CRAFTING SMART CITIES IN THE GULF REGION: A COMPARISON OF MASDAR AND LUSAIL

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Abstract

Deployment of Information Communication Technologies (ICTs) in crafting smart cities in the Gulf Cooperation Council region including Saudi Arabia, Kuwait, United Arab Emirates, Qatar, Oman and Bahrain. Increasing economic dynamism in the GCC region has led development authorities, infrastructure companies, governmental and corporate entities to be more cognizant of deploying ICT solutions for various infrastructural platforms such as intelligent transportation, telecommunications, airports, sustainable environments, public safety, energy efficient buildings, residential and utilities projects. These projects not only stretch the limits of creativity, but also inform us about the neoliberal trajectories pursued by "globalizing" cities and their excessive focus on sustaining competitiveness.

This study looks at these trajectories by specifically focusing on the interstices of smart cities and competitiveness through the role played by communication technologies. An initial question to tackle with pertains to the definition of a smart city as this concept is used in diverse ways in the literature. Transforming the cities into smart ones is a newly emerging strategy to deal with the problems created by the urban population growth and rapid urbanization. Smart city is often defined as "an icon of a sustainable and livable city." Why Gulf countries have been investing in smart cities? Is the emergence of smart cities a mere reflection or neoliberal urbanization or are there other dynamics that we need to take into consideration? This paper attempts to convey the message that smart cities are crucial means of building social capital and also attaining better governance mechanisms in the Gulf.

Keywords: Smart cities, ICTs, governance, Qatar, Gulf

"Lusail City is where Qatar's imagination comes to life"&
"Masdar City…Highest quality of life with lowest environmental footprint…"

Introduction

This study approaches the development of Smart Economic & Sustainable Cities in the GCC through the application of these ICT based infrastructural platforms in a comparative perspective. Qatar (Lusail Smart City, Al Wa'ab City & Energy City), Kingdom of Saudi Arabia (KSA) (Makkah Smart City, Knowledge Economic City & King Abdullah Economic City), and United Arab Emirates (UAE) (Masdar City, Dubai Health City) constitute most recent examples of smart cities in the Gulf Region. Although there is an increase in frequency of use of the phrase "smart city", there is still not a clear and consistent understanding of the concept among practitioners and academia. Only a limited number of studies investigated and began to systematically consider questions related to this new urban phenomenon of smart cities (Chourabi *et al* 2012). Smart city forerunners like San Diego, San Francisco, Ottawa,

Brisbane, Amsterdam, Kyoto, and Bangalore are all now setting a trend for others to follow (Sam Allwinkle & Peter Cruickshank, 2011) .

The concept of smart city entails common characteristics that are key indicators of smartness in a city: a smart economy (sustainable economic growth), smart mobility, smart environment (wise management of natural resources), smart people, smart living (a high quality of life), and smart governance (participatory governance). In the literature, there are widely accepted measures of what a smart city constitutes. For instance, the smartness of a city should be measured by its participatory governance, its smart economy, its smart urban mobility, its smart environmental strategy and management of natural resources, and the presence of its self-decisive, independent, and aware citizens leading a high-quality urban life. Three necessary conditions are defined to create a spatially enabled society: first, citizens have to be "spatially literate"; second, "a conducive environment" for sharing spatial data is needed; third, globally unified Geospatial standards are needed (Roche et al, 2012). The practical application of this view refers to the individuals' ability to use geospatial information and location technology as a means to improve the way they interact with the space and other individuals on/in/through space.

