. From this point of view, a smart city, by monitoring and integrating its critical infrastructure, whether it is the physical capital (roads, bridges, etc.), technological capital (hardware, software, network) or intellectual and social capital (resulting from the relationships between the members of the community), plans the activities of prevention, maintenance and management, makes an efficient use of its resources, and optimizes the effectiveness of its services. Under these conditions, a smart city is an urban context that is at the same time innovative, competitive, effective, efficient, as well as safe, livable, equitable, and sustainable [24, 47].

The main difference between this meaning of smart city and the previous one consists in the role attributed to ICT. In the first case, ICT is an indispensable element around which everything revolves; in the second case, it is only one of the pillars of the model, of which it represents an important enabling factor, but not necessarily the only one, and, sometimes, not even the most important one.

The non-ICT-centered meaning is characterized by a broader, more flexible and open vision. A vision that appears more consistent and convincing, certainly more coherent with the objective of creating local public value. Like for the ICT-centered approach, even this meaning can be related to other recently developed concepts of the city, and in particular to that of 'knowledge city' [1, 9].

In essence, a knowledge city is purposely designed to encourage and nurture the collective knowledge, that is, the intellectual capital of the community, seen as a determinant factor for the sustainable creation of local public value [15]. This city-model derives its social, environmental and economic success by a series of factors, notably [17]: the allocation of facilities, networks and tangible and intangible assets for the production of goods and services based on knowledge (in the broadest sense of the word and, thus, potentially in its scientific, technological, cultural, and artistic manifestation); the development of conditions able to promote talent, creativity, innovation and entrepreneurship; the availability of technologies, instruments and services for the systematic, effective and efficient dissemination of knowledge; the presence of actual and virtual places that can

facilitate interpersonal relations, the exchange of information and the sharing of experiences; and, finally, the ability to generate, attract and retain citizens who are not only highly qualified from a professional point of view but also engaged with the political-institutional life and environmentally-conscious.

The similarities between the concept of knowledge city and that of smart city are very apparent, although the former is characterized by a greater focus on intellectual and social capital, and the latter by a broader, more open and flexible perspective. The concept of smart city, therefore, is more complete and more easily applicable to the majority of urban areas, since it is respectful of their identity, their distinctive characteristics and their evolutionary paths.

On this basis, it seems interesting to identify the areas of intervention in which the city can be smart, that is, able to contribute to the quality of life of its citizens, to the protection of the environment and to economic development. A systemic approach allows to identify six relevant dimensions [22]: smart economy (i.e. competitiveness), smart people (in terms of social and human capital), smart living (i.e. quality of life), smart environment (i.e. attention to the natural resources), smart mobility (which refers to both transport and telecommunication networks and services), and, of course, smart governance (with its features of openness, transparency, participation, and accountability).

These are the same dimensions that the European Commission takes into account when designing programs to give financial support to smart cities.

In this regard, it should be noted that the reference to such dimensions, each of which can be further articulated, has the advantage of making the model very encompassing, covering all the areas of intervention of the city. Yet it is unlikely that a single city can excel in all the above-mentioned areas. It is more likely that each urban reality can be smart in one or more areas of intervention (e.g. economic development, the protection of the environment), but not necessarily in all of them.

In other words, there is no single model of smart city, but rather as many variations as there are possible meanings and contexts of ‘smartness’, with all their possible nuances and combinations [27].

Despite its conceptual variety, the smart city, to be considered such and to become successful, must prove to be genuinely creative. This means that it must develop an original model of socio-economic development through a clear strategic direction, a model that makes the most of its identity, its vocation and its specificity, avoiding improvised or unrealistic approaches as well as to give into emulative practices—unfortunately fairly common.

Obviously, some contextual conditions are essential, notably the concentration, variety and variability of the community of reference [7, 30]. This concentration, which is defined as the presence of a significant number of people in a given geographical space, is an essential factor from both a qualitative and a quantitative perspective: it ensures the necessary population density, but especially the high intensity and frequency of interpersonal and inter-organizational relationships within which smart ideas can grow and spread.

Variety, in the broadest sense of the term, refers both to the community (i.e. diverse people, knowledge, activities and needs) and to the territory (a combination of different uses of the urban area, e.g. residential, touristic, administrative, manufacturing, commercial, recreational). Variety determines the wide array of opportunities for interaction and promotes the development of creativity, innovation and entrepreneurship.

