...::KENT AKADEMİSİ | URBAN ACADEMY

Volume: 15 Issue: 1 - 2022 | Cilt: 15 Sayı 1 - 2022

ARTICLE INFO | MAKALE KÜNYESİ
Research Article | Araştırma Makalesi
Submission Date | Gönderilme Tarihi: 17.08.2021
Admission Date | Kabul Tarihi: 10.02.2022

CITATION INFO | ATIF KÜNYESİ
Kazancı Altınok, G. (2022). (Re)Considering Smart City Approach in Smart Economy Perspective: Evaluation of Konya Case, Kent Akademisi Dergisi, 15(1):277-297. https://doi.org/10.35674/kent.983793

(Re)Considering Smart City Approach in Smart Economy Perspective: Evaluation of Konya Case

Akıllı Şehir Yaklaşımının Akıllı Ekonomi Perspektifinde Yeniden Düşünülmesi: Konya Örneğinin Değerlendirilmesi

Gamze Kazancı Altınok[1]

Öz

Bu çalışmada, kavramsal çerçeve ve analiz yoluyla akıllı kent modelinin akıllı ekonomi perspektifinden irdelenmesi amaçlanmış ve akıllı ekonomi bileşenlerinin yerel ekonomik kalkınma ile ilişkisi tartışılmıştır. Bu nedenle çalışma üç temel bölümden oluşmaktadır. Makalenin ilk bölümü, akıllı kent ve akıllı ekonomi ile ilgili literatür değerlendirmesini kapsamaktadır. Çevresel, ekonomik, mekânsal, sosyal ve kurumsal odaklar çerçevesinde tartışılan akıllı kent yaklaşımı ile ilgili çok sayıda uygulamalar yapılması kentlerin marka değeri kazanmasında önem taşımaktadır. Bu odaklar içerisinden akıllı ekonomi, akıllı kent yaklaşımının bir yansıması olan yeni bir ekonomik yaklaşım olarak değerlendirilmektedir. Diğer bir deyişle akıllı kent yaklaşımı, akıllı ekonomi olarak adlandırılan kendi ekonomik modelini oluşturmaktadır. Akıllı kentin bileşenlerinden biri olan akıllı ekonomi; finans, Bilgi ve İletişim Teknolojileri (BİT), hizmet ve kültürel olmak üzere mevcut ekonomik sektörlerin çekiciliğini artırmayı hedeflemektedir. Ayrıca paylaşım ekonomisi ve temiz/yeşil ekonomi gibi yeni ekonomik sektörlerin oluşmasını sağlamaktadır. Bu nedenle makalenin ikinci bölümünde, Türkiye'de bir kent üzerinden örnek alan incelemesi yöntemiyle akıllı ekonomik yaklaşımın etkinliği sorgulanmaktadır. Türkiye'nin en büyük yüz ölçümüne sahip Konya kenti, yerel yönetimin akıllı kent üzerine yaptığı çalışmalar ve TÜİK'in verileri kullanılarak LQ analizi ile akıllı ekonomi üzerinden akıllı kent sorgulamasının yapılması için seçilmiştir. Bu bulgulara göre Konya, iki nedenden dolayı akıllı ekonomi perspektifinde gerçek bir akıllı şehir olarak görülmeyebilir. Birinci neden, akıllı ekonominin ana bileşenlerinden biri olan girişimcilik kapsamındaki finans, BİT, hizmet ve kültür sektörlerinin LQ analiz sonuçlarına göre yeterince gelişmemiş olmasıdır. İkinci neden ise paylaşım ve kümelenme tabanlı ekonominin ve yeşil ekonomi yaklaşımının yeterince yaygınlaşmaması ve bu konularda veri üretiminin hafife alınması nedeniyle Konya'nın akıllı şehir olarak değerlendirilememesidir. Ancak, mevcut durumda taşıdığı potansiyeller ile üçüncü bölümde, özellikle ekonomik açıdan akıllı şehir olmak için belirlenen fırsat ve sınırlara yer verilmektedir.

Anahtar Kelimeler: Akıllı Kent, Akıllı Ekonomi, Teknoloji, LQ Analizi, Konya

ABSTRACT

It is aimed with this paper to put smart city into smart economy perspective by conceptual framework and analysis. The relation of smart economy components with local economic development have been discussed. Therefore, this study has three key parts. The first part highlights the smart city and smart economy literature. Smart city approach has been discussing in terms of institutional based, environment based and economic based. Smart economy is a new economic approach reflection of smart city approach. Smart economy as one of the component of smart city enables to increase attractiveness of current economic sectors like finance, Information and Communication Technologies (ICT), service and cultural. It enables to occur new economic sectors (sharing economy and clean/green economy). Therefore, the second part investigates the effectiveness of smart economic approach in Turkey with case specific method. Konya in Turkey was selected for testing of

[1] **Corresponded Author:** İstanbul Technical University, Faculty of Architecture, Urban and Regional Planning Department, kazancig17@itu.edu.tr , ORCID: 0000-0002-6344-523X

smart city inquiry by using municipality' website & TURKSTAT data with LQ analysis. According to these findings, Konya may not be seen as a real smart city in smart economy perspective due to two reasons. The first reason is current economic sectors under the entrepreneurship have not developed sufficiently according to LQ analysis results. The second reason why Konya may not be a smart city that sharing and cluster based economy have not become popular adequately and production of data about these issues is underestimated. Therefore, third part includes opportunities and limits determined to be smart city especially in economic perspective in the future.

Keywords: Smart City, Smart Economy, Technology, LQ Analysis, Konya.

INTRODUCTION:

Due to the rapidly developing world, urban dynamics such as social life, economy and environment are being rearranged within the scope of sustainable life. In this context, various city models promoting sustainability such as compact city, smart city, eco-city, green city etc. are being developed day by day (Dieleman and Wegener, 2004; Algan, 2017). These approaches which originated from Sustainable Development Goals by UN emphasize the importance of using technology for various sectors in the city like economy, service, agriculture. Especially, advanced technologies are being applied in response to the need for development and urban systems in the realm of smart city model (Bibri and Krogstie, 2016). Since innovation and technology are driving force of smart city supported by business, industry, cultural facilities, planning etc. creativity and high value ideas are two main outputs of this model, which creates new economic model (Cohen, 2012). In other words, smart city enlightens diverse economic opportunities with new entrepreneurial leadership. Moreover, various types of local and regional economic activities through number of entrepreneurship become important in this model (Giffinger et al.,2007). Therefore, the term smart economy has been discussing since occurring smart city model (Giffinger et al., 2007; Nam and Pardo, 2011; Kumar and Dahiya, 2017). In general, smart economy can be defined as using ICT in all economic facilities (Giffinger et al., 2007; Arroub et al.,2016; Guelzim et al.,2016; Li et al.,2019). Therefore, current economic facilities reshape with smart economic approach like finance, service and cultural sectors. This innovative approach has the ability to create competition, sharing, collaboration and clustering approaches which are the newest approaches of globalizing economy (Arroub et al.,2016; Soe, 2017). Since labor market is more flexible than before productivity of labor capital and economy tend to increase day by day, which catalyzes to occur new branding and imaging especially in local level. In other words, smart economy ensures both improving current sectors and creating new economic sectors (Giffinger et al., 2007; Nam and Pardo, 2011; Kumar and Dahiya, 2017).

