PAPER • OPEN ACCESS

The Urban Capitals: A New Guide for Sustainable and Smart Development

To cite this article: Rashaa Malik Musa Al-Khafaji 2021 *IOP Conf. Ser.: Mater. Sci. Eng.* **1094** 012026

View the article online for updates and enhancements.

The Urban Capitals: A New Guide for Sustainable and Smart Development

Rashaa Malik Musa Al–Khafaji

University of Babylon, Department of Architectural Engineering

E-mail: eng.rasha.malik@uobabylon.edu.iq

Abstract. Global attention is focused on transforming cities and urban areas and trying to trace their success path. This research assumes that cognitive development is based on what is termed knowledge capital, a framework that includes a combination of core capital for the operation of knowledge-based economic processes and mechanisms to enhance them in the areas of product development. This research aims to determine aspects of development and the foundations and mechanisms of knowledge cities. The indicators include the knowledge cluster, and knowledge diversity was identified as a product of the urban capital's implementation, measured by indicators of urban, social, economic, and cultural dimensions of urban capital. The indicators derived from the theoretical framework were applied for research in several international and Arab experiments in the applied part of the research and applying these indicators within a local situation.
Keywords. knowledge city strategies, Knowledge capital, smart KBU, development, knowledge cluster, knowledge diversity.

1. Introduction

The term Knowledge-based urban development (KBUD) represents knowledge-based urban development, refers to the reliance on economic growth and development based on intellectual assets. The characteristics of the third wave of defined transformation (the knowledge economy) have been analyzed following the new urban development conditions, namely, urban development based on multidimensional knowledge. The third cognitive transformation has its motivations that drive its course as it penetrates the individual's three levels and the relationships and means. It is about how knowledge is collected, shared, and disseminated. "Cities are classified according to their historical course to three main groups, including high-tech and service-intensive centers that have not dominated industrial activity, historical, educational, governmental and commercial centers, economic, political decision-making centers, and cities that have continued to flourish" [1, p. 15]. Cities of knowledge are the ultimate goal, and therefore, the knowledge society's tool to apply its principles, distinctive features, and cognitive processes. "The twenty-first century (a century of knowledge) after the Second World War, more than 50% of the GDP of several industrialized countries shifted from resource-based development to knowledge-based development. This trend supported by international organizations crucial to a knowledge-based economy at the global level" [2] The transformation represents the rehabilitation of the urban system affected by time and space. Within two decades of the emergence and consolidation of the knowledge economy concepts and the knowledge society, several cities worldwide have promoted their new urban identity cities of knowledge, such as Barcelona, Boston, Helsinki, Ottawa, and Singapore. Knowledge City has also attracted the attention of the urbanization

and urbanization of the concept of urban development and knowledge development. It represents a turning point in the perception of the city's characteristics in the knowledge-based economy era. The potential for the development of knowledge activities is embodied in a specific space in the nature of knowledge capital and refers to the capacity of space to attract knowledge and to intensify the opportunities for exchange and dissemination or the advantage of activity and individualization in a specific environment. Urban Capital is an integral part of the place's spatial, social, economic, and cultural dimensions. It is linked to the objectives of a knowledge-based economy and is useful in developing opportunities for incubation. It also represents factors that knowledge workers place in their calculations when assessing their preferences. The pillars of urban capital are to demonstrate the availability of knowledge society requirements in the urban environment and their contribution to promoting other capital elements (human, educational, administrative, and technological). The city's authority needs an integrated framework for assessing the complex reality of urban and regional performance in knowledge-based urban development approaches. The cities worldwide tend to adopt this concept to be within the scope of global competition.

2. Attributes of integration in the dimensions of urban cognitive development

The knowledge-based urban development is based on the intensity of knowledge activities with high added value and is derived from the availability of the bases of incubation, operation, and development of knowledge capital, and the promotion of competitive advantages. "Knowledge City is a sophisticated concept of smart city and information city. To the overlap of technology and modern management systems based on the availability of a flexible, clear and effective management structure and able to absorb the technology "[3] "Urban cognitive also a concept that represents any city or urban or regional entity that can assimilate a community policy for development based on the principles of education, innovation, environmental conservation, and technological development, and represents a universal and flexible concept according to the nature of the application and its different means" [2] Because the concept of cognitive urban development results from diverse application contexts, the literature on the concept does not provide a clear and consistent presentation of knowledge cities' characteristics (or which have pursued this approach to development). However, within the context of the adopted research (based on the concept of integrating knowledge and urban capital). These cities aim to "maximize the interaction between the different parties and to exploit the means available to create balanced inputs for the creation of value-added, and to reflect this interaction in a unified vision of the city" [4]

