

Dubai and Barcelona as Smart Cities: Some Reflections on Data Protection Law and Privacy

Radwan Eskhita^a, Vijaya Kittu Manda^b and Arbia Hlali^{c,*}

^a*Erasmus University Rotterdam, Netherlands*

^b*GITAM Deemed to be University, India*

^c*Department of Economics, University of Sfax, Tunisia*

Abstract. This study introduces a descriptive analysis to carry out the transformation of the Dubai smart city as a case study in the GCC region with reference to the Barcelona smart city. Furthermore, to investigate how the Dubai smart city will deal with the huge amount of the collected personal data through Internet of Things devices and applications. The theoretical analysis shows that the Barcelona smart city can be represented as an effective model, its innovations recommends to be used in Dubai smart city. The analysis finds that the classification of the collected data inside smart city to open and shared data did not provide sufficient privacy for personal data. Therefore, the personal data should be classified explicitly in order to be processed separately under the rules of the data protection law.

Keywords: Dubai smart city, Barcelona smart city, data protection law, privacy

1. Introduction

The smart city is a political initiative based on the strategy of sustainable development and aims to improve the quality of life of citizens. Recently, there is a contest between the countries around the world to build the most developed smart cities using advanced technology, mainly Internet of Things (IoT). Thus, it allows by internet connection of citizens and electronic sensors or devices (things) to serve many smart functions.¹ Moreover, smart city is not just a city with advanced technology, it is also big data process. As well, it argued that smart cities include the main sources of threats to personal privacy as the Internet of Things (IoT), the Big Data and the Cloud.² Andrew³ affirmed the obligation to save the protection of personal data during the process of business. Otherwise, it can have a negative impact on democracy and citizen's trust.

Several authors developed a framework for the concept of smart city inside different perspective for example, Anthopoulos⁴ interested in the transformation of the city governments into a smart city. In addition, Ismagilova⁵ studied the impact of the privacy and security on smart city process and their several threats. Others authors interested to develop their studies in the political side of smart cities with analysis of data protection and data law, some attention also carried out to the big data and smart city. In addition, Kitchin⁶ privileged that there are a few considerations aimed at the politics of city data. However, the data collection practices have social effects and several challenges. Likewise, he advanced that the global data collection about cities processes may produce cities that their system seeks for the current modes of governance, also can direct suppress the rights to privacy, confidentiality and freedom of expression. Powell⁷ used the data cities concept to indicate that several smart technologies used to generate huge quantities of data. Similarly, Taylor and Richter⁸ identified that the big data are the main factor for the growth of the smart cities.

*Corresponding author. E-mail: arbiaarbiahlali@yahoo.fr.

In addition, the literature showed that the nature of data collection in urban smart cities required permanent data collection. Thus, the smart city used technologies that generate the continuous flows of data to collect the basic data.⁹ Smart cities look to be the center of economic development, companies engaged to achieve advanced infrastructure to allow the usage of the high technologies for smart cities around the world. The use of advanced technologies increases the smart city functions, but to focus just on new technology and ignore the issues around privacy and data governance represented a critical issue according to Vanolo.¹⁰ In addition, Badii et al.¹¹ argued that the new IoT frameworks claimed to solve various privacy issues through following up the new European general data protection law GDPR's principles.

The review of literature revealed that the study of the smart city is inadequate advanced in theoretical or practical. In this context, the Dubai smart city area search to adopt an advanced technology and smart functions. However, the adoption of a data privacy laws that grant the privacy of the users and data subject is still not clear in Dubai. Thus, this study supposed to introduce a theoretical framework in the Dubai smart city with comparison to the Barcelona smart city in term of data law, privacy and GDPR, despite this main objective of this study, it is also aimed to highlight the different background of Barcelona as a smart city model in Europe as well as the Dubai smart city in the GCC region. Specifically, the examination of the privacy. Accordingly, to achieve this study, the paper was organized as follows. The second section selects to study the Barcelona smart city as a successful model for smart cities. The third section tries to analysis the case of the Dubai smart city which seemed innovative to the GCC region. The fourth section treats the differences that looked appropriate between the Smart Dubai and Barcelona smart cities. The fifth section represents the conclusion.