In the light of these, this study focuses on smart economy in smart city perspective by doing literature reviews, analysis and giving proposals because there is no convincing analysis to be used for testing real smart economy in local level of Turkey. Therefore, the objectives of this study are to examine smart economy through local projects, to define deficits and assets of current economy, and to present opportunities and limits about smart economy model (Figure 1). These are fit to be used for examining Konya case in Turkey. In line with the objectives there are two main research questions which are to be answered in chapter 3 and conclusion.

a) Is Konya economy is a real smart economy?

b) What are the opportunities and limits to be smart city in economic perspective?

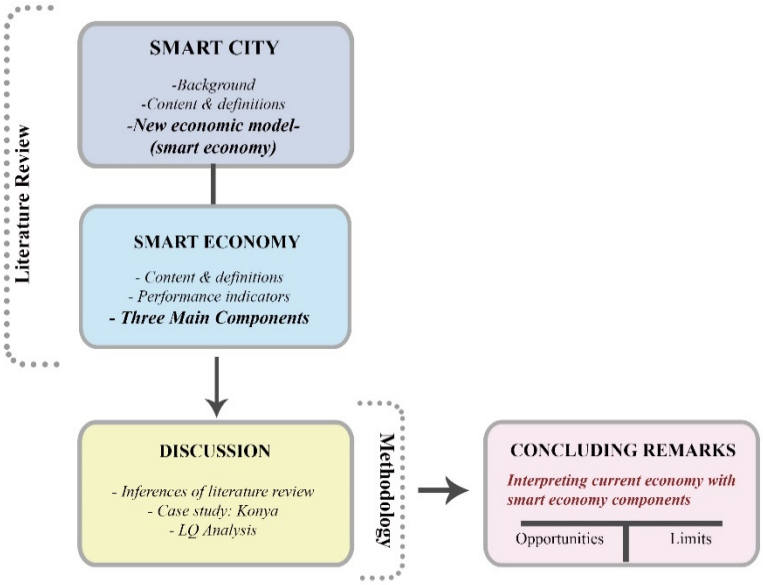

Figure 1. Logical framework of study

1. Literature Review: Smart City/Smart Economy

Smart economy is one of the main component of smart city concept. Therefore, smart city concept and its other components had been searched in this chapter. After smart city assessment, smart economy dynamics/components had been evaluated. ICT is main driver of the transition from traditional economy to smart economy in smart city concept. In other words, smart city creates its own economic model with technological progress. Moreover, this chapter is stepping stone of whole study, which ensures to answer two main questions about study as primary resources. In this research, smart city and smart economy themes derived from the literature are investigated by extracting the definitions from most cited Q1 and Q2 journal articles in the SCOPUS. Smart city and smart economy concepts were defined one by one in the following subsections as definitions and performance indicators.

1.1. Smart City

While the concept of the smart city was first discussed only in technological perspective in the 1960s (Gabrys, 2014); the content of the smart city was revealed as land, people, infrastructure and management components in 1994 (Dameri and Cocchia, 2013). By the end of the 1990s, the smart city was replaced by smart growth which expands its realm to regional in terms of environmental and economic subjects (Neirotti et al., 2014). In the 2000s, the studies on the city scale increased and the components of the smart city were expanded. For example, research that has become widespread in the World within the Seventh Framework Program between 2007 and 2013 has been popular with smart city projects supported by the EU (Jucevičius et al., 2014; Vanolo, 2014). Especially, smart cities are frequently mentioned within the search of a smart, innovative, technological and inclusive new city in the Europe 2020 Strategy published by the European Commission. When the concept of smart city was first introduced, it is seen that the suggestions and the strategies developed and discussed together with ICT. While smart cities were seen only technical and functional, the quality of the service sector has been improved by controlling the existing infrastructure with ICT (Marsal-Llacuna et al., 2015). The concept of smart city enriched in terms of human and social capital has shown that ICT can be used various field in cities from social life to economy. Thus, steps have been taken to improve the lives of people living in the city through ICT (Nierotti et al., 2014). The term smart city consists of three main components by rooting in intelligent infrastructures' creation and ICTs-Human connection. These

components are sustainability to improve the city and environment relations using green economy, smartness to create context between economy and governance, and inclusiveness by fostering a high-employment, economy delivering social and territorial cohesion (Arroub et al., 2016). Similarly, smart city is a city where investments in human and social capital, modern transport and communication infrastructure fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance (Nam and Pardo, 2011). It boosts competitiveness with using high level of digital technology especially in economic (Li et al., 2019).

As a result, the smart city model has developed in two stages. In the first stage, the smart city model which was established only on the basis of ICT (Dameri and Cocchia, 2013; Gabrys, 2014) has been expanded over time including the focus of human, economy, environment, mobility, society, governance (Giffinger et al.,2007; Hollands, 2008; Nam and Pardo, 2012; OECD, 2018). Despite the dense use of the term, there is still unclear understanding of its meaning. There are many organization and researcher are being describing what the smart city is although a wide variety of smart city definition varies by research subject (Marsal-Llacuna et al., 2015; Chourabi et al., 2012; Caragliu et al., 2011; Giffinger et al., 2007; Hollands, 2008; Angelidou, 2015; Wall and Stavropoulos, 2016). In general, smart city has six main components which ensure to manage city governance easily especially in terms of economic and environmental side (Giffinger et al., 2007). It refers some cities where intentionally label themselves as smart in terms of especially city management and economic sector (Hollands, 2008). Similarly, smart city can be described as wide variety of investments about human and social capital, modern communication, sustainable economic growth, natural resources conservation, through sustainable management (Caragliu, Del Bo and Nijkamp, 2009; Bibri and Krogstie, 2016). That is, it has been defined as system of systems that includes digital systems and optimization system of economy, industry and social life (IBM, 2009) since it organizes flows of energy, materials, services in order to catalyze sustainable economic development and high quality of life (European Commission, 2014). On the other hand, it is called as a system because smart cities are catalyzers of planning, management and services by using ICT which is significant field for economic development (ISO, 2014). Accordingly, smart city can be defined as effective use of technology by digitalization of city services to be more sustainable environment, economic and inclusive urban services by participation of inhabitants (OECD, 2018).

A group of definitions which are the most cited articles/report in SCOPUS about smart city can be seen above. It is emphasized that smart city model has three main components which are economic, environmental and institutional with ICT based approach (Caragliu, Del Bo and Nijkamp, 2009; Bibri and Krogstie, 2016; OECD,2018) . Moreover, six characteristics of smart city's which are smart economy, smart people, smart environment, smart government, smart mobility and smart living had been classified into related categories. (Table 1).

Table 1. The focus subject of researchers related to smart city main components

	Researchers and Institutions							
Smart city main components	Giffinger et al. (2007)	Hollands (2008)	Caragliu, Del Bo and Nijkamp (2009)	IBM (2009)	European Commission (2014)	ISO (2014)	Bibri and Krogstie (2016)	OECD (2018)
Institutional based								
Smart governance	+	+	+	+	+	+	+	+
Smart people	+	+	+	+	+	+	+	+
Smart living	+	+	+	+	+	+	+	+

Environment based								
Smart environment	+	-	+	-	+	+	+	+
Smart mobility	+	-	+	-	+	+	+	+
Economic based								
Smart economy	+	+	+	+	+	+	+	+

Smart governance, smart people and smart living were included into institutional based; smart environment and smart mobility were related with environment based and smart economy were included in economic based approach, which is the inferences of literature review. Moreover, the grey colors show main components of smart city whereas the orange color demonstrates whether the relation between smart city components and definitions has. When the definitions made by different researcher/ institutions are examined, smart cities can be defined as a city model that aims to find solutions to the problems by providing the continuity of the dynamics forming the city with the use of technology. It is expected not only the different smart sectors that make a smart city a smart city, but it is also important that these components work harmoniously among themselves. Just like the parts of the body, although their functions and duties are different, they must together form a body. As it can be seen the Table 1, smart city includes more economic and institutional based than environment based approach although the notion of smart city is based on sustainable development which contains environment based approach predominantly. On the other hand, technology based ICT sector generates employment, which encourages the development of city' economy. That is to say, ICT based smart city approach creates new economic phase, which is called smart economy.