3. Urban cognitive development strategies

The strategies are several objectives that have been developed in the knowledge cities development initiatives. These strategies are announced by several cities worldwide, including the achievement of prosperity, justice, and empowerment of the urban society, the sustainability of the accumulation of knowledge resources based on human innovation, and the improvement of means and building relationships that support the development of this resource. This overall goal translates into several actions to enhance the city's role in the global knowledge network, including developing and enabling an environment for entrepreneurship and embracing new ideas [5]. The other objective is to create a positive impression that reinforces the city's position in the global competitiveness map attracting ideas, individuals, and investments. The objectives of Knowledge City are to integrate the economic, social, cultural, and environmental objectives within the concept of cognitive development, where they are concerned with the physical effects and economic benefits and the moral and tangible impact it has on the population. It is a long and arduous transformation process to Knowledge-based urban development. "The knowledge development strategies developed by several cities around the world have led to a multidimensional structure of the city by integrating economic, social, cultural and environmental dimensions into integrated frameworks" [6, p. 125]

3.1. Knowledge of clustering support strategy

"Key common factors explain the rapid proliferation of technology clusters in the 1960s and 1970s, especially in the United States, where local development policies have been used to support science

parks and small business incubators that share key factors such as adventurous investment, job creation, and innovation" [7, pp. 6-7]. "These organizational constituencies possess the ability to create, and manage new industrial branches and to be central places in the knowledge city" [8, pp. 9-10]. "The strategy to support knowledge grouping stimulates on-site convergence between a range of activities that involve the introduction and extraction of knowledge in different locations of cities and aim to be attractive poles for knowledge flow" [9, p. 1]. Innovation engines, as they represent a pool of activities and businesses around well-known educational institutions, create a talent pool and strengthen ties with communities " [10, p. 67]. "Knowledge-intensive industries are intended to be part of a cluster or a site cluster in order to sustain innovation resources" [11 p: 453]. So clustering is concentrated in cities by increasing the productivity of companies within the scope of the assembly and accelerating industrial innovation, benefiting future growth, and building new partnerships" [9, p. 2]. "To achieve mutual benefits from being in the same place, and to benefit from the reputation of the global community" [1, p. 11]. The strategy of supporting knowledge groupings with human and educational capital mechanisms is in line with the development of knowledge development.

3.2. Knowledge networks building strategy

"The traditional model structure of the city includes the presence of the center, the periphery, the central urban areas, and the rural areas, and this is contrary to the new multi-centers models and forms imposed by networks of cities and regions of knowledge, whose features are taking shape globally" [12, p. 6]. Knowledge City represents the spatial formulation of the global economic system or the allocation of city sizes. Traditional concepts in urban planning tend to view the city as a unit confined within specific administrative boundaries and subject to physical intervention at the local level. The concept of Knowledge City is not confined to the physical planning of the sites of knowledge groups, but also to strengthen communication and enhance full control (enhanced by legislation) for the design and management of private and public projects and investments" [13, p. 7]. "Networks mean enhancing functional relationships affecting products and services, and the value of the connection may be greater than the actual value of the product" [14, p. 13]."Networks are also formed by activating diverse service groups and fostering regional or national innovation chains." [15 p. 440] "Networks support knowledge generation and transfer activities within and outside the pool through two channels. The first channel obtains privileges, patents, information, expertise and techniques, and connects the second channel between local parties (government, society, for program implementation, monitoring and performance evaluation "[16, p-p. 288-289]."Networks are achieving ratios of space replacement between the cities virtual and urban network systems" [17]. "Working groups bringing together stakeholders from the population with administrative and executive bodies are established to guide the planning of development projects." This will implement social and economic programs and contribute to monitoring and performance evaluation" [18]. The strategy is based on the mechanisms of technological capital that contribute to the formation of virtual nodes (knowledge spaces) in several environments (in the learning environment, for an example) to increase the mutual influence between knowledge groups and the world. "Some cities have a contractual position in the global telecommunications network and services only, and the communities of some cities are more suitable environments for business and a target for global investment because of their technological progress" [19, p. 139]. "Cognitive networks are the product of cross-paths and innovation systems, convey information, create information, and develop new ideas by connecting new parts to the network or joining separate parts. This deepens the process of innovation [10, pp. 70-71], "Th0e strategy supports the formation of alternative paths through which the network pattern is integrated with the urban system of the city" [20, pp. 28-29]. The network building strategy is the city's vision from the perspective of maximizing access to intensifying the active exchange of information, collective learning and innovation, and a smart reform of residential and commercial uses accordingly.

