Smart City appropriation by local actors: An instrument in the making

The Smart City became a dominant discourse as a new approach to mitigate and remedy to current urban and societal problems. Numerous cities are engaged in a Smart City process to address their local challenges. But different actor’s appropriations and styles of implementation produce particular territorial and societal developments. This paper questions in an innovative way the actors’ appropriation of the Smart City: the phenomenon is considered as an instrument, following the theory of Lascoumes and Le Galès (2007). On basis of an online survey with 193 Belgian respondents, the results of several statistical treatments validate an appropriation of the Smart City between a public policy instrument in one side and a functional instrument in the other side. But across the five categories of actors (Elected politician (1), administrations and public organizations (2), private companies (3), research centers & universities (4) and associations (5)), the Belgian respondents do not fit into one or the other instrument in a monolithic way. The actor’s appropriation does not follow a homogeneous trend based on a technical and holistic direction, like it is represented in the literature.

Keywords: Smart City- Instrument – Actors - Appropriation – Belgium
1. Introduction

Since the mid-2000s, the Smart City became a dominant discourse as a new approach to mitigate and remedy to current urban problems and societal challenges (Alawadhi et al., 2012). At the European level, the ambition to transform cities and territories to smart places takes a certain importance (Luque-Ayala & Marvin, 2015). Numerous European Union research and policy projects emerge to deal with various issues of the Smart City (Yigitcanlar, 2017). Numerous cities engage Smart City developments as a way to address their local challenges.

2. Literature Review

There is neither a single template of framing Smart City, nor a one-size-fits-all definition of it (O’Grady & O’Hare, 2012). Smart Cities is composed by numerous components differently highlighted. Depending on the definition, it comprises specific features like enhancing the quality of life, adopting ICTs in urban systems, implementing new governance, focusing on human capital, and reaching a more sustainable territory (Batty et al., 2012; Ramaswami, Russell, Culligan, Sharma, & Kumar, 2016). According to Mora et al., (2017), Smart City research is fragmented and lacks of cohesion. There is a deficiency of intellectual exchange between authors. Mora et al., identified two main development paths. The first on is based on a peer-reviewed publications produced by European universities, which support a holistic view of the concept. The second stands on the grey literature produced by the American business community and relates to a techno-centric understanding of the subject.

This latest vision of Smart City includes a product-oriented angle which emphasis an interconnection between the market and the urban systems with a strong positioning of service and consulting companies. Solutions against the “sick city” are pushed by firms (Söderström, Paasche, & Klauser, 2014). These corporate discourses focus on reimagines ICT tools as management systems for cities. Smart Cities are advertised as the future of globalization (Araya, 2015). Nevertheless, a critical work in the literature stresses the neo-liberal ethos underpinning this conception of Smart City (Greenfield, 2013; Hollands, 2015; Kitchin 2015; Vanolo, 2014). Issues such as panoptic surveillance, technocratic and corporate forms of governance or technological lock-ins are argued (Greenfield, 2013; Kitchin, 2014; Townsend, 2014).
Meanwhile, facing these corporate and technological trends in Smart Cities, the development of an inclusive Smart City is fostered in the literature (Chatfield & Reddick, 2015; Gil-Garcia, Pardo, & Nam, 2015; Marsal-Llacuna & Wood-Hill, 2017). A human conception is advanced. Social infrastructure (intellectual capital and social capital) is considered as an indispensable endowment for people and their relationships in a Smart City. It comprises various factors like affinity to lifelong learning, social and ethnic plurality, flexibility, creativity, cosmopolitanism or open-minded and participation in public life (Albino et al. 2015). Moreover numerous authors introduces also a reflection on governance as a driver of the phenomenon (Deakin 2014; Meijer & Bolivar 2015; Paskaleva 2011; Ben Letaifa 2015). Kourtit and Nijkamp (2012) argue that ‘smart governance’ implies pro-active and open-minded governance structures, with all actors involved. Stakeholder’s collaborations in the Smart City governance is advocated with the principles of participatory design (K. Paskaleva, Cooper, Peterson, & Götz, 2015).

These divergences do not consolidate a critical, comprehensive and global vision of the Smart City. Conceptual papers as well as models and frameworks empirically and theoretically developed are significantly produced. The conceptualization of Smart City is still under construction but the literature is insufficiently framed in theories. Therefore, due to this lack of a proper conceptualization, defined method or credentials (Angelidou, 2015; Nam & Pardo, 2011) cities claim themselves 'smart' with a self-congratulatory note (Hollands, 2008). Many cities brand themselves as Smart by delivering some projects, but there are not any fully fledged Smart Cities. Cities are not the only actor which appropriates the concept, companies, research centres, associations, start-ups… desire to be part of the movement. Nowadays, rankings, competitions, fairs, congress are launched using the label “Smart”. A certain “Smartwashing” is currently pushed through these actors.

Is the Smart Cities another fashionable city brand or an effective urban development and management model to solve the problems of cities? Academics already asked to the auto-proclaimed Smart Cities to show what are hidden behind their self-declaratory attributions (Hollands, 2008).
Out of this academic claim, how do the different actors of a territory appropriate the Smart City and its orientations? It is necessary to understand how the Smart City is encompassed by the different actors involved. Which elements/components of this polymorphic concept are assimilated and supported by these actors? How do actors stand themselves on Smart Cities and which are their views on it? Is the Smart City considered as a tool to build the city or as a policy debate to imagine the future? Identify stakeholder’s interests and appropriations are essential to face the challenges of building the Smart City and its governance.

Smart cities’ topic is still largely under exploration and need theoretical frame as well as empirical researches based on quantitative methodologies. In particular, the literature on Smart Cities lacks of research on how stakeholders appropriate the Smart City and its different orientations. In this paper, the Smart City is considered as an instrument for cities and territories following Lascoumes and Le Galès (2007) definition of policy instrument. This helps to better analyse challenges and difficulties that cities are faced with when implementing Smart City principles.

3. Theoretical Framework

In order to study the Smart City, it is necessary to theoretically lashes up the concept. Political sociology and sociology of science are solicited to understand the construction of the Smart City and it appropriation by actors. In this perspective, the Smart City is envisaged as an instrument which accounts as processes of public policy change. This notion of instrument is reintroduced through questions of management and governance of public subsystems of societies and policy networks (Termeer & Koppenjan, 1997; Lascoumes & Valluy, 1996). Political scientist studies policy instruments in order to better understand the linkages between policy formulation and policy implementation, and to gain insights into the public policy decision making process. Public policy instrumentation becomes a major issue, as it reveals a theorization of the relationship between the governing and the governed (Lascoumes & Le Gales, 2007).