1.2. Smart Economy

There are various definitions about what the smart economy is. However, definitions about the term smart economy are not enough for showing all specific aspects of smart economy. Therefore, researchers continue to produce new explanations about smart economy. Moreover, considerable researches have revealed the absence of the universal definition of the smart economy and described the concept in different ways (Giffinger et al.,2007; Hollands, 2008; Arroub et al.,2016; Torres et al., 2005; Ariffin, 2012; Guelzim et al.,2016; Kumar and Dahiya, 2017; Li et al., 2019). When literature was reviewed in SCOPUS database, there are 159 documents about "smart economy" concept (Figure 2). Studies and researches have been continuing since 2010.

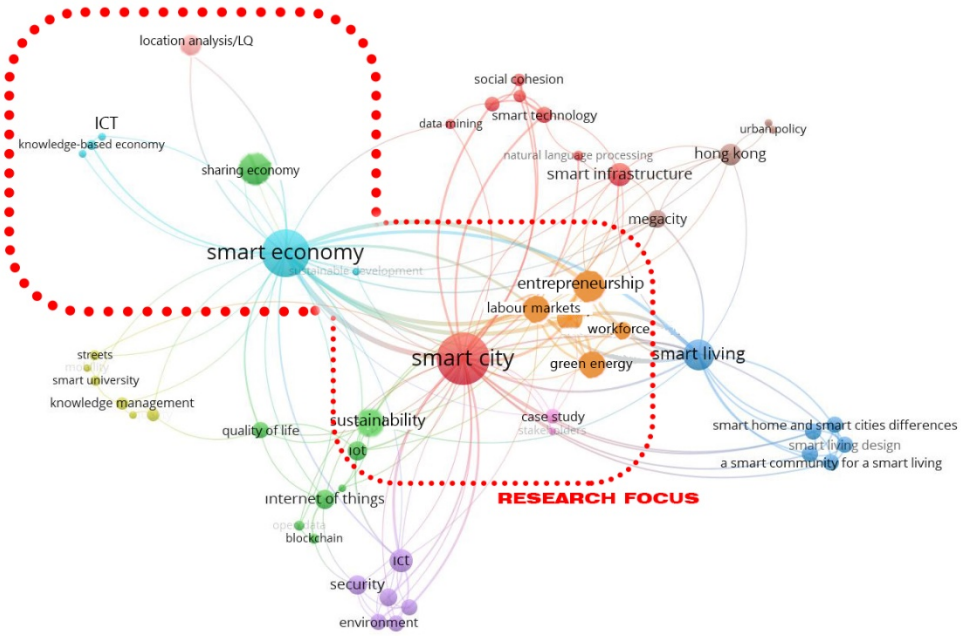

Figure 2. Literature review of smart economy concept with key themes

As it can be seen in Figure 2, sharing economy, location analysis (LQ), entrepreneurial, workforce, labor markets, green energy, smart living, ICT and sustainability are primarily important topics/themes about smart economy. In the light of these, this research focuses on sharing economy, location analysis (LQ) and entrepreneurial issues. Firstly, a review on definitions of smart economy which had been selected among most cited articles in SCOPUS with using focus themes obtained by Vosviewer were investigated and key performance indicators in literature were examined (Figure 3). These investigations have been interpreted as overall literature review in Table 2, which can be defined as inputs in order to examine Konya case with LQ analysis method.

Accordingly, smart economy aims that new economy can attract current economic system by creating ICT related sectors with knowledge workers (Hollands, 2008). In other words, global knowledge economy as one of the part of smart economy in an urban context can be defined as transforming current economy workforce to informative base (Arroub, 2016). It is characterized by new cooperation in production and distributions in all existing and future markets (Anttiroiko et al., 2014). Therefore, innovative output, sustainable productivity, entrepreneurial enterprises and global interconnectedness are crucial inputs which technology is main operating indices of smart economy (Li et al.,2019). A smart economy is also related to smart finance and mobile commerce within the term of the smart city. Likewise, Keegan and his colleagues (2012) assumed that e-commerce or mobile commerce services can operate in the context of smart city by supporting retailers to gain the attention of more customers within the smart economy model (Kırımtat et al., 2020; Keegan et al., 2012). Calculating local innovative spirit which consist of mutual cooperation between universities, NGO's (Non-Governmental Organizations), central and local government (Bakıcı et al., 2013; ISO, 2014) that can be observed as high-quality and coordinated economic growth and creativity are indices that the smart economy dimension is measured (Li et al., 2019). In overall, smart economy can be defined as the integration in the international markets in terms of economic competitiveness of innovation, entrepreneurship, trademarks, productivity and flexibility of the labour market (Giffinger et al., 2007; Cohen, 2012; Arroub et al., 2016). In addition to these, it is ability to transform current economic agenda.

On the other hand, innovative and digital inputs that increase productivity by reducing cost and boost the use of ICTs in the economy, competitiveness enables to be open and employ knowledge by productive resources and efficient costs, which seek to promote the welfare of individual. In addition, smart economy ensures green and sustainable fundamentals with using natural energy resources. It relies heavily on nonpolluting energy sources with recycling waste and produces enough energy to sustain its needs, which allows sustainable growth for cities. Due to new economic perspectives that is technology driven, smart economy model can offer start-ups with new services using little investment (Guelzim et al., 2016; Arroub et al., 2016). It enables sustainable production by considering lifecycle of manufactured goods in terms of social, environmental and economic, which have significant effect to decreasing carbon features (Andronie et al., 2021). In order to this, smart economy can be called as green ideas or clean economy. It transforms new skills and creativities to valuable products and services and more greenery (Ericsson, 2014; Schaffers et al., 2011) and to decrease the number of carbon based industries and economic sectors (Davies and Mullin, 2011). Furthermore, smart urban economy can be configured through adopting cognitive automation, advanced robotics, and deep learning-assisted smart process planning developed on artificial intelligence-based decision-making algorithms (Andronie et al., 2021).

In the light of these, smart economy creates new economic sectors through ICT related field. These are highly dependent on Internet and organizing of people who have common aim (Giffinger et al.,2007; Arroub et al., 2016; Guelzim et al., 2016; Kumar and Dahiya, 2017). Since smart economy based on knowledge economy active sharing of knowledge become important, which is the main aim of smart economy (Kumar and Dahiya, 2017). In contrast to classic economy, smart economy is a new field that focuses on how a city is attractive as well as competitive with regard to factors such as innovation, art, culture, productivity, and most of all international appeal. Therefore, it can be defined as innovative revenue models and sharing economy (Guelzim et al., 2016). Civil society, public and private partnership, non-governmental organizations enable to build long-term economic vision of smart economy, which is the bottom line of sharing economy which has been discussing since 2014 (De Grave, 2016). Like smart city and smart economy, defining what is the meaning of sharing economy has been creating confusion among researchers (Guelzim et al., 2016; Arroub et al., 2016; Frenken and Schor, 2019).

