The Role of Citizens' Familiarity, Privacy Concerns, and Trust on Adoption of Smart Services

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Abstract. Smart city solutions and applications are considered as a strategic means to cope with multiple global and local challenges such as pollution, energy expenditure and digitalization to name a few. Although these solutions are driven by advanced information technologies such as IoT and Big data, their success is dependent on user engagement and trust. We seek to examine how citizens' awareness and perception of smart cities affect their adoption of smart services. To answer this, we conducted a study in Norway and employed a questionnaire receiving 103 responses. Furthermore, we conducted 12 semi-structured interviews to obtain further insights. The results show how citizens value the benefit of smart services and how their adoption is influences by engagement and trust towards them.

Keywords: Smart city applications, smart services, trust, engagement.

1 Introduction

The concept of smart cities is increasingly gaining relevance in a continuously digitalized world and society [1]. The term is used to describe the usage of data, information, and communication technologies (ICT), different sensors and internet of things (IoT) to improve the quality of life for the citizens [2]. Modern technology enables data collection to be more efficient, leading to different possibilities to benefit from the data. According to [3], we already live in a Smart-city-age, where an assembly of networked technologies is used to mediate plenty of everyday-life aspects.

Smart city designers are utilizing modern technologies to create the cooperation and interaction between smart city components and the network architecture. Consequently, the complexity of the changes and new methods needed for citizen interaction lead to changes in existing cities' infrastructure [4]. A current key challenge with smart city development is the processing and management of data which can impact security and privacy of its citizens [5]. Thus, the success of a smart solution is therefore dependent on how well the technological and security challenges are resolved. Another factor of smart solution success, which needs to be taken into consideration, is the dependency

on the engagement of citizens as potential service users [6]. "Smart city technologies and initiatives are often created with little or no critical reflection on consequences beyond their desired effects" (p. 3) [3], thus, there are concerns regarding the development and implementation of smart technologies and their effect on the citizens.

Some researchers have recognized the shortcomings of the technological focus of smart city initiatives, and smart cities initiatives should focus on people rather than assuming that merely technologies can improve cities [7], as it is not enough to only focus on technical solutions without investigating citizens in smart cities and their privacy concerns [5]. Research on citizen's awareness of the smart city concepts shows citizens' interest in how smart cities could improve their quality of life even though they do not have any experience with it [8]. However, further work is required regarding factors influencing citizens in using smart services and adopting smart city initiatives.

The purpose of this study is to investigate the antecedents of smart service adoption behavior for the Norwegian citizens. A literature review was conducted in order to gain the theoretical background needed to address the challenges. Using this knowledge, we derive hypotheses about the perspectives of the citizens regarding the perception and awareness of the smart city concept, potential concerns and to what degree they are adapting the smart city concept. Thus, our research aims at answering the following research question: *How do citizens' awareness of smart cities and their and perception towards them affect their adoption of smart services?*

The remainder of the paper is structured as follows. The theoretical background in section two provides an overview of smart cities and services as well citizen's adoption behavior. The third section introduces the research approach and presents the hypotheses to be tested. Followed by the data analysis and the discussion in chapter four, the paper is finalized by the implications and conclusion in section five.

2 Theoretical Background

2.1 Smart Cities and Services

The concept of 'smart cities' is gaining popularity as the need for optimization of urban spaces becomes increasingly important. The current global demographic trend indicates the need for an efficient management of urban spaces to guarantee a sustainable environment for citizens [9–11]. Whereas the term *smart city* is facing an increased presence during the last years, there is still dissent about a consistent definition of the concept among practitioners and academia [2]. Although a proper definition of the concept might be difficult to achieve due to the field's multidisciplinary, existing frameworks mention relevant factors which define the characteristics of a smart city. Among others, the most common keywords repeatedly used for describing smart cities have been identified as: sustainability, quality of life, ICT, and technology [12]. Quality of life is key in smart cities, thus here we use the following definition: "*A Smart City is a system that enhances human and social capital wisely using and interacting with natural and economic resources via technology-based solutions and innovation to address public issues and efficiently achieve sustainable development and a high quality of life on the basis of a multi-stakeholder, municipally based partnership.*"[12] Accordingly, the

success of smart city systems can be regarded as highly dependent on the citizens' perception of its usefulness and their willingness to adopt the respective technologies, thus, the system of a smart city.