In this article, the Smart City is considered as an instrument which ensue a choice of practical device and some modes of operation. In fact, the Smart City emerged as possible ways of managing and governing the city. Smart City policies support new ways of imagining, organising and managing the city and its flows. The question of Smart City as a
territorial and societal instrument is framed in this article by the theories of instrumentalisation developed by Lascoumes and Le Gales (2007). In this perspective, the Smart City is studied as an instrument which stands between a device utilized to transform the territory and a political issue questioning the future of cities and towns. That helps to better understand the difficulties for implementing the Smart City.

A multiplication of actors has also been noticed in cities and territories. Some authors considered the city as an ungovernable place which hosts a «street fighting pluralism» (Yates, 1977). However, the phenomenon of multiplication of actors generates mechanisms of reorganization of relationships between actors. It implies a multiplication and an innovation of public policies instruments (Pinson, 2006). In Smart Cities, actors at all levels are embracing the notion of smartness to distinguish their policies and programs for targeting sustainable development, economic growth, better quality of life for their citizens, and creating happiness (Ballas, 2013). Instruments determine what resources can be used and by whom as well as the forms of collective action. Instruments may be legislative, regulatory, economic, agreement and fiscal as well as incentive, informative and communicative.

An instrument constitutes a device that is both technical and social, that organizes specific social relations between the state and those it is addressed to, according to the representations and meanings it carries. It is a particular type of institution, a technical device with the generic purpose of carrying a concrete concept of the politics/society relationship and sustained by a concept of regulation (Lascoumes & Le Gales, 2007).

This definition of instrument fits with what Angelidou (2015) considers as smartness which is a continuum in which local government officials, citizens and other stakeholders think about and implement initiatives that strive to make a city a better place to live in, “smarter”. The Smart City is an instrument used by managers, politics and economics to support specific development policies (Hollands, 2008; Vanolo, 2014).

An instrument orients relation between authorities and civil society through tools and devices (Lascoumes & Le Gales, 2007). In the literature of Smart Cities, Nam and Pardo highlight three main factors - technologies, people, institutions- which constitute the main components of a Smart City. Associates to each other’s, they represent a certain form of
devices which support the construction of the Smart City. Ben Letaifa (2015) considers that Smart Cities differs from other concepts in offering a balanced centricity among technology, institutions, and people. The expansion of city missions is accompanied by a development and a diversification of instruments. The public policy instruments is a mean of adapting relations between actors through intermediaries in the form of devices that mix technical and social components in a more or less standardized form (Lascoumes & Le Gales, 2007). It assimilates the factors of the Smart City: technology, people and institution.

The classic forms of city government “command and control” regress due to the multiplication of interactions with the market (privatization in particular) and the forms of actors collaboration (public-private, contracting, PPP, citizen collaboration). New approaches appear via new public policy instruments where a "new governance" perspective strives to take into account large networks of heterogeneous actors (private/public, profit/non-profit) in order to better coordinate them (Lascoumes & Simard, 2011; Salamon, 2002). In the literature on Smart City, authors promote a holistic ecosystem which allows co-creation among all stakeholders. Smart governance stresses collaboration between the various actors in the city. In this perspective, one stakeholder model is highly prevalent. The four helix model, suggest by Lombardi et al., (2012) incorporates the outcome of government policies, academic leadership qualities, corporate strategies and civil society expertise. Coordination and leadership roles in Smart Cities can shift from one actor to another depending on the identity, resources, and ecosystem readiness (Ben Letaifa, 2015).

However an instrument may favour certain actors and interests and exclude others. Actors have capacities for action that differ widely according to the instrument chosen (Lascoumes & Le Gales, 2007). The 3RC framework developed by Kummitha and Crutzen (2017) highlights specific Smart City construction which favours several actors. Some privileged stakeholders build a neoliberal Smart City where the power relations is contained by corporations and governments. They turn the public space into private space and control technological advancements (Critical school of thought). There are also stakeholders which take preferentially part to the construction process of the Smart City. They are present in the consultancy, planning and building of the Smart Cities on basis of ICTs, data management, IoT and technologies (Restrictive school). An instrument influences the way in which actors are going to behave. It creates uncertainties about the effects of the balance of power; they eventually privilege certain actors and interests and exclude others; they constrain actors and
they drive forward a certain representation of problems (Lascoumes, Le Galès & Gardon, 2007).

An instrument is never a closed device; it is inseparable from a contextualized mode of appropriation. This appropriation implies some mobilizations (like the affirmation of new competences), some reformulations (in favour of interests and relationships of power of actors) and some resistances (by reducing the scope of instrument or by circumvent alliances) (Lascoumes & Simard, 2011). The Smart City is considered as an instrument which could be appropriate by actors as either a functionalist instrument (1) or as a public policy instrument (2). For Lascoumes & Le Gales (2007) there is a difference between a functionalist approach of the instrument - named in this article “functionalist instrument” - and a “public policy instrument”.

- The functionalist instruments are considered as a kind of evidence, the choice of tools and modes of operation are superficial. These instruments are viewed as being “at disposal” and conceived as a pragmatic political and technical approach to solve problems. They are neutral and equally available. The central set of issues is around the effectiveness of instruments. The issue of selecting instruments and their mode of operation is presented as a matter of simple technical choices.

- The public policy instruments are considered as not purely technical, inert and with perfect axiological neutrality. On the contrary, they are bearers of values, fuelled by interpretation. Instruments tend to produce original and sometimes unexpected effects. They have their own force of action, structure public policy according to their own logic and develop socio-political mobilizations. Instruments also produce a specific representation of the issue they are handling.

Smart City as functionalist instrument (1) promotes a management and regulation of the city which operates via information and analytic systems. This vision promotes a technocratic mode of urban governance. It presumes that a city can be measured, monitored and treated as technical problems which can be addressed through technical solutions. It represents what Mattern (2013) calls ‘instrumental rationality’ and Morozov (2013) names ‘solutionism’, wherein complex social situations can be disassembled into neatly defined problems that can be solved or optimized (Kitchin, 2014). The functionalist instrument of the Smart City follows
a “hard” direction where ICT and technologies play a decisive role (Albino, Berardi, & Dangelico, 2015). Companies offer Smart City solutions against the “sick” city (Söderström, Paasche, & Klauser, 2014) in developing projects and proof of concepts on the territory. A neoliberal development of the Smart City operates through the promotion of (public)-private ventures as a way to smarter the territory.