In general, sharing economy uses ICT to provide citizens some information to share and distribute capacity in goods and services (Guelzim et al., 2016). Therefore, main component of sharing economy is collaborative and effective consumption by reusing excess capacity. Especially, this economic model provides local economic development by digital connectivity. In this way, city can create favorable sustainable environment in terms of economy for sharing, which enables to achieve being smart city (Gori et al., 2015). On the other hand, ICT based digital platforms by accessing personal information have ability to reduce risky when sharing something such as car, room etc. (Zervas et al.,2015). Especially, expanding digital connectivity in local scale is very popular aim for developing countries (Kumar and Dahiya, 2017). As the rapid rise of sharing economy shows, urbanized areas will be the era which defines business model through which ICT paradigm spreads. Accordingly, digital layers of cities will be fundamental to the socio-economic development of coming decades (Soe, 2017).

In essence, sharing economy has three main components which are on-demand economy, second-hand economy and product-service economy (Bakıcıı et al., 2013; Frenken et al., 2015). According to on-demand economy, services are offered by individuals through their own assest such as AirBnB which is the largest accommodation provider. On the other hand, second-hand economy can be defined as selling goods to companies or individual by them. Generally, these consist of online platforms such as Ebay, Alibaba, Taoboa and social media platforms. In addition to these two components, goods which rent from related company rather than consumer or individual are under

the product-services economy. After the product has been used for individual or consumer, another consumer can use again. Car/bike rental services can be the example of this (Frenken and Schor, 2019; Kumar and Dahiya, 2017).

In addition to sharing economy, ICT clusters is very popular and new term of smart economy like Silicon Valley. This economic model is promoted in product supply through competition. However, smart economy should need to improve how local competitive advantage can be provided especially for small-medium enterprises, food sheds and agro-industry (Kumar and Dahiya, 2017). In other words, local economic development is driving force of smart economy model especially in sharing and cluster based economic model. As a result, new economic models like sharing and cluster based economy have been defining as non-capitalist economic system to emphasize communal models for justice and equity (Agyeman and McLaren, 2014; McLaren and Agyeman, 2015; Hill, 2015). Therefore, local organizations and participation are central to the definition of these type of models. It is crucial that localization of sharing economy with clusters has ability to generate smart economy through community organizations in developing countries (Kumar and Dahiya, 2017).

The prominent issues in the literature on what the smart economy is and its components are mentioned so far. It is assumed that the smart city approach is the source of the smart economy (ISO,2014; Frenken and Schor, 2019). This type of economic model has ability to increase popularity of some sectors and to transform current sectors (Arroub et al., 2016; Giffinger et al., 2007). Accordingly, what can be the performance indicators are discussed in the context of focus themes explaining the literature above. Researchers and organizations which have been working on smart city/economy defines various performance indicators to describe what the smart economy are components. These performance indicators enable to understand this popular fields and different component of smart economy. Therefore, performance indicators about smart economy prepared by Giffinger et al. (City-ranking of European medium-sized cities report), RFSC (The Reference Framework of Sustainable Cities), Ericsson (Networked Society report), ISO (International Organization for Standardization) and Kumar and Dahiya had been evaluated for this chapter (Figure 3).

Firstly, Giffinger and his colleagues argued that there should be performance indicators to be evaluated the smartness of the city (2007). Performance indicators about smart economy were given below.

- R&D expenditure in % of GDP
- Employment rate in knowledge-intensive sectors
- Patent applications per inhabitant
- Self-employment rate
- New businesses registered
- Importance as decision-making centre (HQ etc.)
- GDP per employed person
- Unemployment rate
- Proportion in part-time employment
- Air transport of passengers
- Air transport of freight

Similar to Giffinger's study, RFSC which is originated from Belgium has been producing local policies on smart city to ensure the necessary development of cities since 2007. According to RFSC, sustainable economic development that is smart economy should consist of numeric data. These are;

- The number of ICT based sector
- The number of sectors not using technology
- The number of high school and universities

- The number of green sectors
- The number of institutions switching to smart production
- The number of internationally linked companies
- Percantage of local seed producing centers
- The number of businesses using technology in the food supply chain.

Networked Society report is another important report which was prepared in 2014 as a smart city methods guide sponsored by Ericsson. TBL (Triple Bottom Line) is formed in three main dimensions socially, economically and environmentally and indicators about the subtitles of each are defined. In economic dimension, performance indicators that productivity and competitiveness are keywords had been defined. These are;

- National income per capita
- The number of graduate students
- The number of local product patents
- The rate of using ICT
- New entrepreneurship rate in the 100,000 community.

Similar to Ericsson' report, ISO has been setting standards on sustainability and smart city since 2014. Especially, the report of Sustainable Community Development: Indicators for municipal services and quality of life ensures the necessity of smart cities. Performance indicators are;

- City's unemployment rate
- The number of commercial, industrial and finance like banking and insurance properties
- Percentage of city population living in poverty
- Percentage of persons in full-time employment
- The number of business per 100,000 populations
- The number of new patents per 100,000 population per year.

Kumar and Dahiya are researchers who have the chapter of Smart Economy in Smart Cities book in 2017. They define some performance indicators about smart economy. These are;

- Number of ICT specialists employed in government works.
- The number of electronic devices used in government.
- The number of personal computers connected to the Internet in government offices.
- Percentage of person with master and doctoral degree.

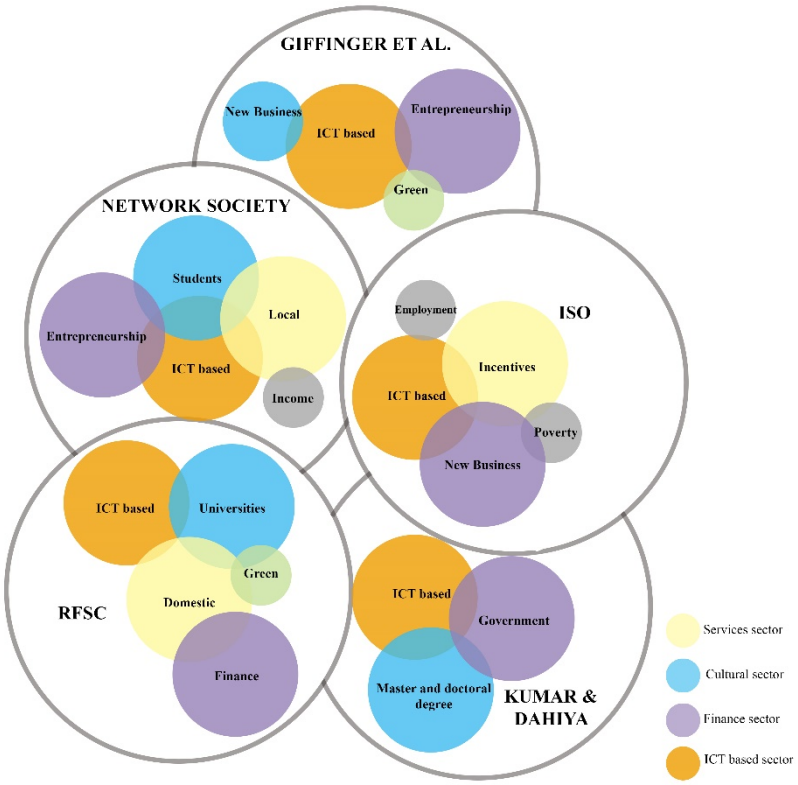

Figure 3. Performance indicators of smart economy

It is assumed that while yellow, orange, blue and purple components are core sectors of smart economy, grey and green components can be defined as supplementary sectors. For instance, performance indicators about social life (individual or community) is supplementary indicators because they are affected other components of smart economy. As it can be seen above, ICT related components are highlighted for all performance indicators about smart economy. Moreover, cultural and services are highly emphasized to demonstrate how smart economy is efficient. Therefore, ICT usage, finance, service and cultural sectors are four significant sector under the entrepreneurship for describing and evaluating smart economy.