Various suggestions have been made to integrate citizens into smart city design and policies, for instance by citizen participation, crowdsourcing, co-creation, and living labs [5]. Although smart cities aim to improve the people's habitat, their innovation character often comes in the form of top-down approach, which may lead to failure of capturing the citizens' needs and thus may not serve their best interest [7]. Thus, to implement smart cities and thereby encourage the adoption, the focus should be on people's behavior as well as adoption incentives rather than technology alone. Smart citizens should therefore be considered as decision-makers rather than users and/or data providers [13]; shifting the mindsets to embrace the fact that smart cities are not only about technologies but mainly people using and applying the technology [14].

With a rapid advancement and utilization of smart ICT, the smart city services are becoming more of a norm. Many cities are expanding their efforts to become "more digitized", "more intelligent" and "smarter" in order to be more competitive [15]. By investing in their infrastructure, cities seek to improve the performance of the relevant services to become more efficient, sustainable, and pleasant for citizens and improving quality of life [16]. Thus, a city is a complex entity that plays multiple roles in serving various aspects of citizens' lives, thus smart city services need to cover several different areas, with the most notable being on transportation, healthcare, energy, public security, building management, waste management, and education [6]. An example for benefits provided by smart services are smart parking services that help to identify free parking spots quicker which in turn can help reduce pollution, fuel consumption, and alleviate traffic jams [17]. However, the possibility to collect and monitor user data and the location of citizens does also bear the possibility of data misuse, which is why privacy and security aspects need to be considered to ensure security and safety for the citizens of a smart city [18].

2.2 Adoption of Smart Services

The application of smart services is crucial for the successful development of future smart cities. When it comes to citizens' adoption of smart services multiple factors need to be considered. While smart cities imply benefits to its citizens, the smart city initiatives and solutions still pose technical, social, and legal challenges which need to be addressed [9]. For instance, perceived security and privacy affect the use and adoption of smart services by citizens [4]. Thus, the challenge of citizens' *concerns and trust in smart services* is a relevant factor in their adoption behavior. A high level of trust can reduce uncertainty and risks and generate a sense of safety for the users. Therefore, a user's trust towards smart e-government services can have a crucial role in their adoption behavior and intention to use them [19, 20]. This puts a lot of pressure on service providers and organizations that in general have a lot of responsibility as they can affect users' trust if they neglect solutions and ways to reduce user's anxiety or if they have insufficient privacy tools to protect their users' data [21].

Another challenge in citizens' adoption behavior is the awareness and the *familiarity with smart services* in general [22–24]. As the concept of smart cities has become more popular in recent years, this indicates a transition from analogue to digital and smart solutions. However, as a prerequisite for citizens to make use of such services, there needs to be an understanding of the technology and the tasks, that might be supported by such. For instance, a low interest in the use of new technologies may be caused by a low awareness of citizens of the possibilities of smart cities [23], as many respondents do not have a clear understanding of what a smart city is and how it could improve their life. Such findings are interesting as literature has indicated that the areas (e.g., Housing and communal services, public health, transport), which respondents perceived to need improvement through technologies, are in fact a central focus of smart city initiatives [6, 25]. Apparently, there exists a lack of knowledge about the definition and possibilities offered by smart cities, which in the worst case can lead to a rejection of the concept itself by the citizens. Thus, as residents' awareness level on services of smart cities plays an important role in the social acceptance of smart cities, marketing of the benefits of smart services could increase the citizens' awareness as well as social acceptance of changes [24].

Another concept, that needs to be considered as decisive for the adoption of smart cities is the *intention to use smart services* in general. Although the number of e-government initiatives is increasing, it is still not clear whether citizens will accept those services to be the new norm, as it relies on the citizens' intentions and decision to adopt them [26]. If an individual perceives an innovation to be inconsistent with their current practice, perceived benefits are uncertain. Lean et al. [27] highlight how trust affects willingness to adopt e-government services, and show that poor coordination in the development and application of relevant services as well as a low level of trust in the e-government are the main barriers in adoption of e-government by citizens [27]. Furthermore, factors like perceived value and risk could affect an individual's decision-making behavior for using a smart service [28]. The perceived value being the overall evaluation of what is received (perceived benefits or gains) and what is given (perceived sacrifices or costs). Perceived risk consists of two components, namely, uncertainty (the possibility of adverse consequences) and losses (the seriousness of consequences). The combination of these factors influences the actual use of smart services, which are again a prerequisite of the instantiation of smart cities.