To illuminate the connection between smart cities and ICTs, Richard Florida's "Creative City" (2008, 2006, 2005, and 2002) thesis is a fertile analytical approach for understanding how cities, especially in periods of neoliberal globalization, have become central to the attainment of competitive advantage. Resulting from the internalization of neoliberal values by national governments, local authorities, municipal leaders and other actors, it is now possible to detect a form of "hollowed out" nation state (Jessop, 2002), or the downloading of the capacities, responsibilities and authority of nation states onto cities. Consequently, as Florida's "Creative City" thesis[27] illustrates, the real economic competition today plays out among cities, not nation states. Florida's thesis positions the three T's - Technology, Talent, and Tolerance – as responsible for attracting the "Creative Class", contributing to the national economy and establishing the requisite framework for sustaining competitive advantage. While communication technologies should not be perceived as the only determinant of "creativity", they are indicative of the "new technologies of power" which have arguably become the momentum behind the intensification of a neoliberal ethos in urban spaces. As such, Florida's creative city thesis and its accompanying buzzwords, "creative class" and "creative economy", celebrate the increasing hegemony of the neoliberal market mentality.

Nonetheless, this hegemony is a contested one, albeit in different forms, intensities and technologies. The mechanisms portrayed as making cities more competitive also inform us that, while competitiveness is a key neoliberal concern in the production of urban spaces and creative cities, innovative technologies work in two directions: (1) deepening the hegemony of markets by marshalling creativity and communication technologies towards the deeper entrenchment of market logic; and (2) impacting the way urban space is imagined, instituted and produced by the state. Hence, the combination of 1 and 2 indicate that states and markets are interlinked in many different ways and market logic is not essentially at loggerheads with the state. The rise of smart cities in the Gulf region signify that states and markets engender new collaborations through the use of ICTs and investigation of the state as

[27] The creativity of cities is attributed to various factors, including openness to diversity, level of tolerance and the peaceful coexistence of differences in a society. Levels of technological innovation and a population comprised of talented and innovative people are also believed to have a direct impact on the creativity and hence, development of a city. In his latest book, Florida (2008) asserts that people can now choose the cities in which they want to live in, and this choice is shaped by the characteristics of the cities. In an earlier text (Florida, 2002), two population indexes are developed. The creativity index measures the number of artists, musicians, and painters living in a city, (also called the bohemian index). The diversity index is itself composed of two indices, the first one is the melting pot index, the number and ratio of foreign born people and immigrants, and the second is the gay and lesbian index, measuring the tolerance of the community, as well as the region.

an entrepreneur under the times of neoliberal urbanization is a critical area that needs to be delved into.

Neoliberal Urbanization and State as an Entrepreneur

First, let us start with what neoliberalization means for the city and why the city is itself important to processes of neoliberalization? Neoliberalization is a range of policies intended to extend market discipline, competition and commodification throughout society. It is a search for securing the "vital cycle of economic growth". Neoliberal mindset needs quality economic foundations, such as quality of life, financial capital, business climate, so and so forth, reassuring Florida's main thesis so that new people and ideas in the form of creativity fosters this cycle. In the current context, neoliberal doctrines have brought about the deregulation of state control over industry and markets, assaults on organized labor, the downsizing and/or privatization of public services and assets, the dismantling of welfare programs, the enhancement of international capital mobility and the intensification of interlocality competition. Its implementation has relied on national restructuring projects (Peck et al, 2009), and the dominance of competitive logic over redistributive objectives has opened up new spaces of contestation among economic actors, institutions, municipalities, nation states and civil actors. This has had significant implications for localities given the risks and responsibilities of downloading.

When we stand back and try to decipher the dynamics behind the increasing hegemony of neoliberalism in redesigning, restructuring and reproducing urban spaces, it becomes possible to conceptualize this phenomenon as a state strategy for creating new conditions of capital accumulation. However, as Brenner and Theodore (2002, 120-130) note, although neoliberal projects take place at different and tangled scales, it is cities and regions in which the contradictions and tensions of actually or already existing neoliberalism are manifested. Cities become the venues on which these tensions and contradictions are concretized and managed (or attempts at management of these tensions and contradictions are made). There is now, for example, increasing city level competition across national borders for foreign direct investment and for trade in city based services and urban assets. Increasingly, urban economic performance matters more than national economic outcomes.