When examining both definitions and inputs of smart economy and performance indicators for evaluating, three main components of smart economy can be defined (Table 2). First component is entrepreneurial in terms of workforce and labor markets. This component consists of sectors like ICT based, finance, services and cultural. Second component of smart economy can be the sharing economy, and third one is clean and green energy.

Table 2. Literature review of smart economy

		Main components of Smart Economy					
		Entrepreneurship (employment- labor markets)				**Sharing economy**	**Clean and green energy**
Researchers	**Research Year**	Innovative-ICT based	Finance	Services-commerce	Arts & cultural activities		
Giffinger et al.	2007	+	+	+	+	-	-
RFSC	2007	+	+	+	+	-	+
Hollands	2008	+	+	-	-	-	-
Schaffers et al.	2011	+	+	+	-	-	+
Davies and Mullin	2011	+	+	-	-	-	+

Cohen	2012	+	+	+	+	-	-
Keegan et al.,	2012	+	+	+	+	+	-
Bakıcı et al.	2013	+	+	+	+	+	-
ISO	2014	+	+	+	-	-	-
Ericsson	2014	+	+	+	-	-	-
Guelzim et al.	2016	+	+	+	+	+	-
Arroub et al.	2016	+	+	+	+	+	-
Kumar and Dahiya	2017	+	+	+	+	+	+
Soe	2017	+	+	+	-	-	-
Li et al.	2019	+	+	+	+	-	+
Frenken and Schor	2019	+	+	+	-	+	+
Kırımtat et al.	2020	+	+	+	+	-	-
Andronie et al.	2021	+	+	+	+	-	+

Table 2 shows that ICT based entrepreneurship and finance sector are two dominant themes about smart economy as well as service and cultural sector under the entrepreneurship was evaluated in smart economy perspectives. Moreover, sharing economy has been mostly discussing themes since 2012. Clean and green energy was also defined as main component of smart economy by transforming current sectors and forming new sectors. Generally, overall definition and performance indicators of smart economy is examined in literature. However, studies which investigate smart economy evaluations in local level applications are not enough evaluated in existing literature. Indeed, location analysis such as location quotation (LQ) analysis should be implemented in local level to investigate whether the city has smart economy or not. Therefore, this research is focused on Konya city in Turkey to examine entrepreneurship based on crucial sectors (ICT based, services, finance and cultural activities) which is one of the main component of smart economy with using LQ analysis method.

2. Methodology: The Analysis of A Smart Economy

The methodology of this research is constituted with reference to the inferences of literature review. In order to test whether smart city approach is really efficient in economical perspective i.e. smart economy, Konya city in Turkey has been reviewed as case specific local approach. In other words, smart city and smart economy literature inferences have been accepted as primary resources for evaluating Konya case. Smart city concept has been discussing since the start of the 2000s in Turkey. Technological progress and the continuous migrations are two main drivers of smart city discussions. 2003-2023 National Science and Technology Policies Strategy Paper and 10th Development Plan are stepping stone of introducing smart city concept in Turkish planning agenda. However, these initial documents include implementations of smart city instead of holistic smart city approach. Therefore, 2019-2022 National Smart Cities Strategy and Action Plan, 2018 Smart City White Paper and 2019 Smart City White Paper had been prepared in order to create common strategic background in local level by MEU. Not only the branding value of smart city concept but also improved smart city applications set up inquiry of Turkey's smart city concept. According to these documents, there are some metropolitan municipalities in Turkey, which were selected to have better understanding of smart city concept and application in local level (MEU, 2018; 2019). Konya is one of the selected cities due to some reasons. Konya Metropolitan Municipality is among prior municipalities to set up smart city solutions for urban services that are related to urban life. Moreover, Konya is one of the first cities to build smart city cooperation and initiatives which are related to transportation services and e-services in Turkey. Similarly, Konya is the pioneer of digitalization of administrative services as online services for citizens. On the other hand, since main scope of the study shapes in terms of smart economy perspective, getting data to test smartness in local assets and basic/local economic sectors are crucial. That is, accessing to data easily is another reason why Konya was selected for this study.

Numerical data about Konya's smart economy has been obtained both Konya Metropolitan Municipality website and Location Quotient (LQ) analysis. LQ is a measure which shows the relations between region and nation local and dominant economic sectors (Isard et al., 2017). Prominent economic sectors of smart economy which come from literature review both definition and KPI's are evaluated by this method. If the results are greater or equal than 1, dominant/core sector can be found and ıf the results are smaller than 1, local sector can be found in Konya. That is, it can be found whether economic structure of Konya is related to smart economic approach, which is a part of smart city inquiry in economical side. Therefore, this research is conducted as three phase (Figure 4). Literature about smart city and smart economy was reviewed in first phase. Assessment criteria's were dedicated through literature review, and applied on projects which were prepared by Konya Metropolitan Municipality in second phase. Moreover, LQ analysis was used to evaluate current economic situation whether smart or not in Konya. After these analysis and assessments, opportunities and limits were defined as a third phase.

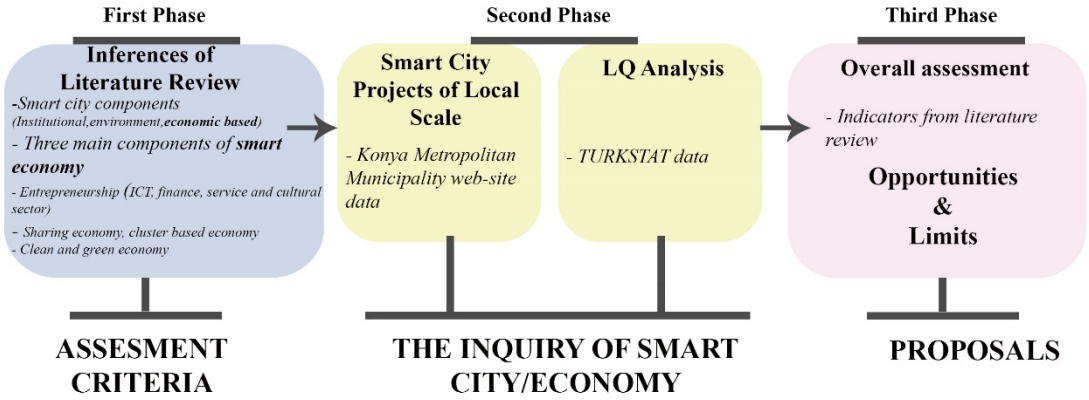

Figure 4. Research methodology

3. Discussion: Is Konya Economy Real Smart Economy?

Efficient website design and content are one of the main reasons why Konya is the pioneer of smart city applications in Turkey (MEU, 2018). Konya Metropolitan Municipality (KMM) had been organized its website with ICT based design and user-friendly databases which includes applications and Smart Cities Action Plan through smart city concept. When searching Smart City Application in Konya, six categories are listed as smart mobility, smart living & smart people, smart environment, smart governance, smart economy. Each of them have their own smart city applications (Url-1). The applications are listed below in terms of smart governance. These are;