3   Research Approach

3.1   Conceptual Model and Hypotheses

In this study, we investigate how citizens' awareness and perception of smart cities affect their adoption of smart services. For the conceptual model we considered several existing acceptance frameworks and adapted them for a representation of citizens' adoption behavior. Based on existing literature, as presented in section 2, we derived five constructs for the development of the hypotheses to be tested (Table 1). The key challenges identified for smart adoption represent the factors familiarity, concern, and trust, which affect citizens in their intention and actual use of smart city services and

initiatives. Based on their relation we derived five hypotheses. The questionnaire with the related constructs' items can be found in the appendix.

Table 1. Constructs for the conceptual model

Construct	Definition	Source
Citizen' concern	Concern related to IoT/smart city deployments	[29]
Trust in technology	Citizens' trust in technology regarding personal information and security	[20]
Familiarity with smart services	Familiarity of a citizen with smart city technologies	[6]
Intention to use smart services	Tendencies of using new digital solutions for tasks that used to be non-digital	[26]
Use of smart services	To what extent do citizens use smart city services	[26]

Even though smart city services are driven by advanced information technologies, the success of these initiatives is highly dependent on the user's engagement and participation [6]. Citizens who are overwhelmed by the complexity of an application interface are likely to give up on the use of it only because they do not understand how to do so. Thus, we argue that familiarity with technology can remove some of the difficulties citizens have when it comes to understanding and application of smart services, and thus can result in an increased use, which is why we formulate the first hypothesis as:
H1: Citizens' familiarity with smart services has a positive effect on their intention to use.

IoT devices and related technologies allow organizations and governments to collect and analyze big data about their citizens' behavior. However, this possibility of monitoring and surveillance can have an impact on the citizens, influencing them in their adoption behavior. Thus, trust in the technology but also the government plays a major role for the adoption and use of these types of technologies [20, 30]. According to [31] trust must also address the citizens' concern regarding security and privacy of their information before successfully adopting smart city technologies. Further on, they mention that solutions must focus on preserving the trust of their smart city inhabitants to sustain the smart city and that users of smart city technologies will interact with the smart solutions when their personal threshold of privacy and security is achieved. Based on this, we formulate the following two hypotheses:
H2: Citizens' concerns have a negative effect on their trust in technology.
H3: Trust in technologies has a positive effect on citizens intention to use smart services.

The concept of familiarity can be based on previous and current interactions, experiences, and learning effects a person has with technology; and trust is the confidence in his or her expectations of the behavior of people, based on different cases and previous interactions [32]. Whereas familiarity can reduce a person's uncertainty by establishing a structure and trust can reduce uncertainty by reliability in expectations regarding other people's actions. Thus, the two concepts of familiarity and trust can be regarded as being closely related [32]. As the behavioral expectations (trust) of a person

is highly context-dependent, it also requires an understanding respectively investigation of the context (familiarity) from the researcher. Based on this understanding, we formulate the fourth hypothesis as:

H4: Citizen's familiarity with smart services has a positive effect on their trust in technology.

Although the growth in the development of e-government and smart city initiatives is steady, the government is relying on its citizens' intentions and decision to adopt these services [26]. As the actual use of smart services is dependent on the intention to use them, which again is dependent on factors like familiarity, trust, and concerns, we conclude our conceptual model with the last hypothesis:

H5: The intention to use smart services has a positive effect on the use of such services.

3.2 Research Design

For the testing of the hypotheses, we chose a quantitative and qualitative empirical research design and conducted an online questionnaire as well as interviews in Norway. The online questionnaire consisted of different sections, each focusing on one of the derived constructs in Table 1. The construct of familiarity with smart services was measured with six items, citizens' concerns with four items, and trust with three items. The initial intention of citizens to use smart services was measured with eight items and the actual use of smart services with seven items. The questionnaire was distributed through social media and was sent to different groups via emails and direct messages. In sum, the survey was distributed to 700 internet users and the total number of responses was 271. However, 169 of these respondents have only partially or not completed the survey which reduced the total valid responses to 102, representing our sample and resulting in a respond rate of 14.6%.

We furthermore conducted twelve semi-structured interviews to gain further insights in the topic of smart service adoption behavior. The combination of quantitative and qualitative methods support each other and offers the possibility to capture information, a merely quantitative approach could not provide. The interview guide consisted of twelve questions regarding their familiarity with smart services, concerns, trust, use and the effect smart solutions have on their daily life. Follow up questions were asked if we felt the need for the participant to elaborate on some of their answers. The interviews were conducted digitally due to Covid-19 restrictions.