Smart City as a public policy instrument (2) is an ideological dimension according to which being smarter entails specific strategic directions (Ballas, 2013). In Smart Cities, proposing visions for the city of the future and developing policy instruments to achieve those visions are important capabilities of actors. A Smart City should not be about technologies only, but should also consider important management and policy aspects (Chourabi et al., 2011). A Smart City takes also a “soft” direction integrating elements such as education, culture, social inclusion, and social innovation. In Smart City, it is important that smartness has not to be considered as a dichotomy in terms of “being smart” or “not being smart (Angelidou, 2014). The Smart City is an example of a ‘political assemblage’ (Mcfarlane, 2011) involving the mobility of policy ideas in global circuits of knowledge (Vanolo, 2014). Smart Cities as a public policy instrument is a new way to enhance local innovation ecosystems and knowledge economy overall (Schaffers et al., 2011). Actors discuss and argue how to solve problems of the city with a holistic conception of the solutions to mobilize. The Smart City stresses questions on introducing a distinction between the ‘good’ and the ‘bad’ city (Vanolo, 2014).

The theoretical framework that Lascoumes & Le Gales (2007) proposed on instruments is an innovative way to approach Smart Cities. This paper studies how the stakeholders - politics & public servants, private actors, members of the civil society and researchers- are appropriating the Smart City between a functionalist instrument (1) and a public policy instrument (2). The assumption made by the authors is that the Smart City may be considered as a functionalist instrument by some actors and as a public policy instrument by others actors according to their role in the decision making process, their level of development in Smart City initiatives (mature versus emerging) and their ideological background.
This distinction offers a comprehensive appropriation of the multi-faceted Smart City by its practitioners. It also allows an identification of the actors’ interests through their appropriation of the Smart City. And finally, it permits to detect the stakeholder’s common and opposite visions of territorial, societal and practical development of the Smart City. An empirical study questioning stakeholders active in Smart Cities in Belgium is established. It validates the theoretical statements on Instruments apply on Smart Cities and the author’s assumptions on stakeholders appropriations.

4. Methodology

A. Themes and stakeholders

To analyse the stakeholder’s appropriation of Smart City, a questionnaire with 31 short statements is redacted on basis of:

- The three factors of the Smart City: technologies, people, institutions (Nam & Pardo, 2011)
- The critics presented in the 3RC framework developed by Kummitha & Crutzen, (2017), especially the critical school of thought and restrictive school.
- Territorial matters stressed by Angelidou (2014) focusing on spatial considerations between the various territorial levels (municipal, regional and national).
- The stakeholders ‘model based on the quadruple helix developed by (Lombardi et al., 2012)

These elements are presented in the literature review and in the theoretical framework. The statements encapsulate the different aspects and orientations of the Smart City as well as the interrogations around it and its practices. They allow interviewed actors to position themselves pro or contra the 31 statements (Likert’ scale from 1 totally disagree to 5 totally agree). The statements are distributed across four sections: General considerations, Technology, Governance and Territorial Aspects.

Five categories of actors are instituted: Elected politician (1), administrations and public organizations (2), private companies (3), research centers & universities (4) and associations (5). The respective stakeholders are selected through the Belgian society on basis of their participations to Smart City events, studies or competitions. Indeed, the authors decide to
build the study on stakeholders which already develop certain Smart Cities knowledge. The stakeholders are involved into the Smart City movement in Belgium.

The paper studies on the one hand, the dynamic into the categories of actors identifying similarities and differences of appropriation in and in-between the five groups, and on the other hand, the appropriation on statements to determine how actors are positioned on them. The different statistical treatments on the actor’s positioning will subsequently furnish a classification of statements. Thanks to it will be possible to analyse the Smart City as a functional instrument or as a public policy instrument.

**B. Collection of data and sample**

The data was collected through an anonymous online survey. A questionnaire was sent to the different stakeholders in two languages: Dutch and French (Qualtrics). The data collection lasted 3 months (from February to April 2018). 193 responses were collected. There is equilibrium of respondents across the three Belgian Regions & the Federal level and across the five stakeholder’s categories as shown in table 1. Public organisations and private companies represent the highest number of respondents in comparison to associations and elected politics.

**Table 1: Number of stakeholders’ respondent inside the five categories**

<table>
<thead>
<tr>
<th>Localization / Actor's category</th>
<th>Elected politics</th>
<th>Admin &amp; publics</th>
<th>Privates</th>
<th>Research centers &amp; uni</th>
<th>Civil Society (assocs)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flemish Region</td>
<td>7</td>
<td>11</td>
<td>10</td>
<td>8</td>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td>Walloon Region</td>
<td>5</td>
<td>25</td>
<td>8</td>
<td>9</td>
<td>7</td>
<td>54</td>
</tr>
<tr>
<td>Brussels Capital Region</td>
<td>11</td>
<td>8</td>
<td>4</td>
<td>11</td>
<td>14</td>
<td>48</td>
</tr>
<tr>
<td>Belgium (Whole country)</td>
<td>3</td>
<td>9</td>
<td>30</td>
<td>3</td>
<td>6</td>
<td>51</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>26</strong></td>
<td><strong>53</strong></td>
<td><strong>52</strong></td>
<td><strong>31</strong></td>
<td><strong>31</strong></td>
<td><strong>193</strong></td>
</tr>
</tbody>
</table>
C. Statistical treatments

Three main statistical treatments are operated in this paper using the software SPSS. They study similarities and differences within and between the five categories of actors as well as possible classifications of the 31 statements depending of the stakeholder’s positioning.

- The first statistical treatment corresponds to a classical sorting and cross sorting by actor’s categories. This basic statistical calculation provides in section 5a, in one side, a global overview of the stakeholder’s positioning on the 31 statements with their respective means. These results allow identifying the preference of each stakeholder to determine their appropriation of the Smart City.

- The second statistical treatment consists of a Factors Analysis using the method PCA - Principal Component Analysis. This multivariate technique, presented in section 5b, studies the interdependence of the 31 statements according to the stakeholder’s responses. The calculation offers logical grouping of proposals according to the actor’s perception of the Smart City. It highlights the different Smart City significations of the interviewed actors.

- The third statistical treatment is based on a K-sort which identifies relatively homogeneous groups of cases (respondents) based on selected characteristics (31 statements). The results offer, in the section 5c, a classification of stakeholders in function of their common positions on specific proposals. This allows identifying groups of actors sharing the same perceptions of the Smart City according the 31 statements.