Variability, in the double meaning of instability and dynamism, is also very significant, since it is from situations of uncertainty and struggle that important innovations might emerge (especially when the fear of a crisis overcomes the aversion to change). Likewise, it is from the opening and consequent evolution of the urban environment that the cognitive capital can be increased and new opportunities for development can materialize.

However, in order to accrue the benefits deriving from the creation of public value, a smart city not only must (try to) be such, it must also be able to communicate its objectives and be perceived as a smart city by all relevant stakeholders. The construction of an image that is at the same time recognizable and attractive, credible and distinctive plays a decisive role in determining the success of a smart city.

4 An Empirical Study About Smart City and Urban Strategic Planning

In view of the contribution that the smart city model gives to the creation of local public value, it may be interesting to assess if and how this model is included in urban strategic plans—and if consideration is given to its various meanings, fields of activity and contribution to the socio-economic development. Specifically, we intend to analyze whether or not the smart orientation is taken into account in the urban strategic plans of the Italian regional capitals, as reflected in the documents published on their institutional websites.

Focusing on the regional capitals allows us to analyze a relatively limited but significant sample of institutions that, although characterized by some common features, differ in several aspects, ranging from the size, geographical characteristics and territorial and socio-economic aspects. By covering substantially all of the significant areas of the country, they constitute a sufficiently representative sample of the variety that characterizes the system of local authorities in Italy.

The documents considered, despite the variety of denominations and methodological approaches, include all urban strategic planning tools, but also any other document that specifically refers to the concept of smart city and that is published on the web as of July 31, 2013. The reference to the documents available online provides useful information on the degree of sensitivity of the specific local administration to the wider dissemination—in terms of accountability—of the information included in its plans.

In general, there is a significant commitment to urban strategic planning (the data shown represent an update to those reported in [20]): 20 out of 21 municipalities (95 %, with the exception of Trieste) have started a strategic process. There is also a high level of disclosure, since 18 municipalities out of 20 (90 %, with the sole exceptions of Potenza and Catanzaro) publish online their urban strategic plans (Table 1).

No less significant is the reading of the data at a demographic level, according to the classes identified by the Ministry of the Interior, and with reference to the geographical areas identified by the Italian Institute of Statistics—ISTAT (Table 2).

From a demographical point of view, the classes of municipalities with the highest level of strategic elaboration and dissemination are those with more than 250,000 inhabitants, where all the institutions establish and publish on the web their strategic planning documents. The next smaller size class (between 100,000 and 250,000 inhabitants) is still characterized by a high degree of strategic disclosure, since this class of cities make available online all the plans they formulated (5 out of 6 bodies, representing 83 % of total local authorities). Relatively smaller, however, is the commitment of the regional capitals of smaller size (up to 100,000 inhabitants), in which only 60 % of the plans are published.

Geographically, the cities in the North–West and Center of the country plus the Islands are those that, overall, are characterized by a larger strategic development and transparency, with the formulation and online publication of strategic plans by all regional capitals. The North–East area still displays a substantial level of strategic planning and disclosure (all 4 strategic plans formulated by the 5 municipalities included in the analysis are published online, representing 80 % of the total). The Southern area, even in the presence of a high level of strategic planning commitment (all regional capitals have begun the process of strategic planning), is characterized by a lower level of disclosure (about 67 %).

In addition to the number of strategic plans produced and disclosed, it's interesting to analyze some other qualifying aspects.

First of all, even if all the documents are characterized by a strategic breath and a medium to long-term perspective (usually 10 years long), 2 out of 17 plans (representing 11 % of the total) focus exclusively on urban-regulation aspects (it's the case of Ancona and Milan), even if they are the result of participative decision-making processes.

It is also important to point out that, although in most cases the process of urban strategic planning and implementation was directly promoted by the local authority, there are cases, like those of Turin and Florence, where the process was initiated, implemented and disseminated by a separate organization (namely '*Strategic Turin Foundation*' and '*Future Florence Association*') gathering both public and private actors and with no management power. In these cases, the plan may contain highly sophisticated analyses and proposals, be perceived as the privileged site for the meeting and engagement of all key-players and for the establishment of an effective communication strategy, but is hardly seen as an authentic instrument of local government.