3.3. Urban capital support strategy

Knowledge City means creating a local and global environment open through practical steps whose primary material is the raw site features such as history, the natural environment, lifestyle, or architectural intervention. For example, "the climate is characterized by talent and tolerance" [5, p.

57]. (These attributes reinforce knowledge exchange). "City branding is the term that interlinking elements according to the knowledge City concept, i.e., introducing the city with a new attractive identity based on several elements such as policy, city management, and external relations, tourism and private sector institutions and agreements, investments, events and culture, heritage and urban landmarks, and the community " [21, p-p. 34-35], there are three main strategies include:

- Enhancing the urban dimension:
  The strategy focuses on motivating urban features that conform to declared or latent desires and are consistent with the needs of the knowledge society, particularly in intensifying constructive interactions for knowledge production. It shows through building links among knowledge communities (such as scientific spaces and academic areas) or develop a common urban contract between the knowledge society and urban society. The city's creation as engines of urban innovation as well as its other functions " [16, p. 143], includes the urban dimension (as noted in the previous chapter). The quality and integration of infrastructure services, the development of transportation, and the transport system's infrastructure, and all related to the sustainability and development of the housing market (both in quantity and quality). This strategy's most important actions are to enhance the quality of the superstructure and sub-structure of the university buildings and the advantages associated with the urban structure and the urban scale. These actions make the city a preferred place. As pointed out, the objective of the existing research is to define a general framework for transforming cities into cities of knowledge and defining a general framework to clarify the concept of knowledge cities and their indicators. Research according to its objective to study all variables of the urban dimension). The literature on the subject of Knowledge City and its applications focuses heavily on two pillars. The first is the "stock of real estate and land available for use by the strategies as tools in spatial restructuring, particularly the types of housing available in cities and enhancing the housing stock to receive the flow of knowledge elites" [10]. Therefore, assessing the available housing stock is related to the pattern of knowledge groups in the city, such as attractive universities, R and D institutions, and technology-intensive industries or creative industries (referring to the pattern of knowledge the city aims to attract). The overlap between lifestyles (work, recreation, and housing) is the cornerstone of the urban capital support strategy that catalyzes society's knowledge. This depends on the other urban variable, namely the promotion of mobility and access options that provide more significant opportunities for inter-urban interaction and integration and the promotion of integration. To guide change in land use and transport network to enhance urban attractions, availability of areas for localization of individuals, expansion of activity (according to the type of activity), and housing options that meet the preferences and desires of target groups in urban development.
- B. Enhancing the social dimension:
  "The strategies of supporting the social dimension encourage the attractiveness of culturally diverse young people and the highly qualified and talented groups, although there are many social groups that are culturally heterogeneous, which places the process of planning the modern city in front of the challenges of meeting the demands and practices of various groups" [22, p. 33]. Therefore, knowledge strategies aim at supporting flexibility and transparency in various fields to provide equal opportunities for different groups to participate and express themselves.
- C. Enhancing the economic dimension:
  "Economic diversification contributes to building a stronger base, and this is a historical reality and the emergence and development of strong urban centers" [23, p: 22]. While the expansion of the city's absorptive capacity depends on the diversity of labor markets and service activities, and production patterns, which is the contemporary focus of urban growth strategies based on knowledge-intensive industries (Hi-tech & creative) industries" [24,p: 34]

The strategy supports the growth of technology-intensive activities and guides development in traditional productive sectors. The availability of a central education strategy that includes a vision consistent with the knowledge-based economy based on a human base that is qualified to develop the sectors on which it is based to achieve a sustainable economy" [13, p. 6].