These dynamics correspond to 'a gradual shift away from distributive policies, welfare considerations, and direct service provision' and mark the competitive state's movement 'towards more market-oriented and market dependent approaches aimed at pursuing economic promotion and competitive restructuring' (Swyngedouw et al. 2002, 200). Through this process, supply-side economic logic privileges the production of urban 'spaces of spectacle' in which the consumption of, and access to, goods by the urban population exists as a source of political motivation for neoliberal ideas. In this sense, rather than attempting to shift the social inequities brought about by the neoliberal political economy, policy concerns are directed towards ensuring urban centers appear attractive to mobile-capital and elite consumers with the explicit goal of improving "the tax basis of the city via a sociospatial and economic reorganization of metropolitan space" (204).

This increasing emphasis on the rise of cities and urban centers as the new spaces of capitalist accumulation (Brenner, 2004) also brings into the fold a variety of new or more diverse actors that collectively produce and reproduce urban spaces. Thus, the rise of cities and the way in which cities are perceived as the new engines of neoliberal capitalism should be seen as a product of agency. This leads us to approach the attainment of competitiveness as part of the urban socio-spatial dialectic that is not limited to the realm of economics, but that exists in the realm of culture as well. For this reason, as the cases below from the Gulf Region will demonstrate, the use of new technologies of power is an effective tool for analyzing this intermingling and articulations between the markets and states.

There is no doubt that new urban technologies are important in harnessing creative capacities for the sake of producing more vibrant, more competitive and more livable cities. The role of communication technologies is indicative of structural dynamics in relation to the unfolding of the neoliberal vocabulary, which asserts that cities matter for accumulation of capital. Florida's creative city thesis, however, goes one step further and emphasizes that it is not just that cities matter, but that particular strengths and qualities of cities matter. There are greater incentives for cities and city regions to actively promote positive locational characteristics, including patterns of linkage and innovativeness, which can then assist cities in attaining competitive advantage and responding flexibly to changing market conditions. (Florida, 2006, 11)

The interface between states and businesee has always been a subject of interest for scholars due to the different strategies adopted by goverments in the age of increasing globalization (Nasra and Dacin, 2009, 583). The different institutional arrangements exist in each country generate unique state-business relations (2009, 583). Within a changing environment a more critical role of state to ensure economic growth and development has emerged, making it a critical area for researches. This role "entails greater involvement and interaction with economic actor such as entrepreneurs and corporations" (2009, 587). Generally, there is a significant body of literature on state/firms relationships and role of state in economy. With regard to role of states, several literature demonstrate that the classical role of state is ensuring internal order and stablity and regulating the market (587). Nevertheless, states can act as an entrepreneur, identifying opportunities, and as an institutional entrepreneur, building the necessary institutional infrastucture to exploit and capitalize on these opportunities. (Nasra and Dacin, 2009, 601)

Through institutional entrepreneurship the state role as a change agent is activated. The implications of being a change agent have been explored in literature. For instance organizational scholars found positive impacts of the transformative role of states on employment and human resources practices, and organizational forms (Nasra and Dacin, 2009, 587). Building institutional structures can facilitate the creation of new productive capacities and set further opportunities (2009, 586). Additionally, shaping institutions impacts international entrepreneurship, Ireland and Webb (2006) emphasizes that the role of the state is not confined to offering support to economic activities through regulations but also by mediating several factors including instability and uncertainity in the market. For example some of the means to attract foreign investments, as indicated by Johnasson (1994) have been the establishment of free zones and ports, thought they are not novel. (as cited in Nasra and Dacin, 2009, 586-587)

The notion of 'resource mobalization' is central to the role of state as institutional entrepreneure. Resources are not necessary tangible, but definitely intangible such as the assests of networks and alliances with firms, mechants, corporations and trading community. The state as institutional entrepreneur should posse social and political skills to facilitate cooperation among the different actors. Furthermore, establishing institutional structure and enabling frameworks promotes entrepreneurship within the country itself (Nasra and Dacin, 2009, 596). Generally, creation of institutional infrasturcture enables the counrty to establish and manage two types of legitimacies: national and international. This legitimacy contributes to country's attractiveness for international entrepreneurs and political stability within the country and the region. (2009, 585)

Despite the fact that states in GCC are represented by individuals due to the monarchical system, it is not a limitation as these actors have showed explicit willingness and latitude to create change (Nasra and Dacin, 2009, 601). Smart cities as free zones are part of the processes of crafting an institutional infrastructure by the state, as the principal entrepreneur and a change agent with a transformative power.