5. Results

5a. Crosstabs: Actor’s means

For the five categories of actors the mean is calculated for each statement. These means show that actors on average develop similar points of view on some statements while, for others, disagreements exist between actors. Nevertheless, in general on the 31 statements the values stay high (between min 1,83 and max 4,38). Indeed, several statements are acclaimed by the different categories of actors with on average a rating superior to 4-Strongly
agree-. They highly approve that Smart Cities includes green technologies (n°13: 4,03/5) and is a key technological challenge for cities and towns (n°10: 4,16/5).

In contrary, two statements receive a strong negative evaluation with on average a value inferior to 2,5 showing a certain disagreement. Actors are mainly opposed on the fact that the Smart City is a menace on regulation and rules of law (n°8: 2,46) as well as a fashionable concept that may soon be outdated (n°2: 2,48). In relation to these statements, private companies evaluates this statement (n°2) with the lowest note 1,83 out of this statistical treatment (The only evaluation under 2/5). Nevertheless differences of evaluation exist between actors.

Table 2: Stakeholder’s means by statements

<table>
<thead>
<tr>
<th>N</th>
<th>Statements</th>
<th>Means of actor’s categories</th>
<th>Elected politics</th>
<th>Admin &amp; publics</th>
<th>Privates &amp; Uni</th>
<th>Research &amp; Uni</th>
<th>Civil Society</th>
<th>Total</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Smart City is an essential tool for branding towns, cities and territories</td>
<td>3,77</td>
<td>3,38</td>
<td>3,81</td>
<td>2,77</td>
<td>3,03</td>
<td>3,77</td>
<td>1,03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Smart City is a fashionable concept that may soon be outdated</td>
<td>2,31</td>
<td>2,68</td>
<td>1,83</td>
<td>3,19</td>
<td>2,68</td>
<td>2,31</td>
<td>1,37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Smart City is an essential tool for the future of cities and towns in Belgium</td>
<td>3,92</td>
<td>3,75</td>
<td>4,31</td>
<td>3,39</td>
<td>3,48</td>
<td>3,92</td>
<td>0,92</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Smart City is related to the threat of privatization of public spaces and public services</td>
<td>2,19</td>
<td>2,42</td>
<td>2,15</td>
<td>3,03</td>
<td>3,19</td>
<td>2,19</td>
<td>1,04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Smart City is an essential tool to enhance the sustainability of cities and territories</td>
<td>3,92</td>
<td>3,79</td>
<td>4,38</td>
<td>3,61</td>
<td>3,61</td>
<td>3,92</td>
<td>0,77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Smart City may further increase marginalization of some inhabitants and social failures</td>
<td>3,42</td>
<td>3,36</td>
<td>2,65</td>
<td>3,97</td>
<td>3,84</td>
<td>3,42</td>
<td>1,31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Smart City is an essential tool to improve the quality of life of inhabitants</td>
<td>3,85</td>
<td>3,70</td>
<td>4,04</td>
<td>3,55</td>
<td>3,65</td>
<td>3,85</td>
<td>0,49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Smart City menaces regulation and rules of law</td>
<td>2,19</td>
<td>2,34</td>
<td>2,29</td>
<td>2,65</td>
<td>2,97</td>
<td>2,19</td>
<td>0,78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Smart City will mobilize considerable financial resources in the coming years</td>
<td>3,85</td>
<td>3,62</td>
<td>3,67</td>
<td>4,00</td>
<td>3,74</td>
<td>3,85</td>
<td>0,38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Smart City is a key technological challenge for cities and towns</td>
<td>4,35</td>
<td>4,11</td>
<td>4,38</td>
<td>4,00</td>
<td>3,84</td>
<td>4,35</td>
<td>0,55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Smart City is mainly based on the use of ICT, Big and Open Data</td>
<td>3,46</td>
<td>3,43</td>
<td>3,65</td>
<td>3,32</td>
<td>3,58</td>
<td>3,46</td>
<td>0,33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Smart City is a tool to enhance transparency in decision making</td>
<td>2,92</td>
<td>3,40</td>
<td>3,29</td>
<td>3,13</td>
<td>3,32</td>
<td>2,92</td>
<td>0,47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Green technologies are part of Smart Cities solutions</td>
<td>3,77</td>
<td>3,98</td>
<td>4,29</td>
<td>3,97</td>
<td>3,94</td>
<td>3,77</td>
<td>0,52</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Calculated on the categories of actor’s results out of the sample (not based on the aggregate means).
<table>
<thead>
<tr>
<th></th>
<th>Statement</th>
<th>Value 1</th>
<th>Value 2</th>
<th>Value 3</th>
<th>Value 4</th>
<th>Value 5</th>
<th>Value 6</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Smart City is a threat: it menaces privacy protection, facilitates hacking...</td>
<td>2.73</td>
<td>2.75</td>
<td>2.81</td>
<td>3.26</td>
<td>3.06</td>
<td>2.73</td>
<td>0.53</td>
</tr>
<tr>
<td>15</td>
<td>Smart City improves governance principles (Decision making, stakeholders’ cooperation, ...)</td>
<td>3.19</td>
<td>3.11</td>
<td>3.06</td>
<td>3.23</td>
<td>3.13</td>
<td>3.19</td>
<td>0.17</td>
</tr>
<tr>
<td>16</td>
<td>Smart City should be based on initiatives led by civil society actors (citizens, associations)</td>
<td>2.96</td>
<td>3.19</td>
<td>3.25</td>
<td>2.94</td>
<td>3.29</td>
<td>2.96</td>
<td>0.35</td>
</tr>
<tr>
<td>17</td>
<td>Local government should play a leading role in the Smart City development</td>
<td>3.50</td>
<td>3.25</td>
<td>3.37</td>
<td>3.10</td>
<td>3.39</td>
<td>3.50</td>
<td>0.40</td>
</tr>
<tr>
<td>18</td>
<td>Smart City construction can not start without the setup of a strategic plan</td>
<td>3.35</td>
<td>3.11</td>
<td>3.71</td>
<td>3.17</td>
<td>3.48</td>
<td>3.35</td>
<td>0.60</td>
</tr>
<tr>
<td>19</td>
<td>Smart City should entail a sharing of power between the different actors (local authorities, civil society, private companies, research centers)</td>
<td>3.27</td>
<td>3.66</td>
<td>3.04</td>
<td>3.23</td>
<td>3.68</td>
<td>3.27</td>
<td>0.64</td>
</tr>
<tr>
<td>20</td>
<td>Administration is the best actor positioned to manage local implementation of Smart City strategy and solutions</td>
<td>2.88</td>
<td>3.09</td>
<td>2.88</td>
<td>3.00</td>
<td>2.94</td>
<td>2.88</td>
<td>0.21</td>
</tr>
<tr>
<td>21</td>
<td>Smart City can not be developed without local startups and entrepreneurs</td>
<td>2.62</td>
<td>3.25</td>
<td>3.46</td>
<td>3.00</td>
<td>3.06</td>
<td>2.62</td>
<td>0.85</td>
</tr>
<tr>
<td>22</td>
<td>Research centers and universities are essential contributors to Smarter cities and towns</td>
<td>2.92</td>
<td>3.13</td>
<td>2.96</td>
<td>3.45</td>
<td>3.29</td>
<td>2.92</td>
<td>0.53</td>
</tr>
<tr>
<td>23</td>
<td>Smart City should be based on a balanced mix of projects from public authorities and projects from citizens, associations and private companies</td>
<td>3.08</td>
<td>3.30</td>
<td>3.60</td>
<td>3.42</td>
<td>3.61</td>
<td>3.08</td>
<td>0.54</td>
</tr>
<tr>
<td>24</td>
<td>Smart City is primarily a political process involving elected officials</td>
<td>3.23</td>
<td>3.25</td>
<td>2.58</td>
<td>3.10</td>
<td>2.94</td>
<td>3.23</td>
<td>0.67</td>
</tr>
<tr>
<td>25</td>
<td>The development of Smart City is largely relying on private consultancy</td>
<td>3.38</td>
<td>3.09</td>
<td>2.98</td>
<td>2.94</td>
<td>3.06</td>
<td>3.38</td>
<td>0.45</td>
</tr>
<tr>
<td>26</td>
<td>To accelerate the development of the Smart City, It is important to lighten the administrative procedures</td>
<td>2.77</td>
<td>3.25</td>
<td>3.31</td>
<td>3.16</td>
<td>2.90</td>
<td>2.77</td>
<td>0.54</td>
</tr>
<tr>
<td>27</td>
<td>Large multinationals (IBM, Google, Uber, Accenture) primarily benefit of Smart City development</td>
<td>3.15</td>
<td>3.06</td>
<td>3.27</td>
<td>3.35</td>
<td>3.32</td>
<td>3.15</td>
<td>0.30</td>
</tr>
<tr>
<td>28</td>
<td>Smart City is directly related to an increased competition between cities and territories</td>
<td>2.77</td>
<td>2.50</td>
<td>2.73</td>
<td>2.97</td>
<td>3.39</td>
<td>2.77</td>
<td>0.89</td>
</tr>
<tr>
<td>29</td>
<td>Smart City can be adapted to any territory, including rural areas</td>
<td>3.81</td>
<td>3.87</td>
<td>4.15</td>
<td>4.06</td>
<td>3.87</td>
<td>3.81</td>
<td>0.35</td>
</tr>
<tr>
<td>30</td>
<td>Smart City will mainly benefitting to large cities in Belgium</td>
<td>3.62</td>
<td>3.17</td>
<td>3.15</td>
<td>3.42</td>
<td>3.32</td>
<td>3.62</td>
<td>0.46</td>
</tr>
<tr>
<td>31</td>
<td>Smart City has to be elaborated at the regional level within the framework of a Smart Region</td>
<td>3.85</td>
<td>4.06</td>
<td>3.79</td>
<td>3.81</td>
<td>3.65</td>
<td>3.85</td>
<td>0.41</td>
</tr>
</tbody>
</table>
On the other hand, on the 31 statements, the five stakeholders develop similar considerations on:

- The lowest difference-0,17- on a statement is recorded concerning the Smart City as a tool which improve governance principles (nº15). The different categories of actors seems quite indistinct with an evaluation average of 3,19/5.

- The Smart City will mobilize considerable financial resources in the coming years (nº9). The difference between the categories of actors is low and is established at 0,38 with a shared opinion in favour between 3,74 and 4,00/5.

- Actors opinion also coincide (2,88) along the affirmation that the administration is the best actor positioned to manage local implementation of Smart City (nº20) with a difference between them of 0,21.

- Finally, they are poorly convinced (3,46) that Smart City is mainly based on the use of ICT, Big and Open Data (nº11), the difference between the categories of actors reach only (0,33).

In contrary, there are differences of opinions between actors concerning certain subjects:

- There is a disparity (1,03) on the fact that Smart City is an essential tool for branding towns, cities and territories (nº1). Numerous researchers do not share this statement while a number of private companies strongly support the Smart City in this branding function.

- The strongest difference (1,37) recorded is opposing the categories on Smart City as a fashionable concept that may soon be outdated (nº2). While several politics and private companies are not convinced by a possible fading of Smart City, actors of the research and civil society largely agree on the fashionable vison and doubt on the long term effect of the concept.
- Finally, among others the statement “Smart City is directly related to an increased competition between cities and territories (n°28)” is characterized by an important difference (0,89) of appreciation between the categories of actors. Actors of the Civil Society perceive a risk when privates do not consider it as a threat.

These results show that the different categories of actors have on average a harmonious vision on several topics concerning the Smart City. But their own positioning varies on specific statements. It shows a difference of appropriation on the concept that need to be deeper study. The next step offers the opportunity to refine the analysis and group statements inside a limited amount of determining factors further on it allow internal differences within some groups.

5b. Factor Analysis: Principal Analysis Component

A Principal Analysis Component is conducted on the 31 statements with a Varimax rotation. The PAC regroups the different statements when interviewees tend to react in a similar way to the statements. The KMO and Bartlett’s tests show for the measurement of sampling adequacy a significate rate of 0,763 (Kaiser-Meyer-Olkin). The PAC reduces the number of factors from 31 statements to eleven factors. These factors are explained at 63,725%.

The reduction to eleven factors shows there is little recovery between the statements. It illustrates a certain independence of them. For each category of actors the means of the 11 factors’ residuals are calculated and exposed in table 3. The 11 factors are labelled according to the meaning of the different statements composing each of them.
Table 3: Factors of the PAC