Table 1 Urban strategic plans of Italian regional capitals: overall framework

Cities	Demographic classes and geographical areas	Title of urban strategic plans	Year
Aosta	*Up to 100,000 inh North–West*	*Future of Aosta: Strategic Plan of Aosta and of La Plaine*	2010
Turin	*From 500,000 to 1,000,000 inh North–West*	*1) City Strategic Plan—International Turin*	2000
		2) 2° Strategic Plan of the Metropolitan Area	2006
Genoa	*From 500,000 to 1,000,000 inh North–West*	*1) Plan of the City of Genoa*	2002
		2) The City Changes (UrbanLab)	2009
Milan	*Over 1,000,000 inh North–West*	*Government Plan of the Territory*	2011
Trento	*From 100,000 to 250,000 inh North–East*	*1) Strategic Plan 2010*	2003
		2) Strategic Agenda 'Trento 2020'	2007
Bolzano	*From 100,000 to 250,000 inh North–East*	*Ideas for 2015: Thinking the City*	2004
Venice	*From 250,000 to 500,000 inh North–East*	*Venice Metropolitan Area*	2004
Trieste	*From 100,000 to 250,000 inh North–East*	*N/A*	N/A
Bologna	*From 250,000 to 500,000 inh North–East*	*Metropolitan Strategic Plan*	2013
Florence	*From 250,000 to 500,000 inh Center*	*1) Strategic Plan Florence 2010*	2002
		2) There is More than One Florence	2009
Ancona	*From 100,000 to 250,000 inh Center*	*A Plan for Ancona: the Changing City*	2009
Perugia	*From 100,000 to 250,000 inh Center*	*Perugia—Europe from 2003 to 2013*	2004
Rome	*Over 1,000,000 inh Center*	*Strategic Plan for the Development of Rome Italian Capital*	2009
L'Aquila	*Up to 100,000 inh South*	*L'Aquila 2020*	2008
Campobasso	*Up to 100,000 inh South*	*Territorial Strategic Plan*	2008
Bari	*From 250,000 to 500,000 inh South*	*BA2015—Metropolitan Area of Bari*	2008
Naples	*From 500,000 to 1,000,000 inh South*	*Strategic Plan*	2006
Potenza	*Up to 100,000 in South*	*Strategic Project of Potenza's Hinterland*	2005
Catanzaro	*Up to 100,000 inh South*	*Strategic Plan*	2011
Palermo	*From 500,000 to 1,000,000 inh Islands*	*Palermo, Capital of the Euro-Mediterranean Area*	2010
Cagliari	*From 100,000 to 250,000 inh Islands*	*Strategic Plan*	2008

Table 2 Urban strategic plans of Italian regional capitals: data by demographic classes and geographical areas

	N. of cities	N. (%) total population		N. (%) of plans approved		N. (%) of plans online	
Total	21	9,732,740	(100 %)	20	(95 %)	17	(81 %)
Demographic classes (interior ministry)—N. of inhabitants:							
Up to 100,000	5	319,897	(3 %)	5	(100 %)	3	(60 %)
From 100,000 to 250,000	6	853,516	(9 %)	5	(83 %)	5	(83 %)
From 250,000 to 500,000	4	1,342,822	(14 %)	4	(100 %)	4	(100 %)
From 500,000 to 1,000,000	4	3,130,918	(32 %)	4	(100 %)	4	(100 %)
Over 1,000,000	2	4,085,587	(42 %)	2	(100 %)	2	(100 %)
Geographical areas (ISTAT):							
North–West	4	2,874,628	(30 %)	4	(100 %)	4	(100 %)
North–East	5	1,076,927	(11 %)	4	(80 %)	4	(80 %)
Center	4	3,403,925	(35 %)	4	(100 %)	4	(100 %)
South	6	1,564,897	(16 %)	6	(100 %)	4	(67 %)
Islands	2	812,363	(8 %)	2	(100 %)	2	(100 %)

One further consideration to make is that most of the urban strategic plans are fairly recent (the oldest one was approved in 2000 and only 9 out of 17 plans, representing 53 % of the total, are more than 5 years old). It would therefore be premature to assess the impact they had on their socio-economic environment. Among the older experiences, four are fairly significant, having already moved to the second generation of urban strategic plans. In the cases of Turin, Trento and Florence the second-generation plan stems from a critical analysis of the structure, content, status of implementation and impact of the first-generation plan. In the case of Genoa, however, the two documents are not sequential and rather highlight a discontinuity of both strategic and administrative nature.

Within this framework and considering the overall high levels of strategic planning and disclosure recorded by the generality of Italian regional capitals, it is interesting to analyze if, how and what of the smart city model is reported in their urban strategic plans (Table 3).

The first thing that can be evidenced is that only 4 of the 18 analyzed urban strategic plans contain specific references to the smart city model. Moreover, these 4 plans refer to individual areas of activity, such as the security of infrastructure, eco-friendly construction activities, energy efficiency, sustainable mobility and the use of ICT in the delivery of services to citizens. They all lack an overall strategic vision of the smart city.