4 Data Analysis and Discussion

4.1 Measurements

Table 2 provides an overview of the descriptive statistics of the investigated variables and statistics used to determine their reliability through Cronbach's alpha (CA). All constructs exceed the recommended threshold of 0.7. The highest value of 0.90 is also within the maximum recommended value for Cronbach's alpha [33]. For the construct validity, the values of average variance extracted (AVE) should exceed the recommended AVE's threshold of 0.50, which holds true. Furthermore, the correlation among

the variables should not exceed 0.80 and the square root of each construct's AVE (in bold) should be higher than its own correlation with the remaining constructs [34], which is also valid for our results. Thus, validity can be assumed for this model and the discriminant validity between the constructs are supported.

Table 2. Descriptive statistics and correlations of latent variables.

Construct	Mean (SD)	CA	AVE	1.	2.	3.	4.	5.
1. Citizen' concern	3.99 (1.45)	0.85	0.7	**0.83**				
2. Familiarity with smart services	4.04 (1.71)	0.74	0.66	-0.11	**0.81**			
3. Intention to use	5.10 (1.16)	0.84	0.86	-0.14	0.43	**0.92**		
4. Trust in technology	4.00 (1.32)	0.9	0.84	-0.42	0.20	0.35	**0.91**	
5. Use of smart services	4.42 (1.79)	0.72	0.64	0.00	0.48	0.39	0.15	**0.80**

The regression weight of each hypothesis is displayed in Figure 1. It represents whether the investigated effect is positive or negative, e.g., hypothesis 2 shows a negative regression weight of -0.40, which can be explained as an increase of concern by one unit, it will affect trust with -0.40 units. The significance of the hypotheses testing is also presented in Figure 1, next to the regression weight. To be considered as having a significant influence, the p-value needs to be lower than 0.05. This argument is valid for H1, H2, H3, and H5. Thus, the familiarity of a citizen with smart services does not have a significant positive effect on his trust in technology.
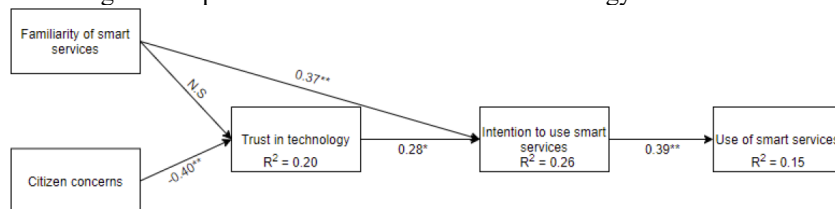
Note: * p<0.001, ** P<0.05, N.S = None-Significant

Fig. 1.: SEM analysis of the research model.

Regarding the mediating effects of the model, the bootstrapping function in SmartPLS is used to find the estimations. The indirect effect of familiarity with smart services on intention to use through trust in technology is not significant as the P-value is 0.19, exceeding the threshold of 0.05. The indirect effect of familiarity with smart services on use of services through Trust in technology is also non-significant with a

P-value of 0.25. All other mediating effects are significant with a P-value less than 0.05, and in the range of 0.007 - 0.031.

4.2   Discussion

We investigated five hypotheses to evaluate the influence and significance of factors responsible for the smart service adoption behavior of citizens based on the results of the quantitative study and included the results from the interviews into our analysis. The interviews are used to complement the findings from the SEM analysis of the model and to gain more insight on the role of the proposed antecedents of use of smart services.

First, we examined how the construct of familiarity influences the respondents' intention to use new digital-solutions for tasks that used to be none-digital; more specifically common e-solutions that are available for most citizens with access to a smart device. Based on our results, we are able to show that familiarity towards smart city services has a positive effect towards their intention to use smart city services, with a high significance value. Thus, if a person has a high level of familiarity towards smart services, there will be a higher chance for that person to use it. As a result of the analysis, we confirm H1. The interviews revealed that although all interviewees use some kind of smart service/solution related to a smart city concept, ten out of twelve respondents did not know about the concept of a smart city. Thus, our results reveal that as soon as citizens are familiar with the technology and related benefits, they are willing to adopt smart services, even though they do not really know about the connection to a smart city concept. However, this knowledge is not necessary given a perceived benefit for the citizens.