<table>
<thead>
<tr>
<th>N</th>
<th>Factors</th>
<th>Statements</th>
<th>Elected Politics</th>
<th>Admin &amp; publics</th>
<th>Privates</th>
<th>Research &amp; Uni</th>
<th>Civil Society</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Smart City as a tool</td>
<td>3-5-7-1-10-12-2-13</td>
<td>.14</td>
<td>-.16</td>
<td>.44</td>
<td>-.31</td>
<td>-.21</td>
</tr>
<tr>
<td>B</td>
<td>Smart City as a threat</td>
<td>8-14-4-6-28</td>
<td>-.24</td>
<td>-.28</td>
<td>-.05</td>
<td>.25</td>
<td>.50</td>
</tr>
<tr>
<td>C</td>
<td>Smart City as a set of actors</td>
<td>17-16-25</td>
<td>.08</td>
<td>.06</td>
<td>-.14</td>
<td>-.13</td>
<td>.21</td>
</tr>
<tr>
<td>D</td>
<td>Smart City as a concept for cities</td>
<td>30-31</td>
<td>.30</td>
<td>-.03</td>
<td>.00</td>
<td>-.06</td>
<td>-.10</td>
</tr>
<tr>
<td>E</td>
<td>Smart City as based on open governance</td>
<td>22-23-15</td>
<td>-.37</td>
<td>.04</td>
<td>-.10</td>
<td>.31</td>
<td>.22</td>
</tr>
<tr>
<td>F</td>
<td>Smart City as a structure at a regional level</td>
<td>18-31</td>
<td>.02</td>
<td>-.15</td>
<td>.25</td>
<td>-.05</td>
<td>-.02</td>
</tr>
<tr>
<td>G</td>
<td>Smart City as an administrative procedure</td>
<td>26</td>
<td>-.45</td>
<td>.18</td>
<td>.03</td>
<td>.16</td>
<td>-.09</td>
</tr>
<tr>
<td>H</td>
<td>Smart City as a potential threat</td>
<td>24-9-28</td>
<td>.24</td>
<td>-.02</td>
<td>-.17</td>
<td>.10</td>
<td>.04</td>
</tr>
<tr>
<td>I</td>
<td>Smart City as a capture by multinationals</td>
<td>27</td>
<td>-.09</td>
<td>.10</td>
<td>-.19</td>
<td>.13</td>
<td>.14</td>
</tr>
<tr>
<td>J</td>
<td>Smart City as an implementation by the administration</td>
<td>20</td>
<td>.19</td>
<td>-.08</td>
<td>.07</td>
<td>-.17</td>
<td>.00</td>
</tr>
<tr>
<td>K</td>
<td>Smart City as driven by techno and start-ups</td>
<td>21-11</td>
<td>-.31</td>
<td>.00</td>
<td>.33</td>
<td>-.24</td>
<td>-.10</td>
</tr>
</tbody>
</table>

The factor A integrates 8 statements, it mainly considers the Smart City as a manner to build and enhance the territory. This factor regroups statements highlighting the Smart City as a tool (n°3-5-7-1-10-12) with green solutions (n°13) and technological challenges (n°10) which is not a fashionable concept soon outdated (n°2).

The eleven factors obtained can be classified into the two types of instruments discussed in the theoretical framework. Three factors correspond to the technical and functionalist Instrument: A-I-K. These factors may be assimilated to a pragmatic set-up of the Smart City. The concept is apprehended as an adequate instrument for the development of cities and towns (A) with the involvement of some actors like multinationals and start-ups (I&K). These factors composed together a vision of the Smart City centred on a functionalist and technical implementation of the concept. There are no question and ethical considerations in these factors.
In contrary, four factors matches with a public policy instrument approach (B, C, E, H). These instruments encompass two aspects, in one side, a critical reasoning on the construction of the Smart City and, on the other side, a call for specific development of the Smart City. The critical factors (B and H) comprise statements which highlight a Smart City with numerous menaces: threats on the rules of law and the privacy, risk of privatization and hacking, danger of expensive spending and concurrence between territories, and finally menace of potential top-down approach. These two factors put into perspective the Smart City under its potential negative effects. The two others factors (C and E) contains statements requesting a Smart City based on open governance and a mix of actors (privates, politics and citizens) to manage it. These four factors feature the Smart City as a public policy instrument without neutrality and potentially producing negative effects on the society.

In these statistical results, four factors (D,F,G,J) are not yet clearly associated to an instrument with a public policy or a functionalist approach. These factors stress considerations for a construction of the Smart City based on territorial aspects (D&F) and administrative process (G&J).

**5c. K-sort**

A clustering is realized through a K-sorting using the Two Steps technic which does not required to pre-establish the expected numbers of clusters before the treatment. One of the main outcomes of this clustering is that it generates only two groups. Further on, respondents are almost equally distributed across the two clusters as shown in table 4.

The Pearson Chi-Square tests for three characteristics of actors are not statistically significant for genders and the three regions (Flanders, Brussels-Capital and Wallonia). They are statistically significant for the categories of actors (Appendix 1). The numbers of respondents vary depending of the information furnished in the anonymous profile.

The results show a equilibrate distribution of elected politics along the two clusters. While a majority of actors coming from Civil Society, Research centres & Universities and Administrations & Public organisations are located in the second cluster, private actors are mainly gather in the first cluster.
Out of this actor clustering, it is also possible to classify the 31 statements into groups. The differentiation of opinion on the statements between the two clusters of actors is the classifying characteristic. A sample independent T-tests (t-test for equality of means) determine the sorting calculation. Two groups emerge out of the statistical results; it shows that the clusters of actors have a different appropriation on 20 statements. The first group is constituted of 13 statements supporting a functional instrumental approach; the second one is composed of 7 statements offering a public policy instrumental approach. It misses 11 residual statements; they are not sorted because there is no independence. The actor’s opinion is similar across the two clusters. They share a common appropriation on these statements which mainly focus on governance aspects.

Table 4: Statements along the functionalist and public policy instruments (Cluster results)