2. Barcelona as smart city model in Europe and privacy

The building of Barcelona smart city infrastructure started in 2011, the project was realized with collaboration of the Institute of Informatics (IMI). The strategy included a large number of IoT projects. The innovation project was to build a sensors inside the city to monitor

measurements. The link of the collected information from city sensors with practical programs and workshops gives the strategy more efficiency, where the citizen can see directly, how his participation will be effective in the real world. Accordingly, the city can use the data in cooperation with the local companies to solve the local obstacles. The strategy developed to overcome the technology issues and to concentrate on building data for common usage. The Barcelona city implemented a new agenda for the data transformation, the agenda is known as 'data as commons'. It implies data protection guidelines to deal with open data. In addition, the government implemented tools entitle the citizens to keep control over their data and select the data that they want to share or disclose. The government emphasizes to put a roadmap for digital city of Barcelona, which includes many main principles like the priority the privacy of the citizen and the focus on technological sovereignty.¹² In addition, the government issued 'Technological Sovereignty Guide' as free software to help the cities in building local ethical framework and share this framework between cities as Marzloff et al.¹³ reported. Another innovation from Barcelona in the field of smart city technology was Barcelona's 'Sentilo', this innovation works with sensors for real-time data, these sensors collect the activities of Internet of Things across Barcelona as reported by Bass et al. Thus, helps to keep the data under monitoring and the government can decide and adjust the collected data through CIY OS system, which look to be a single lake for gathering all the data across the city. The Chief Data Officer decides about the access of the data, which data are open (OPEN DATA BCN), which are shared with limited access privileges, the citizens can also access this open data through friendly portal called BCNow, that all was through what officially known as Barcelona's open-source technology stack. One of the main practical implementations of the open data and city sensors was the digital democracy platform. Anonymous verification minimizes the sharing of personal data. According to the data protection standard, the platform allows the user to select the data sharing parameters. Digital interface will entitle the citizen to manage the sharing at various levels of granularity. Also, the user permission will be stored for later verification in referring to the study of Bria et al.¹⁴

For the Privacy in Barcelona Smart City. The data privacy and the infrastructure inside smart city

are the main central keys to manage the city. The data collection in central lake is a new strategy to keep the data inside the smart cities under central control, it includes open data, statistics and external data, this strategy used by Barcelona city to regenerate procurement. This strategy can also encourage and strength the local economy.¹⁵ As a data collection method for government, some successful consent driven channels can gain access to better resources instead of trying to collect personal data. The collective consent is still vague concept, a massive number collections of consents from a large group of people required additional tools, the tool must afford the flexibility to withdraw or limit their consent. This tool allows the citizen to manage their data and consents and share the data according to their own terms. The integration of this tool inside the system of the city council makes it easier to keep the consents or even the purpose of personal data usage under control. In addition, it can assist through this tool the manager of data publish, open data can be accessed under open data license agreement, other data, which must be protected from unauthorized access must be available through an encrypted tunnel, to ensure the required level of safety.¹⁶

The open data contains no personal data. According, the city must manage the process of personal data collection, where keep always balance between collecting open data for development and management purposes and raise the level of the personal data control of citizens themselves. The GDPR is the applicable data protection law for the collected data in Barcelona smart city according to its territorial scope (GDPR 2016, Art.3).¹⁷ The process of awareness and knowledge about the risks of misusing data and the protection of personal data was the main factor in the strategy of Barcelona smart city. Thus, the city implemented a training program for these purposes. The technological components, which used in data collection and in data safe are demonstrated by city administration, to show how the data will be collected safely. The sensors around the data collection of the city for various purposes, the data sorting is done under the supervision of chief data officer. Also, the open data has not the same level of access, some public data are accessible just through specific portals. The Use of the third part software maybe makes the city council dependent on specific vendor technology. For these reasons, the city used its own open-source software and the council give the manufactures of

the sensors it's standard and required format of generating data. From data protection side, the city informs the citizens about the benefits of using the data for governmental purposes. To offer better services, it is a strategy to integrate personal data in a transparent way, while keeping the standard of ethical and secure processing of the personal data.¹⁸

3. Dubai smart city and privacy

Dubai city can be considered as the modernist city in the Middle East. In the beginning of construction, Dubai smart city was suffer from enormous amounts of unstructured data. After a period, Dubai government succeeded to find and define an initial policy framework to face the problems. The Dubai governmental data process, included the city managed through the Open Data Law, which classify the usage of private and public data. An additional challenge faced Dubai Data Office was to overcome the barrier of the government, especially in the process of sharing the data, sharing was not common, neither for public use nor for cross-government use. Through defining what is secret and what is not, was essential to overcome this problem through managing the flow of data to the proper entities within a legal framework.¹⁹

Dubai Data Office aims to facilitate the process of data-sharing and classification through Dubai Data Law innovation. The data are classified into not personal, sensitive, or confidential secure. The main task of this law is to define the responsibilities to each data piece, this classification helped to collaborate between the government organizations and the private sector.