Another thing that can be highlighted is the demographic and geographic distribution of the collected data: first, the 4 cases that cite the smart city model belong to different demographic classes (with weights ranging from 20 % to 50 %), with the sole exception of the class between 100,000 and 250,000 inhabitants; second, each of them belong to a different geographical area (with weights ranging between 17 % and 25 %), with the sole exception of the Islands.

In essence, the distribution of the few urban strategic plans containing specific references to the model of the smart city is numerically rather homogeneous, both demographically and geographically.

Nevertheless, all the plans of the Italian regional capitals contain frequent references to aspects that are considered typical of the smart city model, such as change (e.g. the plan of Bolzano '*Ideas 2015: Thinking the City*', the second plan of Genoa '*The City Changes*', and '*A Plan for Ancona: the Changing City*') and innovation (e.g. '*Venice—City of higher education, research and innovation*', '*Bari—Research & Innovation, The metropolis in a bit*', and '*Cagliari—Knowledge, innovation and development*').

Consequently, it seems that at the time of the preparation of these urban strategic plans, the reference to the smart city model was not yet sufficiently robust and widely known, so as to remain largely unexpressed or marginal. In view of these findings, it is interesting to see whether, beyond the content of the urban strategic plans, the smart city model finds confirmation in other planning documents that the regional capitals have approved and published online (Table 3).

This approach leads to substantially different results, since 13 of these municipalities (62 % of the total) publish on their websites documents where they declare their intention to become smart (mostly in response to bids for funding at the

Table 3 The smart city model in the urban strategic plans and other specific documents of Italian regional capitals

	N. (%) of online documents containing references to the smart city model	Urban strategic plans	Other specific documents
Total	***Overall situation***	**18 (86 %)**	**13 (62 %)**
	of which: without significant content	14 (67 %)	–
	specific fields of activity	4 (19 %)	8 (38 %)
	overall model	–	5 (24 %)
Demographic distribution	***Up to 100,000 inhabitants***	**3 (60 %)**	**2 (40 %)**
	of which: without significant content	2 (40 %)	–
	specific fields of activity	1 (20 %)	2 (40 %)
	overall model	–	–
	From 100,000 to 250,000 inhabitants	**5 (83 %)**	**2 (33 %)**
	of which: without significant content	5 (83 %)	–
	specific fields of activity	–	2 (33 %)
	overall model	–	–
	From 250,000 to 500,000 inhabitants	**4 (100 %)**	**3 (75 %)**
	of which: without significant content	3 (75 %)	–
	specific fields of activity	1 (25 %)	3 (75 %)
	overall model	–	–
	From 500,000 to 1,000,000 inhabitants	**4 (100 %)**	**4 (100 %)**
	of which: without significant content	3 (75 %)	–
	specific fields of activity	1 (25 %)	2 (50 %)
	overall model	–	2 (50 %)
	Over 1,000,000 inhabitants	**2 (100 %)**	**2 (100 %)**
	of which: without significant content	1 (50 %)	–
	specific fields of activity	1 (50 %)	–
	overall model	–	2 (100 %)

(continued)

Table 3 (continued)

	N. (%) of online documents containing references to the smart city model	Urban strategic plans	Other specific documents
Geographical distribution	***North–West***	**4 (100 %)**	**4 (100 %)**
	of which: without significant content	3 (75 %)	–
	specific fields of activity	1 (25 %)	2 (50 %)
	overall model	–	2 (50 %)
	North–East	**4 (80 %)**	**3 (60 %)**
	of which: without significant content	3 (60 %)	–
	specific fields of activity	1 (20 %)	3 (60 %)
	overall model	–	–
	Center	**4 (100 %)**	**2 (50 %)**
	of which: without significant content	3 (75 %)	–
	specific fields of activity	1 (25 %)	1 (25 %)
	overall model	–	1 (25 %)
	South	**4 (67 %)**	**3 (50 %)**
	of which: without significant content	3 (50 %)	–
	specific fields of activity	1 (17 %)	1 (17 %)
	overall model	–	2 (33 %)
	Islands	**2 (100 %)**	**1 (50 %)**
	of which: without significant content	2 (100 %)	–
	specific fields of activity	–	1 (50 %)
	overall model	–	–

national and EU level). Within these 13 cases, the majority (8 out of 13, 62 %) talks of smart interventions in specific fields of activity (the same that were mentioned above), but there are also cases (more specifically 5, which account for 38 % of the total) that refer to a comprehensive model of smart city.