- D. Enhancing the cultural dimension:

  Culture is the cornerstone of knowledge cities; cities of culture that stimulate the creation of collective innovation, and knowledge-based strategies are containing the mechanisms of marketing the local culture globally" [16, p. 230]. Cultural assets are factors influencing the transformation of many cities such as Amsterdam, Barcelona, and Singapore to exploit their historical, social and cultural specificity for renewing their urban identity " [23, p: 10]. These unique sites contribute to investment opportunities. "Through the availability of support from large financial institutions, international consulting firms for architecture and design, international advertising and media companies to strengthen the city's resources in this area" [24, p: 125]. "Such as the conversion of contemporary cultural facilities such as museums from closed and exclusive spaces to specific social strata to engines of innovation relevant to the activities of human societies, from negative to real active" [25, p: 105]. The three knowledge cities' strategies work together (following the arrangement mentioned above or as required by improving the urban status and strengthening their strengths). The network building strategy stimulates the flow of goods, information, and people across the network from one region to another to enhance the accessibility factor. Strategies for supporting urban capital on the availability of favorable conditions in the urban environment attract employment and global investments, thus strengthening the foundations of knowledge clusters. The strategy of supporting urban capital works on developing urban centers and the globalization of the city's urban center and disseminating them globally, thus contributing to establishing complex networks of mutual benefit. So, Knowledge City strategies are an integrated vision for knowledge capital performance, see Figure 1.

Source: Author's own according to [8, p. 9]

Figure 1. Integrated perspective of knowledge development strategies.

4. Formation of a general framework for measuring indicators of cognitive integration factors

The integration of the city represents the highest degree of complexity and requires changes in the extent of the functional relationship to support the work of the strategies to penetrate the traditional boundaries and cooperation in practical applications. This indicates that the advantage of the site can explain the relative development of applying the concept of knowledge cities in some regions, "Integration involves the levels of organizational, actors and the subjects for which interaction occurs. The time dimension of integration is to accept visions and to assess the consequences and costs of alternative policies in the short and long terms. "Integration in its spatial dimension implies the integration of regional and local levels for policy coherence" [16, pp. 385-388]. The integration of cities depends on two essential characteristics: the clustering characteristic (the presence of cognitive capital elements, the accumulation, and growth of knowledge capital elements in the city). The character of diversity (based on diversity of urban capitals, which consists of; social, economic, and cultural capitals) corresponds with the needs of a knowledge-based economy that provide a rate of flexibility sufficient to deal with global economic changes, and each will be tailored according to the indicators of knowledge capital.

4.1. Indicators of knowledge conglomeration
The knowledge cluster characterizes the city's reading according to the vocabulary of clusters and network building. The availability of human and educational capital is the necessary infrastructure for the emergence of knowledge gathering and the building of networks between these communities within local, regional, and global channels. This is a process based on the existence of technological and administrative capital. "The bloc is a feature that has been synonymous with economic activities throughout history and a key factor in traditional economic theories that sought to explain the optimal location of factories and their proportion to the availability of resources and reduce the cost of transport of raw materials and products." [26, p. 351]

4.2. Knowledge capital indicators to support the cognitive knowledge strategy
The association is formed through the convergence and interrelationship between educational activities, research activities, and manufacturing activities. The networks rely on interrelationship "to pass and improve the horizontal links that extend across the boundaries of the institutional organizations to which individuals belong or the vertical links within the firm's organization" [27, p: 38]. Cognitive knowledge indicators reflect the knowledge-sharing characteristic by demonstrating the degree to which knowledge institutions and human resources are concentrated in specific areas of cities and specific cities and represent indicators of assessment of cities at the global level, including the following indicators:
Networks rely on a strong administrative capital that supports the complementary effects of spatial

4.3. Knowledge Capital Indicators in Support of Knowledge Networking Strategy
convergence (locally interconnected communities) on the one hand, and the availability of means to transfer and exchange knowledge (to support these communities globally). Networks rely on a strong administrative capital that supports spatial convergence's complementary effects (locally interconnected communities). The availability of means to transfer and exchange knowledge and networks rely on the existence of technological infrastructure and institutional infrastructure supporting their paths. There is a state of integration between the concrete and the virtual so that the interaction is often a physical and sometimes non-physiological character, forming the pattern of the network. This type of access to a steady-state but depends on the concepts of utility/cost and how successful the interaction between the two systems Urban and Virtual) " [24,p: 128]. Table 1 shows the indicators of the measurement of the cognitive conglomerate in the situation.