- municipality website
- e-payment and e-municipal services
- cemetery information system
- e-citizen
- municipal automation
- coordination information center
- vehicle tracking system
- municipality job tracking system
- muhtar information system
- districts information system
- e-license
- Konya open data portal

Smart people & smart living projects are;

- Mobile Mesnevi application
- Public education center applications
- Education aid applications
- Competition and event registrations
- Youth card application
- Project support center
- Online museum application
- Smart public buildings (stadium etc)
- Police management control center
- Water administration mobile business tracking system
- Mobile water network control vehicles
- Park gardens water well automation
- e-address system
- Mobile data collection and smart association - spatial database provision
- Free wi-fi services

In addition to these, smart environment projects are;

- Air quality monitoring system
- Noise control monitoring and warning system
- Earthmoving vehicles tracking system
- Electric buses
- Environmental management and information system center
- Treated wastewater recovery plant (purple network)- (creates a source for irrigation of green areas).
- e-pati application- (animal friends project)
- Branching from the active water line
- Agricultural area analysis and reporting application

Smart mobility projects are;

- Intelligent public transportation system with mobile devices
- Smart stall screens
- Smart roads and junctions
- Central Traffic Management System (traffic control central system)
- Electronic card system- (for use in public transport)
- Public transportation with contactless banking cards
- Master transport plan by bike
- Bike paths and smart bike system- (bike repair stations, route planning option, recreational tours)
- Icing tracking system
- Tram system without catenary
- Underfloor heated interchanges and pedestrian overpasses
- Electronic monitoring system
- Parking locator app
- Junctions cameras
- Simulation systems
- Public transport announcement system
- Line management system
- Informative electronic signs on vehicle roads

- Bicycle tram and buses with bicycle apparatus.

Smart economy projects as a final component are;

- farmer information system
- e-pattern
- agriculture support applications

Overall, the number of listed services about smart city applications (apps) had been related with literature table which is about smart city components (Table 3).

Table 3. Categorizing KMM' web-site apps through smart city main components

	Smart City Main Components				
	Institutional based		Environment based		Economic based
	Smart governance	Smart people & Smart living	Smart environment	Smart mobility	Smart economy
Number of listed apps	12	15	9	19	3
Total	27 apps		28 apps		3 apps

As it can be seen Table 3, application and services about smart economy component do not satisfy in the context of economic based smart city component. Institutional and environment based applications related with smart transportation and smart governance which are also important component of smart city were taken into more deep considereation although smart economy applications are very limited or still continuing. Since smart economy is main focus of this study, smart economy applications in Konya were examined more detailed. The first project is farmer information system. It is an information support platform created to enable farmers to reach experts more easily during the process of solving the problems by sending photos from the field when necessary. The second project is e-pattern. Konya Metropolitan Municipality has created the e-Pattern project in order to identify assets with many economic values, from agricultural production capacities to tourism, and make them available to citizens who need them on the internet. The agricultural and economic situation of the region, the historical, touristic and spiritual values of the region have been revealed and collected in a central database. The last project named as agriculture support applications for agricultural support are given by the municipality. In addition, consultancy services are provided to the farmers, and the problems and questions of the farmers are answered here. The assessment of these projects can be seen Table 4.

Table 4. Evaluating of KMM' smart economy projects through smart economy components

	Main components of Smart Economy					
	Entrepreneurship (employment- labor markets)				**Sharing economy**	**Clean and green energy**
KMM's Smart Economy Projects	Innovative-ICT based	Finance	Services-commerce	Arts & cultural activities		
farmer information system	+		+			
e-pattern	+	+	+	+		
agriculture support applications	+	+				

Table 4 shows that these projects may not be satisfied adequately to have smart economy when examined these projects. It can be assumed that projects which were improved by KMM are more theoretical than practice/action based. Moreover, there is not any attempt to improve sharing

economy and clean energy on economy. However, according to inferences of literature, smart economy has three main components. The first one is smart economy encourages entrepreneurship in some sectors like ICT, finance, services and cultural. The second is smart economy ensures to develop new economic approach like sharing economy and cluster based economy, and the third one is related to clean and green energy system. Therefore, it can be agreed that smart economy projects developed by local government are not enough for Konya to be titled as a smart city.

After KMM' projects about smart city especially smart economy assessment, LQ analysis had been applied in order to test whether Konya is smart city in smart economy concept. It ensures having a better understanding whether Konya' current economic structure is proper to transform into smart economy. Since there is no data on other components of smart economy like sharing economy and clean/green energy were found in TURKSTAT dataset, enterprises statistics (in 2018) for detecting what type of entrepreneurship in Konya and Turkey had been used in order to test smart economy perspective (Table 5). The formula used in LQ analysis is given below.

$$LQ = \frac{e_i / \sum e}{E_i / \sum E}$$

ei, employment of sector i in the region;

∑e is the total employment in the region;

Ei, employment of sector i in the focus region

∑E represents the total employment in the focus region.

If the result is equal to 1 (LQ=1), the intra-regional density of the sector is equal to the country average. If the coefficient is greater than 1 (LQ>1), it proves that the sector operates more intensively in the region compared to the country, and when the coefficient is less than 1 (LQ<1), the weight of the sector in the regional economy is less.

Table 5. LQ results of entrepreneurs' statistics based on economic activities of Turkey & Konya in 2018

Enterprises Statistics	Year	Turkey	Konya	LQ Analysis Results
A. Agriculture, Forestry And Fishing	2018	32800	2333	2.64
B. Mining And Quarrying	2018	6507	143	0.81
C. Manufacturing	2018	442601	15279	1.28
D. Electricity, Gas, Steam And Air Conditioning Supply	2018	7140	168	0.87
E. Water Supply; Sewerage, Waste Management and Remediation Activities	2018	5601	118	0.78
F. Construction	2018	281500	6233	0.82
G. Wholesale And Retail Trade; Repair Of Motor Vehicles and Motorcycles	2018	1290966	37127	1.06
H. Transportation And Storage	2018	522044	13474	0.95
I. Accommodation And Food Service Activities	2018	339777	7678	0.83
J. Information And Communication Technologies (ICT)	2018	45448	529	0.43
K. Financial And Insurance Activities	2018	24521	441	0.66
L. Real Estate Activities	2018	66711	1582	0.88
M. Professional, Scientific And Technical Activities	2018	241583	5429	0.83
N. Administrative And Support Service Activities	2018	68812	1101	0.59
P. Education	2018	27032	479	0.65

Q. Human Health And Social Work Activities	2018	47479	774	0.6
R. Arts, Entertainment And Recreation	2018	53634	904	0.62
S. Other Service Activities	2018	341795	9760	1.06
Total		**3845951**	**103552**	

Core sector Local sector

Table 5 demonstrates that the LQ score of ICT, financial activities, services/commerce, education, arts and entertainment facilities are under the 1, which means that these sectors are local sector. In order to have smart economy these sectors should have been improved to core sector by local government. As one of the main component of smart economy necessity, enterprises on these sectors which have very low LQ rate should be promoted. Since smart economy related sectors which are listed above were not preferred by enterprises in Konya the smart economy progress in Konya cannot be provided. If it is needed to be build smart economy structure in Konya as mentioned KMM' websites, smart economy related economic sectors with the lowest LQ rate should have been developed. As a result, Konya' current economic structure is not suitable to be formed smart economy model. However, high LQ rate of enterprises statistics on agriculture sector show that it has a potential of Konya' smart economy in terms of sharing- cluster based economy that are the second component of smart economy. Sharing economy as one of the smart economy component adopts potential dominant economic sector with collaboration. Highlighting opportunities and limits in the context with smart economy offers a clue how Konya' economy can be transformed into smart economy.