Smart Cities of the Gulf Region

The six countries in the Gulf region share several common features, such as the high per capita GDP, monarchical rule and central authority, and abundant financial wealth generated from their dependence on oil and gas (Khodr, 2012, 150). The abundant wealth has contributed to the "introduction of comprehensive administration reform and the need to provide more public services" (2012, 151). The public policies have been formulated and implemented in different sectors. The Smart Cities, or the Specialized Cities as named by Khdor, in the region are "important sources of [policy] innovation and economic growth, as well as vehicles for globalization" (2012, 152). There is a diffusion of SC phenomena occurring in the Gulf region (2012, 149). Indeed, governments are not different from individuals or organizations when comes to innovation (2012, 172). Although there are several projects around the world similar to the Smart Cities in the Gulf, like Silicon Valley and Kerala's Smart City, SC in GCC are built from scratch rapidly (2012, 152). There are many projects in the region, such as Education City in Qatar, Healthcare City in Dubai and Masdar City in Abu Dhabi.

The concept of free zone is crucial to the understanding of smart city. "A free zone is one with multiple economic incentives, opportunities and benefits" (Khodr, 2012, 155). The majority of Smart Cities in the Gulf are free zones. However, those without population are mostly called enterprises, while others are called cities only for marketing purposes. Some Smart Cities built for political, economic, religious, ethnic or education reasons. The use of terms such as bay and park is common (2012, 155-156). Nevertheless, there are several internal determinants for such innovation. The first determinant is the political system. The rulers of this region are the policy entrepreneurs who have greater latitude to create change. Dependence on fossil fuels, which will eventually run out, constitutes the second internal determinant. Overcoming social problems emerged from dependence on foreign workforce and planning to improve the education and heath sectors are the final determinant (2012, 173). On the other hand, the diffusion is a result of geographical proximity. Some states already adopted these innovation policies and proximate countries tend to have the same economic and social problems and aspects. It is also the result of high level of communication between governmental officials. They learn from each other but also compete with each other (2012, 173).

Comparison of Masdar/Abu Dhabi/UAE and Lusail/Doha/Qatar

In the past decade, Qatar has transformed itself into a major hub for numerous economic and cultural activities. What is more, Qatar becomes extremely attractive as a place for foreign investment. Qatar's national vision for the year 2030 consists of basic foundations focus on the necessity of continuous social development in order to achieve a fair and safe society based on upholding human values and social welfare and aim to maintain and improve its economic standards in order to further strengthen its national economy and remain competitive, while continuing to secure and satisfy the needs of its citizens. Qatar plans on fostering investment in environmental development in order to maintain a balance between economic growth and environmental protection and awareness. Lusail City project is planned, designed and implemented in accordance with Qatar's national vision for the year 2030. It blends modern facets of architecture with traditional values and norms. Above all, it is a project inspired by the mystique of Qatar's heritage. Qatari Diar Real Estate Investment Company was established in December 2004 to support Qatar's growing economy and to co-ordinate the country's real estate development priorities. With a mission to become the most effective and trusted real estate investment company in the world, Qatari Diar strives to create developments that are sustainable, quality-built, well-planned and ultimately desirable places to visit, work and live.