Further, we examined citizens' concerns based a series of scenarios related to the topic of internet of things and smart city initiatives. We asked about concern towards personal information being leaked, personal information being misused, personal information being stored online, and concern regarding location tracking by organizations for smart services. They were also asked to respond to their concerns regarding how technology handles their information and security issues and how it influences their trust in smart services. The relationship between citizens' concern and trust in technology based on the results of the analysis showed that citizen concern has a negative effect on trust in technology. Thus, we confirm H2. Consequently, an increase in the level of concern will decrease the level of trust in technology. Most of the interviewees indicated no concerns regarding usage of smart services, while several mentioned concerns over surveillance and privacy. An interesting finding is that an interviewee mentioned no concerns regarding the usage of smart services, however, when given the specific example of 'virus infection reduction' they mentioned concerns regarding the location tracking, which is also a reason why that person did not use the smart application for infection tracking/reduction. Summarized, our results show a significant relation between privacy and security concerns and trust in smart services. Thus, it should be a priority of smart city initiatives to focus on the creation of a secure data infrastructure and to promote those efforts in order to reduce citizens' concerns and thereby increase their trust in the adoption of smart services.

Regarding, H3 the findings show that trust in technologies has a positive effect on intention to use smart services. The analysis of the data from the survey confirming H3, complemented from the interview findings. From the interview findings, trust in technologies seems to be dependent on what type of functionality it has. Who the provider of the technology is, does also affect the trust of citizens, as five people answered they would trust the government more than a private company. For instance, one interviewee stated: "In Norway it would be the municipality. I feel like the municipality has the people's best interest in mind and they don't want to make money with it". This is in line with [29], who identified a higher trust in government agencies compared to private companies. A study by [35] also points out that trust plays an important role to help users overcome perceived risks and uncertainty for using and accepting new technology. Three interviewees reported a high degree of trust in technologies as they were very willing to share their personal information to technologies. These persons therefore make a good example of individuals with a high degree of trust in technologies, for better or worse in the sense that they say: "Why would someone use my personal information" or "I don't care about my privacy". This finding could also be regarded as in line with [36] who concluded about privacy and trust on a situational level, that high trust compensates for low privacy, and vice versa. Thus, the interviewees stated a higher benefit from using new technology and smart services, than having concerns about their privacy. Attention should also be paid to the organizations applying technologies as data shows factor influences citizens' trust in technology, and literature has also pointed out that trust in an organization and their practices could lead to greater willingness to share information [37].

To investigate the H4, we examined how citizens' levels of familiarity with technology affect their trust regarding the technologies they use and the handling of information and security. The findings show that familiarity does not influence trust. To further investigate this unexpected finding, we evaluated the interviews. The interviewees were asked if they would lose trust and stop using a service because of a security breach. The majority answered that they were likely to continue using the smart service if they experience some form of benefit from using it, regardless of their trust. One possible reason for this could be that the subjects have become accustomed to the fact that the technology is not reliable as malfunctions can occur at any time. This result, in combination with the SEM result, that the level of familiarity regarding smart city services does not influence their level of trust towards technology, it shows that there are no significant values that familiarity has an effect on trust in technology. This was further affirmed by our findings from the interviews.

Finally, we investigated the relation between the intention to use a smart service and a citizen's actual usage of such technologies in H5. As expected, citizens' intention to use smart services affects the actual usage of smart services.

Both results from the survey and interviews have given usable data to get a better understanding of the relation. For instance, the interviewees stated that 'ease of life' is an influencing factor why some of the respondents wish to adopt these services and solutions, with 'time savings' as an important factor contributing to ease of life. All interviewees stated to use at least one form of smart service. As an example, they mentioned the daily use of smart services provided by the public transportation system.

However, interestingly in the online survey 50% answered they never use smart services daily. but use them weekly or monthly. The possibility that respondents are lacking knowledge about what a smart service/solution is, could also be a possible reason for this. Lack of knowledge should therefore be taken into consideration as a potential reason for the results presented. According to [6] a lack of knowledge regarding smart solutions could be caused by insufficient marketing campaigns or inappropriate design of advertising material.