5. Indicators of knowledge diversity
The diversity feature is a reading of the city's identity vocabulary developed throughout history and represents the city's ability to meet a wide range of population requirements and opportunities to attract diverse groups of individuals, activities, and investments and rely on multidimensional mechanisms. The strategies of supporting the capital city to activate the site's role are attractive, and this role varies according to the size of work and the nature of the activity. "Large organizations can rely fully or partially on the organization of high-level work and remote management while small organizations to take advantage of local sites (as near universities)" [28, p. 51]. Creativity also examines unique sites and explains the diversity of urban capital vocabulary identified in the previous chapter, including:

- Indicators of urban diversity.
- Indicators of social diversity: [15, p. 4]. As discussed in Table 2-5, social diversity is enhanced.
- Indicators of economic diversification:

    "Advanced urban environments are characterized by heavy non-standard production and knowledge-intensive services to support advanced research centers and networks and their accessibility to higher levels of functional complexity and overlap between activities, and is reflected in the diversity of production patterns" [29, p. 24]. Indicators

of cultural diversity: The activity in Knowledge City depends on the attraction of material and human resources. The cultural factors associated with the city's climate and the prevailing impression or impact on visitors are important factors contributing to creating an enabling environment for entrepreneurship and adopting new ideas [30, pp. 12-13].

6. Application of theoretical framework indicators

In this part of the research, the research indicators are to be used by linking the general strategies of urban cognitive development with spatial features. These spatial features are clustering and diversity to achieve the concept of cognitive integration as mentioned in the primary research hypothesis and are measured by explanatory indicators organized according to human, educational, administrative, technological, and urban capital. These indicators will be applied to four different cities: Shanghai in China, Munich in Germany, Riyadh in Saudi Arabia. These three cities had clear KC strategies, and they represented different contexts, which are subject-specific indicators to assess with high credibility. Hila in Babil province in Iraq represents a local context. This application is the first of its kind in the field of urban knowledge development research and studies in Iraq.

6.1. Shanghai city in China

"Shanghai is one of the largest China's cities in terms of population, the country's economic and industrial capital, and one of the important ports on the Yangtze River. The city covers an area of 100 kilometers from east to west and 120 kilometers from north to south" [31, p. 169]

"The city covers 0.06 percent of China, and its population accounts for 1 percent of the population, contributing 5.5 percent of GDP, 12.6 percent of national tax revenue and attracting 10.8 percent of total FDI flowing into China"   [11, p. 6]. The analytical framework reached, and the indicators contained therein were applied to the city of Shanghai. Table 1 shows the obtained results.

Table 1. Cognitive consciousness and urban capital diversity in shanghai city.

Shanghai Experience - Development of Pudong District			
3. Diversity - the strategy of supporting urban capital		Cognitive conglomeration	
To implement new urban policies A nucleus for a global area and a suitable test field(Chen, 2014)	Urban diversity	There are 18 academic institutions (faculties(and eight technology parks(Zhangjiang Hi-tech Park, Important national centers include: Shanghai Super Computer Centre, National Light Source Project in Shanghai, and Shanghai High Polymer Material R&D Centr Caohejing National Industrial Park, Zizhu Science-Based Industrial Park, Songjiang Science & Technology Par (Chen, 2014)& (Yawei,2016)	1- Knowledge grouping strategy
Availability of land suitable for development and economical prices			
36% green land and 14% forest (Zhong, 2012)			
Low-density housing area		Where 70% of the industrial clusters are technologically intensive, and 64% of the investments are based(Chen, 2014)	

Multiple navigation options due to the presence of the international airport and seaport and connecting the area in ring roads with the rest of the city (Ziye Na, Liu,2012)		The existence of professional and technical schools (LI Nana,2012)	
The city has around 3 million knowledge workers and information technology specialists. More than 40 million passengers travel through the airport every year, but the city is experiencing a decline in ethnic diversity only 4.3%(Chen,2012)	Social diversity	Local Creative Gatherings	
Shanghai is a national industrial and commercial hub It has also developed the creative and cultural industries as a film industry under the central state's management. Shanghai is a national industrial and commercial hub It has also developed the creative and cultural industries as a film industry under the central state's management. (Chen,2012)	Economic diversification	Four community management mechanisms were implemented at the site, including planning, financial and tax support, availability of essential services, and free sites	2 - the strategy of knowledge networks
The architectural heritage of the ancient city of Shanghai in the (Bond region) and landmarks of the French colonial phase Includes several green spaces and nature reserves EXPO Architectural Area The modern buildings and the Shanghai Tower were constructed as a symbol of the Shanghai International City (Walcott&Parnell.2006)	cultural diversity	Connects the area to a universal cable network	

Source: Author's own

6.2. Munich City, Germany
 "Munich is the third-largest city in Germany and the capital city of Bavaria. Munich occupies a major position within the global knowledge society. Knowledge is an economic, social, and cultural resource that is available and essential for industrial development. Its population is 8% of Germany, and its area is 310 km^2, representing 6% of Bavaria. However, includes nearly 50% of the population of the region and 60% of the total labor force, Germany adopts the federal system, which includes the authorities at the national level and the level of regions and cities, and planning authorities are organized according to the hierarchy of responsibilities." [30, p-p.1-2]

Table 2. Cognitive consortium and the diversity of urban capital in Munich.