<table>
<thead>
<tr>
<th>N</th>
<th>Statements</th>
<th>Mean Group 1</th>
<th>Mean Group 2</th>
<th>Means difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Group 1 : Functionalist Instrument</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Smart City is an essential tool for branding towns, cities and territories</td>
<td>2.94</td>
<td>3.89</td>
<td>-0.95</td>
</tr>
<tr>
<td>3</td>
<td>Smart City is an essential tool for the future of cities and towns in Belgium</td>
<td>3.18</td>
<td>4.49</td>
<td>-1.31</td>
</tr>
<tr>
<td>5</td>
<td>Smart City is an essential tool to enhance the sustainability of cities and territories</td>
<td>3.27</td>
<td>4.62</td>
<td>-1.35</td>
</tr>
<tr>
<td>7</td>
<td>Smart City is an essential tool to improve the quality of life of inhabitants</td>
<td>3.22</td>
<td>4.39</td>
<td>-1.17</td>
</tr>
<tr>
<td>10</td>
<td>Smart City is a key technological challenge for cities and towns</td>
<td>3.83</td>
<td>4.49</td>
<td>-0.66</td>
</tr>
<tr>
<td>11</td>
<td>Smart City is mainly based on the use of ICT, Big and Open Data</td>
<td>3.16</td>
<td>3.79</td>
<td>-0.63</td>
</tr>
<tr>
<td>12</td>
<td>Smart City is a tool to enhance transparency in decision making</td>
<td>2.73</td>
<td>3.82</td>
<td>-1.09</td>
</tr>
<tr>
<td>13</td>
<td>Green technologies are part of Smart Cities solutions</td>
<td>3.61</td>
<td>4.47</td>
<td>-0.86</td>
</tr>
<tr>
<td>15</td>
<td>Smart City improves governance principles (Decision making, stakeholders’ coop, …)</td>
<td>2.86</td>
<td>3.39</td>
<td>-0.53</td>
</tr>
<tr>
<td>18</td>
<td>Smart City construction can not start without the set-up of a strategic plan</td>
<td>3.17</td>
<td>3.59</td>
<td>-0.42</td>
</tr>
<tr>
<td>26</td>
<td>To accelerate the development of the Smart City, It is important to lighten the administrative procedures</td>
<td>3</td>
<td>3.29</td>
<td>-0.29</td>
</tr>
<tr>
<td>29</td>
<td>Smart City can be adapted to any territory, including rural areas</td>
<td>3.56</td>
<td>4.38</td>
<td>-0.82</td>
</tr>
<tr>
<td>31</td>
<td>Smart City has to be elaborated at the regional level within the framework of a Smart Region</td>
<td>3.59</td>
<td>4.08</td>
<td>-0.49</td>
</tr>
<tr>
<td>N</td>
<td>Statements</td>
<td>Mean Group 1</td>
<td>Mean Group 2</td>
<td>Means difference</td>
</tr>
<tr>
<td>---</td>
<td>---------------------------------------------------------------------------</td>
<td>--------------</td>
<td>--------------</td>
<td>------------------</td>
</tr>
<tr>
<td>2</td>
<td>Smart City is a fashionable concept that may soon be outdated</td>
<td>3,07</td>
<td>1,88</td>
<td>1,19</td>
</tr>
<tr>
<td>4</td>
<td>Smart City is related to the threat of privatization of public spaces and public services</td>
<td>3,09</td>
<td>1,97</td>
<td>1,12</td>
</tr>
<tr>
<td>6</td>
<td>Smart City may further increase marginalisation of some inhabitants and social failures</td>
<td>3,91</td>
<td>2,77</td>
<td>1,14</td>
</tr>
<tr>
<td>8</td>
<td>Smart City menaces regulation and rules of law</td>
<td>2,88</td>
<td>1,99</td>
<td>0,89</td>
</tr>
<tr>
<td>14</td>
<td>Smart City is a threat: it menaces privacy protection, facilitates hacking...</td>
<td>3,57</td>
<td>2,15</td>
<td>1,42</td>
</tr>
<tr>
<td>28</td>
<td>Smart City is directly related to an increased competition between cities and territories</td>
<td>3,1</td>
<td>2,52</td>
<td>0,58</td>
</tr>
<tr>
<td>30</td>
<td>Smart City will mainly benefitting to large cities in Belgium</td>
<td>3,56</td>
<td>2,96</td>
<td>0,6</td>
</tr>
</tbody>
</table>

**Group 2: Public Policy Instrument**

Group 1: 13 statements are highly supported by the actors of cluster 1 in comparison to a weak support registered by the actors of cluster 2. The 13 statements emphasises the Smart City on two aspects. The actors of clusters one consider the Smart City as a tool useful for branding towns, enhance sustainability, improve transparency, governance principles and quality of life. They also esteem necessary to follow specific concrete directions to apply the concept on the territory. It consists to develop the Smart City using ICT, Data and green technologies, as part of a local strategic plan, under the framework of a Smart region with a lighting of administrative procedures. The Smart City is adapted for them to any territory, including rural areas even if its implementation reveals a key technological challenge for cities and towns. This assortment of practical considerations advocates for a functionalist instrumental approach of the Smart City. The vision of these actors is centred on a functionalist and technical implementation of the concept without questioning the consequences of such an implementation.

Group 2: 7 statements compose this group. The actors of the first clusters do not clearly assent these statements while the actors of the second cluster strongly support these proposals. They question the formation of Smart City and stress some dangers in its implementation. For them, the Smart City is a fashionable concept which may mainly benefit to large Cities and increased competition between them. The Smart City is also a threat which may cause a privatization of public spaces, a marginalisation of some inhabitants, may facilitate hacking and may menace the regulation, rules of law and the privacy protection. All
these considerations push to recognize the Smart City as a public policy instrument with potential (negative) value. For the actors of this cluster, the Smart City construction produces mainly undesirable effects on the society.

Table 5: Distribution of stakeholders across the two clusters

<table>
<thead>
<tr>
<th>Clusters</th>
<th>Elected politicians</th>
<th>Admin &amp; public</th>
<th>Privates</th>
<th>Research &amp; Uni</th>
<th>Civil Society</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12</td>
<td>21</td>
<td>35</td>
<td>10</td>
<td>13</td>
<td>91</td>
</tr>
<tr>
<td></td>
<td>46.2%</td>
<td>40.4%</td>
<td>67.3%</td>
<td>33.3%</td>
<td>41.9%</td>
<td>47.6%</td>
</tr>
<tr>
<td>2</td>
<td>14</td>
<td>31</td>
<td>17</td>
<td>20</td>
<td>18</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>53.8%</td>
<td>59.6%</td>
<td>32.7%</td>
<td>66.7%</td>
<td>58.1%</td>
<td>52.4%</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td>52</td>
<td>52</td>
<td>30</td>
<td>31</td>
<td>191</td>
</tr>
<tr>
<td></td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

These results stress there isn’t a clear distribution of categories of actors into one or the other cluster. Some light trends exposed hereunder are pertinent but the distribution of profiles across the two clusters is not monolithic. However the classification between functional and public policy instrumental appears relevant.

6. Discussion

The statistical results validate that the instrumental approach is pertinent to consider the concept of Smart City. The Belgian stakeholder’s appropriation of the Smart City supports the partition between two types of instrument, the functionalist and the public policy. The distributions of statements across the two instrumental approaches emerge mainly from the results of the CAP and the k-sorting statistical treatments.

But, both views converge in a Smart City as an instrument which precedes the management and government of cities and territories. Some actors put tags and warnings for its implementation. As shown in the results of this study, the first necessary step is to investigate how do actors appropriate these instruments before their implementation. Considerations on instruments offer the opportunity to question the circulation of ideas and models (Hood, 2007). The statistical results show that the actors’ appropriation is operated in different directions.
The results highlight that some actors consider the Smart City as a functionalist instrument. Smart City is appropriate as a management device of city and territory based on an efficient mode of governance where complex social problems can be solved or optimized (Kitchin, 2014). This actors’ appropriation corresponds to a functional instrumental approach where the Smart City is considered as a kind of evidence, “at disposal”, and conceived as a pragmatic political and technical approach to solve problems (Lascoumes & Le Gales, 2007), what’s Morozov (2013) calls “solutionism”. The Smart City in this perspective is a denaturalized technical object, neutral, equally available and without political value and consequences. It is a pragmatic solution, a device utilized to transform the territory.