CONCLUSION:

In order to better understand the current situation, priority sectors that need to be intervened and sectors that need to be continued are revealed through high (H), available (A) and fragile (F) approaches (Table 6).

Table 6. Overall evaluation of smart economy in Konya

	Main components of Smart Economy					
	Entrepreneurship (employment- labor markets)				**Sharing economy**	**Clean and green energy**
KMM's Smart Economy Projects	Innovative-ICT based	Finance	Services-commerce	Arts & cultural activities		
farmer information system	H	F	A	F	F	F
e-pattern	H	A	A	A	F	F
agriculture support applications	H	H	F	F	F	F
Enterprises Statistic- LQ result						
Agriculture, forestry and fishing	A	A	A	A	A	A
Manufacturing	A	A	A	A	A	A
Wholesale and retail trade; repair of motor vehicles and motorcycles	A	A	A	A	A	A
Information and Communication Technologies (ICT)	F	F	F	F	F	F
Financial and insurance activities	F	F	F	F	F	F
Administrative and support service activities	F	F	F	F	F	F
Education	F	F	F	F	F	F

Human health and social work activities	F	F	F	F	F	F
Arts, entertainment and recreation	F	F	F	F	F	F

H High A Available F Fragile

It is proved that Konya' current economic system cannot be interpreted to be a smart economy. Table 6 demonstrates that Konya's current economy is generally fragile for transforming smart economy. However, agriculture, manufacturing and repairing sectors have prior potential for smart economy. It can be seen that some of KMM's smart economy projects also have opportunities. When analyzed fragile parts, ICT, finance, service, education and cultural sectors which are a part of smart economy components are more vulnerable than others. Therefore, action plans and policies should be prepared for being smart. While doing this, transform Konya' economy to smart economy it has needed to be determined what are the opportunities and limits in the context with smart economy. According to inferences of literature review, it is assumed that sharing economy is one of the main component of smart economy, which ensures some opportunities. Sharing economy with ICT based digital connectivity creates sustainable environment in terms of economy (Gori et al., 2015). Especially in Konya, since agriculture is a dominant sector which can be seen in LQ analysis result, collaboration and organization of agricultural sector can be ensured easily. Moreover, the economic scale of Konya is more manageable than other metropolitan cities in Turkey, which is an advantage of expanding digital connectivity with sharing economy concept. On the other hand, Konya' economical structure has some limits; but, they can be converted into opportunities. For example, LQ results of Konya are not seemed suitable for smart economy due to low rate of ICT related sectors. However, being to adopt sharing economy can assist this matter.

Konya has lots of opportunities to transform its current economy to smart economy. These opportunities are listed below.

- Dominant agricultural sector
- Active municipality web-site
- e-municipality applications
- Projects about agricultural sector such as KOP Project
- The existence of organizations that support the development of agriculture such as KTO Karatay University, cooperatives and producer unions.

As it can be seen above, Konya' economy receives quite high potential to convert smart economy because of cooperation potential and ICT related local governance systems. However, Konya has some limits and challenges to have smart economy. These are;

- Dominant national economic policies instead of local policies.
- Smart city/economy as only branding value
- No holistic approach about smart city development both national and local scale.
- Lack of social policies about economic development.
- No prioritization and staging period of economic sector.

Dominant national economic policies form a strict border of the economy of Konya, which ends up as three consequences. Firstly, site selection of projects and financial supports to entrepreneurs generally have been chosen in large metropolitan areas in Turkey. Therefore, entrepreneurs or small scale investors do not prefer ICT related sectors in Konya. Secondly, since there is no holistic approach for smart city concept local governments try to build their own smart community in Turkey like Konya, which causes only branding or marketing based smart city application. Thirdly, it causes lack of social

policies in local scale. Social policies matters of managing economic sectors, which is the base of sharing economy. If social policies gain importance in both national and local governance, not only Konya' but also whole economic structure of Turkey have a potential for transforming smart economy.

On the other hand, while smart city model had been accepted with ICT related economy, environment, government etc., social policies are missing parts, which explains how smart city model can be adopted current city system. Besides, smart city which were developed in sustainability context like digital city, intelligent city may not be seen appropriate for local scale (Hollands, 2008). It creates only marketing value to increase competitiveness in national scale whereas it should be increased life quality of citizens in local scale. However, smart city needs to consider what are the opportunities and limits before simply being labelled as smart. In essence the smart economy has to take much risks with technology in local scale to ensure applicable for whole citizens. In this point, sharing economy as another main component of smart economy can be the solutions for offering advantages of local economic development. It is the time for searching of smart economy in terms of sharing economy and finding new participatory organizations for sustainable economic system. It widens the sustainability perceptions in terms of economy which offers multi-participant process certainly contribute to local economic development.

Compliance with Ethical Standard

Conflict of Interests: The authors declare that there is no conflict of interest.

Ethics Committee Approval: Ethics committee approval is not required for this study**.**

Acknowledgements: I would like to thank Prof. Dr. Elif Alkay for her expert advice and her contribution of this article which was developed by her phD course.

REFERENCES:

Articles:

Agyeman, J. and McLaren, D. (2014). '**Smart Cities' Should Mean 'Sharing Cities'**. *Time: Ideas and*.

Andronie, M., Lăzăroiu, G., Iatagan, M., Hurloiu, I., & Dijmărescu, I. (2021). **Sustainable cyber-physical production systems in big data-driven smart urban economy: a systematic literature review.** *Sustainability*, *13*(2), 751.

Angelidou, M. (2015). **Smart cities: A conjuncture of four forces**. *Cities, 47*, 95-106.

Anttiroiko, A. V., Valkama, P., & Bailey, S. J. (2014). **Smart cities in the new service economy: building platforms for smart services.** *AI & society*, *29*(3), 323-334.

Ariffin, A. (2012). **Smart Economy in Smart Cities.** In Kumar, T.M.V (Eds.), *Iskandar Malaysias Definition of Smart City*. Erişim: http://sustainableiskandar.com.my/iskandarmalaysias-definition-of-smart-city/

Bakıcı, T., Almirall, E. and Wareham, J. (2013). **A Smart City Initiative: the Case of Barcelona**, *Journal of Knowledge Economy, 4(2).* 135–148.

Caragliu, A., Del Bo, C., & Nijkamp, P. (2011). **Smart cities in Europe**. *Journal of urban technology, 18(2),* 65-82.

Davies, A. R., & Mullin, S. J. (2011). **Greening the economy: interrogating sustainability innovations beyond the mainstream.** *Journal of Economic Geography*, *11*(5), 793-816.

De Grave, A. (2016). **So long, collaborative economy**!. *Ouishare Magazine*.

Dieleman. F. and Wegener, M. (2004). **Compact City and Urban Sprawl,** *Built Environment, 30(4)*,308 323.

Frenken, K., Meelen, T., Arets, M., & Van de Glind, P. (2015). **Smarter regulation for the sharing economy.** *The Guardian*, *20*, 175-189.