Lusail City is a futuristic project which will create a modern and ambitious society. The smart, peaceful and inspirational environment combines artistic elements of architecture with various practical and versatile services in order to satisfy all the needs of its residents and visitors. Lusail City extends across an area of 38 square kilometres and includes four exclusive islands and 19 multi-purpose residential, mixed use, entertainment and commercial districts. It is a comprehensive arena with leisure spots, residential buildings, commercial towers, avenues and public ports. Lusail, a true city of the future, accommodates 200,000 residents and 170,000 employees; it will also welcome over 80,000 visitors. The total estimated population of Lusail will eventually reach 450,000 people. The city also includes numerous residential units, office buildings of various sizes and 22 hotels with different international star ratings, making it an element of attraction for investment in Qatar.

The United Arab Emirates is comprised of seven emirates. By 1971, when the U.A.E. officially declared itself an independent federation, Abu Dhabi was the natural choice for capital of the new country due to its wealth, its undisputed political clout as well as the strength of its leaders' local and foreign alliances (Nasra & Dacin, 2009). Although economic developments are ongoing in all emirates, most of the projects are concentrated in two of the emirates: Dubai and Abu Dhabi. UAE has started a process of ''transforming oil wealth into renewable energy leadership, and has set the long-term goal of a ''transition from a 20th Century, carbon-based economy into a 21st Century sustainable economy (Reiche, 2010). In early 2007, The UAE government has announced the government strategy for the coming years, outlining activities and ambitions. Different emirates have developed their own economic strategies, e.g., Abu Dhabi Economic Vision 2030 and Dubai Strategic Plan 2015.

Although the dynamics of policymaking might be difference in Qatar and UAE, the planning regimes and general policy model is very similar. It all starts with a leadership vision: general policies become part of this vision; a decision is taken; and policies are formulated, adopted, then implemented, and often evaluated. Channels of communication between the public and the government official are diverse, though the interactions between the stakeholders are unique, and the public participation and the institutional legislative power are deferent in scope, size, and nature. Furthermore, the participants operate in a special policy milieu and use mechanisms to affect the making of the policy that are specific to the country's political traditions and recent political developments (Khodr 2010).

Businesses and governments are starting to recognize the role of technology in meeting the goals of urban infrastructure provisioning both today and in the long term (Gregor Harter& others 2010), that leads to increase the reliance on smart cities in United Arab Emirates and Qatar. Masdar City is an eco-city, located in the vicinity of Abu Dhabi in the United Arab Emirates. It is a project of Abu Dhabi's state-run Masdar Corporation, in partnership with Foster + Partners, a prominent British architecture firm (Isabelle Whitehead 2009). Lusail City is one of the most ambitious and ground breaking concepts of Qatari Diar Real Estate Investment Company, which aspires to become the most internationally renowned company in real estate investment.

Three years before the government of UAE's announcement of the first renewable energy policy in 2009, Abu Dhabi made a decision to initiate 'Masdar Initiative' (Mezher and Park, 2012, 73). Masdar means 'the source' (Snyder, 2009, 2). This initiative aims to "advance renewable energy and sustainable technologies through education, R&D, investment and commercialization" as mentioned in Masdar website – About Masdar. Masdar City is part of Masdar Initiative. For implementation, Abu Dhabi created Abu Dhabi Future Energy Company (ADFEC), later called Masdar Company in 2006 (Mezher and Park, 2012, 74). ADFEC is mandated to drive the initiative. Masdar was established by Mubadala Development Company; a public joint stock company founded by the government of Abu Dhabi (Perkins, 2009, 11), and designed by Foster + Partners; a British architectural firm for feats technological wizardry (Ouroussoff, 2010). The city is "presented as a solution to the

equally pressing current problems of resource depletion and climate change" (Snyder, 2009, 2). The city is US $22 billion free zone located 17 km from Abu Dhabi's downtown (Mezher and Park, 2012, 74). The city is built to meet different purposes. Contributing to sustainable human development, changing the position of UAE as technology producer and developer, expanding Abu Dhabi's role in the global energy market and economic diversification are the main objectives of this initiative (Mezher and Park, 2012, 74).