As pointed out when talking of urban strategic planning, even in the development of smart city projects there are both initiatives launched directly by the local authorities (8 out of 13 cases, 62 % of the total) and initiatives launched by separate organizations (mostly associations or foundations) promoted by the same municipalities (5 cases out of 13, 38 % of the total). It should be noted, however, that in no case the launching association or foundation is the same organization that is involved in the urban strategic planning—at the most there are forms of collaboration that develop between the two entities (e.g. '*Turin Smart City Foundation*' vs. '*Strategic Turin Foundation*').

For completeness, it is also worth noting that in four other urban areas (Florence, Potenza, Trento and Trieste), some initiatives aimed at developing smart projects have even been initiated by organizations to which, at least so far, the local administration does not participate directly.

This multifarious framework allows us to develop some critical considerations.

The fact that only one-fifth of the urban strategic plans formulated by the Italian regional capitals refer explicitly to the smart city model can have two complementary meanings. On the one hand, it may signal the weakness or, more simply, backwardness (even only from a terminological point of view) of most of the analyzed urban strategic plans, which overlook a relevant and critical model for the creation of local public value. On the other hand, it may signal the lack of strategic importance that was attributed to the smart city model, at least until the time these plans were approved (which is pretty recent). This could have happened despite the smart city model is formally identified as instrumental in improving the quality of life, safeguarding the environment and promoting economic development.

The latter interpretation seems to be confirmed by the fact that 62 % of the analyzed municipalities pursue, in fact, smart city projects, but mainly in the context of their participation in specific bids for public funding. These are certainly positive for the innovative opportunities they offer, but nevertheless expose to the risk of undertaking occasional or sporadic initiatives that are not included in a clear strategic vision. Although it is too early to evaluate the results that can be achieved in this way, another risk worth mentioning is that these projects, once the funds allocated to them are exhausted, get abandoned, making their socio-economic impact extremely modest and ephemeral.

Moreover, the fact that in a significant number of cases, the pursuit of smart city projects is delegated to organizations outside the local administration (not to mention those cases in which the initiative is promoted by entities to which the municipality does not even participate) may, in turn, be variously evaluated. On the one hand, it is a solution that can support the wide and open involvement of the plurality of public and private stakeholders. On the other hand, it is a situation that, in the absence of specific managerial powers attributed to the delegated

organization, can hardly be an effective form of local government (as already noted on the subject of urban strategic planning). This can result in an excellent design of smart city, which, however, cannot be concretely implemented outside some random occurrences.

Finally, the fact that there is a predominance of projects focused on specific fields of activity rather than on a comprehensive model of smart city can, also, be interpreted in different ways. On the one hand, this can be a strength, if it means that only the aspects considered most relevant and critical to the specific urban context are selected. On the other hand, it can be a point of weakness, if these projects are not part of a clear strategic vision.

The latter interpretation seems, unfortunately, more likely, as the areas of activity that are addressed in the smart city projects are often common to several cities, not assuming, at least apparently, a character that is tailored to the specific urban situation. In addition, as already mentioned, since these projects substantially correspond to the activities that are financed with public funds, they seem to reflect an opportunistic behavior rather than strategic choices that are broad and forward thinking. This adds to the fact that in several cases the only chosen area of activity is the development of ICT.

As mentioned earlier, technological innovation is an essential condition for any smart city project. However, such projects run the risk of failing if they are designed to respond to a technological innovation rather than to an actual need. In other words, these projects are likely to propose answers to needs that are not felt by the citizens, perhaps neglecting others that are of greater importance for everyday life.

Even the usability factor of the technological tools that are developed assumes a certain importance. In countries where the average age is rather high, like Italy, it needs to be considered that large segments of the population are not familiar with digital solutions and therefore will tend not to use them, despite having them available, even when they respond to actual needs.

After all, it should not be overlooked that citizens must be made aware not only of the existence and availability of a service, or its ease of use, but also of the concrete benefits that the service itself can bring to each of them individually and to the community. For example, equipping bus stops with digital panels providing passengers with real-time information on the arrival times of buses can even be counterproductive, if first the efficiency and proper frequency of the public transport service is not ensured.

5 Conclusion

To sum up the main points touched in this chapter, a city can be defined smart when the investments in physical, technological, intellectual and social capital nurture a sustainable economic development and a high quality of life, while at the same time wisely managing natural resources and using a participatory model of

government. It is important to remark that the quality of being smart does not have to be uniquely related to the presence of ICT, but also to the recognition that the intellectual and social capital as well as the physical capital are important factors in the creation of local public value.