5 Implications and Conclusion

The main goal of this study was to address the lack of research in the smart service adoption behavior of citizens. Many studies investigated the privacy and security issues/concerns of smart city initiatives (e.g., [4, 29, 31, 38]). As well as some studies evaluated the importance of involving citizens in smart city projects as well as how smart city development should be more citizen-centric [7, 14, 39]. However, there seems to be lacking research that investigates the perspectives of citizens' adoption behavior of such smart services in smart cities. Accordingly, our research has contributed with an insight into citizens' perceptions and knowledge about the smart city concept as well as their usage behavior and their intention to use smart services. Public and private organizations working on smart cities should focus on the perceptions and needs of its citizens' and educate them about the changes that are taking place in their city, to ensure participation on a sufficient level to allow the smart solutions/initiatives to reach their full potential. The results of this study attempt to illustrate that citizens' perspectives and awareness of smart cities are important and should be taken into account when designing and initiating smart city concepts. Furthermore, the results show how citizens' knowledge and perception of smart solutions can influence their intention to use, either positively or negatively, which in turn influences the actual use of those services.

The findings from this research may be utilized by different organizations in public or private sectors, to get a deeper understanding of the importance of involving and educating citizens of the concept of smart cities. The country of Norway is a leader in implementing smart city technologies and already consists of several smart cities throughout the country (e.g., Bergen, Kristiansand, Oslo, Stavanger). Nevertheless, our results were able to show that several residents of Norway are still unfamiliar with the smart city concept and what kind of technology is regarded as smart services or solutions. The importance of understanding citizens' perspectives is highlighted in our study, which shows that even in a country with a several smart cities and a high level of digitalization, citizens' knowledge of what the smart city concept is, still seems to be lacking. By focusing on citizens' perspective, we found that citizens deem the government and municipality as highly trusted actors. Especially when it comes to collection and storage of personal information. Past studies have suggested enlightening the citizens through better or more advertisements of smart cities and its benefits [6, 24]. From our findings, we propose that the government and/or municipalities take the role of educating their citizens to increase awareness of smart cities and its benefits, as our study has shown that Norwegian citizens perceive them to be more trustworthy. Factors

like concerns (H2) and trust (H3) significantly influence the adoption behavior of smart services and, thus, could be decisive for the success of smart city initiatives. Thus, based on our results, we propose a stronger citizen-focused approach for the development of smart cities, rather than a technology-focused one.

As every research project, our study suffers from some limitations. The sample size is quite small and cannot be regarded as representative, however it is adequate for employing PLS-SEM [40]. Although we tried to deepen our insights by combining a qualitative and quantitative empirical approach, we are aware of that our results should be regarded as an initial research approach to investigate the research problem. In addition, Fuzzy-Set Qualitative Comparative Analysis (fsQCA) may be employed to identify the necessary and sufficient conditions and acquire a deeper insight in the data [41]. Furthermore, we eliminated 169 incomplete surveys from our analysis. However, those respondents could have belonged to the group of citizens struggling with smart technology, which is why our results could be biased. Finally, the interpretation of the qualitative data is highly dependent on the assumptions of the researchers. Thus, it is possible that our results could have been interpreted differently by other researchers. As future research agenda we propose to investigate factors influencing citizens' adoption behavior and focus on how to increase trust and reduce concern issues since those factors seem to impair citizens from adopting smart services.

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Appendix

Constructs and final items

Familiarity of smart services (FamSS)
1. To what extent are you familiar with Smart transportation services such as: smart parking, mobile connected vehicles, smart buses, smart traffic lights, etc.?
2. To what extent are you familiar with Smart energy services: smart meters for electricity, gas and water, home energy monitoring systems, smart grid services, decentralized energy ecosystems, etc.?
3. To what extent are you familiar with Smart building management services: smart home/building systems using wireless sensors to connect and control in-house heating, air-conditioning, lighting, security systems, and other appliances, etc.?
Use of smart services (Use)
1. To what extent do you use E-hailing services such as: car, taxi, uber or other forms of transportation to pick up via digital devices?
2. To what extent to you use online government services such as: city portal, tax returns, construction permits, reporting relocation, etc.?
3. To what extent do you use digital care search and scheduling services for digitally booking of health services?
Citizen concerns (CitCo)
1. To what degree are you concerned with personal information being leaked?
2. To what degree are you concerned with personal information being misused?
3. To what degree are you concerned with personal information being stored online?
4. To what degree are you concerned with a company being able to track your position through mobile devices?
Intention to use e-services (Int)
1. To what degree would you use the electronic services provided by organizations?
2. To what degree would you interact with a service electronically?
Trust in Technology (TrustT)
1. To what degree do you trust the security of the smart city services?
2. To what degree do you trust the devices that collect and process the data while you are using smart city services?
3. To what degree do you count on smart city services to protect your information?