Indeed, the economy of the emirate is mainly dependent on exporting fossil fuels and the government has started to strengthen the knowledge-based economic sectors. Thus Masdar City does have a remarkable role in this transition period from carbon-based economy to sustainable economy. The climate change has also created a global demand for alternative sources of energy. Hence, Masdar City as the vital technological cluster in the region will make Abu Dhabi a global energy leader. From a policy perspective, Masdar City will provide the government of Abu Dhabi with an opportunity to contribute to global policy development. (Reiche, 2010, 379)

The city will include "apartments, laboratories, factories, movie theaters, cafes, schools and a fire station – everything a normal city contains" (Snyder, 2009, 5). Masdar City will become a homeland for a population of 90,000: 40,000 residents and 50,000 daily commuters (Reiche, 2010, 379). The city incorporates traditional Arabic architecture, central social space and agricultural zone. "The city is raised 23 feet off the ground to allow for transportation and removal networks underneath." (Snyder, 2009, 5) Cars are prohibited in Masdar City (Snyder, 2009, 8). Resident will use the personal rapid transports (PRTs) and can choose to walk or ride bicycles. Commuters will have to park in offsite lots and take light rail transportation into the city. (Snyder, 2009, 6)

Masdar City embraces the One Planet Living Principles, which were developed by BioRegional and World Wide Fund for Nature. Masdar City provides a chance to implement these principles. Masdar City's main principles are to establish a free-carbon zone that uses energy from renewable resources, minimize and recycle waste, create sustainable transports, preserve culture through building and city design, ensure fair wages and working conditions, and to design building to integrate health and happiness (Mezher and Park, 2012, 77). Additionally, the first component of the urban sustainability strategy of Masdar City is economic. It is related to real estate development, intellectual property ownership and human capital. The second component is environmental which related to renewable energy, green buildings, and intelligent transportation. The last one is the social benefits generated from living in Masdar City. (Mezher and Park, 2012, 78)

Masdar has several subsidiary companies. Masdar Institute of Science and Technology is the key pillar of Masdar City (Reiche, 2010, 380). Masdar Institute was established in 2007, in cooperation with Massachusetts Institute of Technology (MIT) (Mezher and Park, 2010, 76). This unit is the "Middle East's first graduate institution dedicated to the research and development of sustainability and renewable energy" (Perkins, 2009, 11). Masdar Institute building uses at least 70% less electricity and potable water than any similar conventional building. (Mezher and Park, 2010, 76)

Another unit is Masdar Carbon, which aims to create a significant reduction in Abu Dhabi's carbon footprint. The unit will develop a "multi-dollar national carbon network". Masdar Carbon will be offering technological assistance, project owners, and carbon management and finance. Masdar Power invests in renewable energy projects. It will help power companies to add renewable energy to their generation mix, while supporting cleantech companies with expertise and capital (Mezher and Park, 2010, 75). The last unit is Masdar Capital that aims to build a portfolio of cleantech and renewable energy companies and to provide them with capital and expertise. It targets investment focused on clean energy and environmental resources and services. (Mezher and Park, 2010, 76)

The actual objective of Masdar City is most commonly criticized. Some scholars believe that Masdar City is one of these several projects and plans to show off and impress the world (Snyder, 2009, 14 and Reiche, 2010, 380). The project of Masdar City only shows that the "region in more concerned with image than with environment sustainability per se" (Snyder, 2009, 14). Khodr argues that the major social aspects remain unclear and questions the ability of the city to attract 40,000 people to live within its boundaries. (2012, 160). Both Masdar and Lusail cities represents clearly what Kanter and Litow discussed about smart cities, where they "consider a smarter city as an organic whole—a network and a linked system. While systems in industrial cities were mostly skeleton and skin, postindustrial cities—smart cities—are like organisms that develop an artificial nervous system, which enables them to behave in intelligently coordinated ways (Chourabi and Gil-Garcia et al. 2012, pp. 2289-2297)."