From an infrastructural point of view, it is important that the available resources are used together to improve economic and political efficiency and enable social and urban development. From a social point of view, a smart city is a city whose community has found out how to learn, adapt and innovate, with a particular focus on achieving social inclusion and citizen participation in urban governance. From an environmental point of view, sustainability emerges as a priority; this is a very important aspect in a world where resources are scarce and cities increasingly base their development also on the availability of natural resources. From an economic point of view, a city can be considered smart if, thanks to its competitiveness, is able to attract new businesses and thus to increase local prosperity.

Consequently, research on the smart city is both complex and fascinating and may represent one of the main areas of urban innovation and development in the coming years.

To be effectively set up and implemented, however, the smart city model requires competence and the ability to follow through. It cannot be managed in an improvised or episodic way. It requires a strategic vision that is specific, clear and selective and a system of governance that is authentic, open and engaging.

To this end, it is necessary that the smart city model is clearly stated in the urban strategic plan and, in an integrated and convergent way, in the operational programs and budgets of the local authority. This condition is, in fact, essential to make the municipality's overall system of governance meaningful, relevant and functional and to avoid the proliferation of a multitude of independent and distinct planning tools. The latter could perhaps be singularly well-designed, but likely to compose a too crowded instrumental framework, which can be redundant and wasteful, inevitably rigid, costly and of little value, since its results are essentially alien to the effective processes of government and management.

With specific regard to the smart city orientation in urban strategic planning, there are many other weaknesses that should be adequately addressed and that concern both methodological and substantive issues. For what concerns the latter, at least two perils must be avoided: first, the excessive generality of the strategic objectives, which is typical of settings that tend to be all-inclusive; second, the opaque definition of the contents of the plan, which is the result of non-rational or non-transparent choices. For what concerns methodological issues, especially the way in which decisions are taken, the main risks and limits concern the only apparent openness of the planning process and the purely fictitious involvement of civil society. This corresponds to a decision-making process that is circumscribed to the narrow political and administrative boundaries or, no less seriously, to a privileged and non-transparent relationship among strong powers.

Another risk that is not to be underestimated is the lack of coherence, both in terms of harmony and synchrony and of horizontal and vertical integration, between the smart orientation of a local authority and (1) that of contiguous

territorial contexts (either geographically close or more generally united by the same socio-economic problems) and (2) that of other levels of government (provincial, regional, national). This aspect is particularly important for the urban realities of smaller size, which are increasingly, and per se praiseworthy, testing smart solutions. If the need for an integrated approach is not taken into account, these initiatives might be characterized more by their audacity than by their probability of success.

In all such cases, the governance tools that have been adopted are often only formally 'for governance'. In reality, they are dominated by rhetoric, fashion or fiction, they can be self-referential, shortsighted, emulative, unrealistic, bent to particular interests, and, in any case, unable to contribute to the creation of local public value. In other words, they tend to be irrelevant to the directions of change of the corresponding socio-economic system.

On the contrary, in order to be useful to the development of a smart city, urban strategic planning requires the prior definition of appropriate rules concerning openness, transparency of information and communication flows, solutions for the involvement and participation of social actors, partnership arrangements and the exercise of leadership. These are essential rules to try to reduce and overcome—with the awareness of never succeeding completely—many areas of risk inherent to the innovation process of urban contexts. These risks include actors not being open to dialogue and exchange, information asymmetries, power imbalances, divergence of interests, unstated priorities, lack of resources, inertial activities, and unforeseen emergencies.

Despite these risks, if carried out according to the above-mentioned system of rules, the urban innovation process allows giving answers to the problems that the vast majority of stakeholders consider most appropriate. In other words, it provides answers that are largely shared across all interested actors. In order to do so, it is necessary to build a clear, strong, distinctive and long-term vision and to formulate specifically selected yet at once flexible and adaptive goals and projects.

The result will be a smart agenda for local government that is significant enough to make a difference and streamlined enough to be effectively implemented and shared among relevant actors. This will allow the municipality to mobilize interests, build consensus, attract resources, and produce positive results. The actual achievement of positive results—obtained through the implementation of strategies, the activation of processes of collective learning, the higher cohesion among social actors, better ownership of new policy initiatives, and the progressive realization of the desired idea of smart city—can effectively contribute to the creation of local public value.

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