For the Privacy in Smart Dubai. The process of the Smart City data is managed via the Dubai data law,²⁰ under the following principal. The providers must take all necessary actions to safeguard the confidentiality and privacy of users, they must be complained with the data privacy rules and the intellectual property rights, under this principle, the data are classified for two main categories, open data for public and shared data with access restrictions. Define, identify, classify and prepare the data for the final submission represents the process of dealing with data and each phase used to be managed through different level of organization structure. The classification of the data into many

categories according to its privacy and privileges will help to give each piece of data the appropriate access rights. The classification of the data attributes into open, confidential, sensitive and secret helps also to set the proper privileges. The processing of data and the management of the rules and compliance is managed through different level of the management team. The Chief Data Officer supervises the classification framework of the data, data management administrator works on the classifying inside the department, the data steward ensures the accordance of using the data from third parties with Dubai smart city policy.²¹

The Data Law will regulate all types of data, regardless of if it is personal data or general data. This law not limited from the territorial scope to Dubai, where any place in UAE may work with data related to Dubai entities will be subject to this law, also Dubai International Finance Centre or Free Zone has the same situation. The Dubai Data law implies also the providers to classify the processed data into shared and open (Article 15 Data Law).²² In addition, the authority is responsible to enforce this law and equipped with a capacity of judicial officers. This addresses a previous concern that the Dubai Data Law could see the Government unilaterally claiming ownership of any information falling within the broad definition of Dubai Data. The Policies require government entities to obtain the consent of individuals and private sector organisations to the use and sharing of their personal or commercial data with other government entities. The government entities will be able to pool data, and this should reduce the need for government departments to repeatedly request the same information from corporations and citizens. Government entities must adhere to principles of transparency, clarity and private sector data.²³

4. Comparative analysis between Dubai and Barcelona smart cities

The Barcelona experience can be adopted and used in the GCC smart cities, to enhance their level of professionalism in dealing with data and improve the mechanism of processing the data. The Dubai Data Law is an innovation in the field of the public data management. The Barcelona city added the concept of city sensor, which make the data collection not just a coincidence, but also target, according to the principles of “More data, more services”. The following of the Barcelona innovation (City Sensor) will help not just to classify the data into shared and public, but it will help more in data collection and in the real time data. Which, can afforded better services and collect more data for governmental usage. The policy maker in GCC can use such innovation to raise the size of collected data inside Smart City, as an opportunity to use this data in enhancing his policy, like getting response of the street toward government performance. Moreover, Barcelona smart city has followed a modern data protection law (GDPR) due to its territorial subjects. Following the GDPR obligation has not negatively affected the smart city, as initially claimed, it has been seen as a huge step to the front since its principles like privacy by design help to promote data-driven innovation and to ensure that citizens’ rights are respected.²⁴ The theoretical analysis in this study showed the existence of some differences between the two smart cities. Table 1 shows the represent the comparison analysis between the two smart cities such as Dubai smart city and Barcelona smart city.

The main differences between Smart Barcelona and Smart Dubai privacy strategy is the plan of dealing with personal data. The Dubai Data Law can

Table 1
Comparison between Dubai smart city and Barcelona smart city

Smart city	Dubai smart city	Barcelona smart city
Date of starting	2015	2011
Objectives	<ul style="list-style-type: none"> – permit a quick development of the city and succeed services. –Assist alternative interventions and recover public safety. – make the database available for all the parts of government 	<ul style="list-style-type: none"> –award better services –found an equilibrium between open data collection. – allow the control of the personal data of citizens themselves
Type of data/open or private data	Open Data Law/Civil Law and UAE Constitution	Open Data BCN /GDPR
Personal data classification	No classification	Classified as data subjected to specific legal conditions.

help in organization of data, especially after start building Dubai Smart City. Conversely, this law implies no real protection for the personal data, where it deals with the data in general and not differentiate between personal and non-personal data like Barcelona did. The claim against personal data privacy could be raised depending on civil law and the UAU constitution.

5. Conclusion

A smart city is a city that uses and incorporates new information technologies and communications in its various sectors in order to optimize the use of infrastructure existing. Whether in terms of transport, building, governance or the environment, new technologies can help meet current urban challenges. This study analyzed the background of the data law protection in the Barcelona smart city as a successful model in the Europe, then analyzed the cases of Smart Dubai.

The study revealed two main findings. First, Dubai smart city is built to be compatible with the national data law of the UAE state, the real challenge is to classify the collected data not only to open and shared data, but also to personal and non-personal data. The personal data could then be protected under the applicable data protection law. Second, in the area of smart cities, the innovation not just to practice the new technology, it is also to develop an appropriate protection regulation to keep the privacy of the visitors and users. The legal compliance shall be a main base of their operation, therefore, further researcher about the data protection application on smart city and emerging EU legal framework upon them is for today and near future an urgent need.

Endnotes

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