Conclusion

A smart city would be a popular policy option for GCC countries. The main reason for investing in smart cities would be to overcome the rising problems that are emerging with the rapidly growing population in the urban areas. The role of government as an 'entrepreneur' in crafting those cities is remarkable as it enables the economic growth through the public-private-partnerships. However, the smart cities are not yet examined for success, only with time the real results will tell. A detailed comparison of Lusail City and Masdar City is provided below in Table 1.

Table 1: A Comparison of Lusail and Masdar City

Category	Masdar City	Lusail City
Country	Unite Arab Emirates	State of Qatar
City	Abu-Dhabi	Doha
Description	The design is based on a fusion of the traditional Arab walled city with innovative modern architecture	A Futuristic project aim to create a modern and ambitious society. Artistic elements of architecture with various practical and versatile services.
Vision	Promote renewable energies & Develop sustainable and renewable alternatives to fossil fuels	A show case for urban development. Lusail city is to be as a conscience of sustainable development
Target Segment	Citizens Investors and development partners.	Citizens Investors and development partners.
Competitive Advantage	Carbon-Neutral Zero-Waste City Promoting sustainable energy	Integration to QNV 2030
Launching Year	2006	2008
Completion Year	2025	2019/20
Challenges	The question of governance sustainability highly relevant; The social and Governance Responsibility is an ambiguity matter.(Dr. Khodor, 2012) The challenge of substitution between natural resources and zero carbon economy (Whitehead, 2011) Residents will not own cars, therefore this will result in severe limitation on personal freedom. (Snyder, 2009). The dependence on Rail system will create a challenge for business shipments. (Snyder, 2099)	The question of would the city attract the targeted number of residents and visitors? Another challenge is how it will serve to mitigate the urban rapid population increase while it only serves a certain segment of the society, the elite of the community? As Lusail is a city inside a city, would its infrastructure, prevent from inheriting the current situation of bureaucracy and work delay in some of the offices of the country? Qatar may face the challenge of

	Some of the technologies Masdar city is designed to use have not been examined to sustain and work efficiently in harsh deserts conditions. (Snyder, 2009) The heavily relying on ICTs remains a challenge for two reasons: The ICT changes and develops rapidly, and in case of natural disasters how would human react and live there lives. (Allwinkle, Cruickshank, 2011)	human resource employment not on worker level but in hiring levels. (Mansfield,2012) The heavily relying on ICTs remains a challenge for two reasons: The ICT changes and develops rapidly, and in case of natural disasters how would human react and live there lives. (Allwinkle, Cruickshank, 2011)
Role of the State	Power is mainly with in the ruling families and hence the full legal control of oil and gas resources is with local government. Therefore, the state in UAE has a great role. (Reiche,2010) The State is diversify the country's investment therefore inviting heavily in SC such as Masdar City, to protect its position as leading energy player in world and to help develop the country knowledge base economy. (Perkins, 2009) The state of UAE is investing in Masdar smart city and other cities in other states in order to diversify the investment portfolio of the emirates. Masdar smart city opens opportunities in the market by attracting international investors and joint ventures. Using this strategy is transforming the state role to be institutional entrepreneur and economically active player to cope with the globalization of the market. The states uses the PPP approach as the constructions of the city is being done via international companies, joint ventures with British companies.(Reiche,2010)	Adopting this policy has embodied Qatar National Vision 2030 in the field of real estate development It's a life evident of the government major initiatives towards building a diversified market, relying on non-hydrocarbons investments to maintain a sustainable welfare to its community. The state is applying the approach of Private joint venture and Public private partnership through Qatari Diar and Lusail subsidiary. As Qatari Diar being a subsidiary of Qatar Investment Authority, the state has guaranteed proper governance is taken in place and that the companies are operating us to the states standards and aligned with the national vision. The state is adopting this policy to mitigate the problems generated by the urban population growth by connecting the infrastructure in a sustainable technology. Throughout the deployment of ICTs, the state will improve its smart governance. (Chourabi *et al*, 2012)

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