Gabrys, J. (2014). **Programming environments: environmentality and citizen sensing in the smart city.** *Environment and Planning D: Society and Space*, *32*(1), 30-48.

Gori, P., Parcu, P. L., & Stasi, M. (2015). **Smart cities and sharing economy.** *Robert Schuman Centre for advanced studies research paper no. RSCAS*, *96*.

Guelzim, T., Obaidat, M. S., & Sadoun, B. (2016). **Introduction and overview of key enabling technologies for smart cities and homes.** In *Smart cities and homes*, 1-16. Morgan Kaufmann.

Hollands, R. G. (2008). **Will the real smart city please stand up? Intelligent, progressive or entrepreneurial?.** *City, 12(3),* 303-320.

Jucevičius, R., Patašienė, I., & Patašius, M. (2014). **Digital dimension of smart city: critical analysis.** *Procedia-Social and Behavioral Sciences*, *156*, 146-150.

Keegan, S., O'Hare, G. M., & O'Grady, M. J. (2012). **Retail in the digital city.** *International Journal of E-Business Research (IJEBR)*, *8*(3), 18-32.

Kırımtat, A., Krejcar, O., Kertesz, A., & Tasgetiren, M. F. (2020). **Future trends and current state of smart city concepts: A survey**. *IEEE Access*, *8*, 86448-86467.

Kumar, T. V. and Dahiya, B. (2017). **Smart economy in smart cities**. In *Smart Economy in Smart Cities* (pp. 3-76). Springer, Singapore.

Li, X., Fong, P. S., Dai, S., & Li, Y. (2019). **Towards sustainable smart cities: An empirical comparative assessment and development pattern optimization in China**. *Journal of Cleaner Production*, *215*, 730-743.

Marsal-Llacuna, M. L., Colomer-Llinàs, J., & Meléndez-Frigola, J. (2015). **Lessons in urban monitoring taken from sustainable and livable cities to better address the Smart Cities initiative**. *Technological Forecasting and Social Change, 90*, 611-622.

Neirotti, P., De Marco, A., Cagliano, A. C., Mangano, G., & Scorrano, F. (2014). **Current trends in Smart City initiatives: Some stylised facts**. *Cities 38*, 25-36.

Schaffers, H., Komninos, N., Pallot, M., Trousse, B., Nilsson, M., & Oliveira, A. (2011, May). **Smart cities and the future internet: Towards cooperation frameworks for open innovation.** In *The future internet assembly* (pp. 431-446). Springer, Berlin, Heidelberg.

Torres, L., Pina, V., & Royo, S. (2005). E-**government and the transformation of public administrations in EU countries: Beyond NPM or just a second wave of reforms?.** *Online Information Review, 29(5),* 531-553.

Vanolo, A. (2014). **Smartmentality: The smart city as disciplinary strategy**. *Urban studies, 51(5),* 883-898.

Wall, R. S., & Stavropoulos, S. (2016). **Smart cities within world city networks**. *Applied Economics Letters, 23(12)*, 875-879.

Zervas, G., Proserpio, D., & Byers, J. (2015). **A first look at online reputation on Airbnb, where every stay is above average.** *Where Every Stay is Above Average (January 28, 2015)*.

Proceedings:

Algan, N. (2017). **Kentsel Gelişmede Ekolojik Sürdürülebilirlik.** *Uluslararası Kentsel Politikalar Konferansı(INCUP2017),* http://incup2017. emu. edu. tr/tr (Accessed date: 06.05.2020).

Arroub, A., Zahi, B., Sabir, E., & Sadik, M. (2016, October). **A literature review on Smart Cities: Paradigms, opportunities and open problems.** In *2016 International Conference on Wireless Networks and Mobile Communications (WINCOM)* (pp. 180-186). IEEE.

Bibri, S. E. and Krogstie, J. (2016). **Big Data and Context–Aware Computing Applications for Smart Sustainable Cities.** *Proceedings of the 2nd Norwegian Big data Sysmposium, Trondheim, Norway*, *15*.

Chourabi, H., Nam, T., Walker, S., Gil-Garcia, J. R., Mellouli, S., Nahon, K., ... & Scholl, H. J. (2012). **Understanding smart cities: An integrative framework.** In 2012 *45th Hawaii international conference on system sciences,* January, 2289-2297. IEEE.

Dameri, R. P. and Cocchia, A**.** (2013). **Smart city and digital city: twenty years of terminology evolution**. In *X Conference of the Italian Chapter of AIS, ITAIS*, 1-8.

Nam, T., & Pardo, T. A. (2011, June). **Conceptualizing smart city with dimensions of technology, people, and institutions**. In *Proceedings of the 12th annual international digital government research conference: digital government innovation in challenging times* (pp. 282-291).

Soe, R. M. (2017, June). **FINEST Twins: platform for cross-border smart city solutions**. In *Proceedings of the 18th Annual International Conference on Digital Government Research* (pp. 352-357).

Books:

European Commission (2014). ***National/ Reginal Innovation Strategies for Smart Specialization*** (RIS3). Erişim: http://ec.europa.eu/regional_policy/sources/docgener/informat/2014/smart_specialisation_en.pdf

Frenken, K. and Schor, J. (2019). Putting the sharing economy into perspective. **In *A Research Agenda for Sustainable Consumption Governance***. Edward Elgar Publishing.

Hill, S. (2015). ***Raw Deal: How the" Uber Economy" and Runaway Capitalism Are Screwing American Workers*.** St. Martin's Press.

IBM Global Business Services (2009). **A vision of smarter cities**. IBM Corporation. Erişim: https://www-03.ibm.com/press/attachments/IBV_Smarter_Cities_-_Final.pdf

Isard, W., Azis, I. J., Drennan, M. P., Miller, R. E., Saltzman, S., & Thorbecke, E. (2017). ***Methods of interregional and regional analysis*.** Routledge.

ISO 37120 (2014). **Sustainable development of communities – Indicators for city services and quality of life**.

McLaren, D. and Agyeman, J. (2015). ***Sharing cities: a case for truly smart and sustainable cities*.** MIT press.

MEU (Ministry of Environment and Urbanization). (2018, 2019). **Akıllı Şehirler Beyaz Bülteni** [Smart Cities White Paper].

OECD (2019). **1st OECD Roundtable on Smart Cities and Inclusive Growth**. Accessed date: 14.05.2020

The European Framework for Sustainable Cities (RFSC) (2017) 5 **Dimensions and 30 Objectives for A European Vision of Tomorrow's Cities**, Accessed date: 30.04.2020.

Reports:

Ericsson AB (2014). **Networked Society City Index 2014.** Appendix 1 Methodology https://www.ericsson.com/assets/local/networked-society/reports/city-index/networkedsociety-city-index-2014-appendix1-methodology.pdf

Giffinger, R., Fertner, C., Kramar, H., & Meijers, E. (2007). **City-ranking of European medium-sized cities**. *Cent. Reg. Sci. Vienna UT*, 1-12.

Web-sites:

Cohen, B. (2012). What exactly is a smart city? September 19, 2012b, online at: http://www.fastcoexist.com/1680538/what-exactly-is-asmart-city (accessed 26 November 2021).

TURKSTAT, The results of Enterprises Statistics. (2018). https://biruni.tuik.gov.tr/medas/?kn=145&locale=tr

Url-1: https://akillisehir.konya.bel.tr/ Accessed date: 05.06.2020.