The results also underline that some actors consider that the Smart City should be conceived as a public policy instrument. The actor’s appropriation shows an ideological dimension of the Smart City. They mainly stress the own force of action and potential effect of the Smart City (Lascoumes & Le Gales, 2007). Their appropriations focus on the consequences of the Smart City as an instrument which impact territories and societies. They mainly concentrate on the potential negative effects. The underlined elements are pointed out by the restrictive and critical school of thought (Kummita & Crutzen, 2017). The Smart City is not purely technical, inert and with a perfect axiological neutrality (Lascoumes & Simard, 2011). On the contrary, the Smart City is bearded of values questioning the future of cities and towns. The Smart City is an instrument full of consequences provoking debates on political goals, influencing policies and affecting actors’ resources.

Unlike the review of the literature of Mora et al., (2017) Smart City is not perceived by actors as a binary path. For Belgian stakeholders, Smart City does not follow a dual development between technology centered and holistic. Additionally, the Smart City is not assimilated as following a soft and a hard direction (Albino et al., 2015) where technologies take a decisive role. Nuances are needed in the Belgian stakeholders ‘appropriation. Indeed, actors are not clustered in one or in the other conception and direction of the Smart City. They follow, in one hand, a partition following the two types of instruments, and on the other hand, a division and associations of actors on certain topics. In fact, the association/division of actor’s is not following a homogeneous trend.

The assumptions made by the authors are verified. The Smart City considered as a functionalist and public policy Instruments by Belgian stakeholders corroborates with the
statistical results. Politics & public servants, private actors, members of the civil society and researchers appropriate the Smart City through the two types of instruments. But there are differences of appropriation inside the categories of stakeholders. Their role in the decision making process, their level of development in Smart City initiatives (mature versus emerging) and their ideological background may have a potential effect on their appropriation of the Smart City.

Finally, this study focuses on the entire Belgian territory. It make possible to take into account the verticality of relationships between actors which is missing in many scientific analyses of Smart Cities. This verticality is taken into account thanks to the variety of respondents. But this study is limited by a temporal factor. Indeed, this article takes the pulse of Belgian actors at a given moment on a fixed territory. It does not take into account the dynamics and processes existing in time. The actor’s positioning and appropriation of the Smart City development is a fixed picture. In addition, the representativeness of the actors interviewed is not measurable.

Nevertheless, this article offers a comprehensive view of the multi-faceted Smart City by its practitioners. It allows an identification of the actors ‘appropriation of the Smart City through an instrumental approach theorized by Lascoumes & Le Gales (2007). It encompasses also their common and opposite opinion on the territorial, societal and practical development of the Smart City.

7. Conclusion

This paper questions in an innovative way the Smart City appropriation by actors. Smart City is often perceived as a development of the territory pushed on the one hand by technologies and on the other by a holistic development which includes a whole series of notions such as sustainable development, governance, human centred…. This study stands out from these conceptualizations and uses the Instrument theory conceived by Lascoumes & Le Gales (2007).

In this paper, the Smart City is considered as an instrument of territorial construction. The question that arises is how do actors appropriate the Smart City as types of instrument? Is It a functional instrument: a kind of evidence, a denaturalized technical object, and a pragmatic
solution at disposal or a public policy instrument: not neutral, provoking debates on political goals, influencing policies, affecting actor’s resources?

On basis of an online survey with 193 Belgian respondents, the results of different statistical treatments carried out demonstrate that:

- First, the use of Instrument theory is relevant. The positioning of the actors on questionnaire's statements follows the logic of the functional and public policy instruments.

- Second, Smart City actors do not fit into one or the other category of instrument in a monolithic way. Trends emerge for some actors and verify the assumptions proposed by the authors.

- Third, in some cases actors oppose certain conceptualization of the Smart City and in others form coalitions of opinions.

These results show that the actor’s appropriation of the Smart City do not follow a homogeneous trend based on a technical and holistic direction. It is necessary to nuance the current affirmations on actors’ consideration in the Smart City literatures. In fact, each actor follows his own logics that it would be valuable to study in depth through some theoretical frameworks. The theoretical lenses used in this article are older than the concept of Smart City itself and thus provide insights to study it. Undeniably, this paper contributes to the Smart City literature by analyzing through instruments the Smart City as a public policy instrument in one side versus a functional instrument in the other side.

In order to go further in the analysis of the Smart City as an instrument, and in order to take into account the dynamics and processes underlying Smart City appropriation, it will be necessary to study the impacts of the actor’s role in the decision making process, actor’s level of development in Smart City initiatives (mature versus emerging) and actor’s ideological background.
8. Bibliography


9. Appendix

Table 4: Results of clustering calculation

<table>
<thead>
<tr>
<th>Clusters</th>
<th>N</th>
<th>% Combined</th>
<th>% Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>101</td>
<td>52,3%</td>
<td>51,3%</td>
</tr>
<tr>
<td>2</td>
<td>92</td>
<td>47,7%</td>
<td>46,7%</td>
</tr>
<tr>
<td>Combined</td>
<td>193</td>
<td>100,0%</td>
<td>98,0%</td>
</tr>
<tr>
<td>Excluded</td>
<td>4</td>
<td>2,0%</td>
<td></td>
</tr>
</tbody>
</table>

Table 5: Results of clustering calculation across three variables

<table>
<thead>
<tr>
<th>Tests</th>
<th>Actor's categories</th>
<th>Regions</th>
<th>Genders</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Value</td>
<td>Asymp. Sig.</td>
<td>Value</td>
</tr>
<tr>
<td>Chi-Square</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Chi-Square</td>
<td>12,05</td>
<td>0,017</td>
<td></td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>12,234</td>
<td>0,016</td>
<td></td>
</tr>
<tr>
<td>Linear-by-Linear Assoc</td>
<td>0,139</td>
<td>0,709</td>
<td></td>
</tr>
<tr>
<td>Phi</td>
<td>0,251</td>
<td>0,017</td>
<td></td>
</tr>
<tr>
<td>Cramer's V</td>
<td>0,251</td>
<td>0,017</td>
<td></td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>191</td>
<td>192</td>
<td>192</td>
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