Munich Experience - The three development sites (railway, Raim, and central area)			
3 - Diversity of urban capital - the three development projects		Cognitive conglomeration	
-A varied and mixed residential stock with a long-term vision for job opportunities (the development of the inner city center provides 3000 residents and more than 5000 work sites(	Urban diversity	There are several different knowledge groups in the city (universities, R & D institutions, and large corporations). The city	1 - the strategy of cognitive groupings

- Creating a new and diverse urban corridor in the east of the city at the new airport for economic development, where 7% of the city's population lives and 10%. (Scholl& Al Awadhi,2016)		has the highest attractiveness of human capital nationwide (Thierstein, S.Reiss-Schmid,2008)	
-Transport infrastructure and the introduction of sustainable transport attracts an increasing number of mobile passengers around the city (more than 10% of trips through Munich use bicycles and aim to increase the proportion to 15% -Munich station receives 350 trains a day, and the city has a good public transport system, which is a dense network of subway and tram - Traffic orientation for more than 23 thousand workers during the city,			
The city has transformed the land shortage into an added advantage (use modification and development of areas). Development opportunities are spread throughout the city and include diverse opportunities for housing, work, recreation, and tourism			
Is an important center for the financing of ideas and projects at the regional and global levels Is a destination for qualified individuals and a center of attraction for diverse migrant workers within the higher education sector. The city community is multi-ethnic, representing 17%	Social diversity	The Bavarian Campaign to Encourage Gatherings and create Platforms for Interaction of Researchers and Enterprises - An information port linked to the Ministries of Economic Relations, Higher Education and Scientific Research, which provides the necessary measures to support the interaction between research groups	2. Knowledge networks
The city is characterized by low crime rates (9 crimes per 100,000 people)		(Thierstein, S.Reiss-Schmid,2008)	
Directing development projects to integrate immigrant communities into the city community (low unemployment rates compared to Germany(The unemployment rate in 2005 was 8.3%, which is low compared to the unemployment rates in the rest of Germany. (Gritsai,2007)			
80 %of the jobs in Bavaria are concentrated in public and private services, public administration, banking, and insurance And high employment rates in the services sector Attract companies (Thierstein, S.Reiss-Schmid,2008)	Economic diversification	The ICT sector is interlinked with the educational and economic sectors The city is fully equipped with Internet connections and broadband services. Munich ranks first among cities in Germany in the availability of these networks	
The Urban Identity of Nineteenth-Century Cities	cultural		

Holding scientific and commercial exhibitions in these development areas	diversity
Organizing international events and exhibitions More than 30,000 businessmen from 100 countries participate annually at the Munich International FairThe Urban Identity of Nineteenth-Century Cities	
Holding scientific and commercial exhibitions in these development areas	
Organizing international events and exhibitions More than 30,000 businessmen from 100 countries participate annually at the Munich International Fair	

Source: Author's own

6.3. Riyadh City in Saudi Arabia

"Saudi Arabia's experience in developing a comprehensive knowledge-based development strategy is one of the few Arab experiences in this field, and its central applications have concentrated mainly in the cities of Dammam and Riyadh (an approach similar to that of Shanghai).

Riyadh is the political and administrative capital of the Kingdom of Saudi Arabia and includes;

the headquarters of the Royal Court and the Presidency of the Council of Ministers and various ministries and most of the central military and civilian government bodies. " Riyadh is one of the largest communities in the Arabian Peninsula and is one of the fastest-growing cities in the world with a growth rate of 2.4% With a population of 6,152,180 and an expected population increase of 8.2 million in 2030 " [32, p. 109].

Table3. Knowledge cluster and urban capital density in Riyadh city.

Experience Riyadh			
Diversity - Urban Capital Support Strategy		Cognitive conglomeration	
Five urban centers have been planned and initiated to meet the need for office space. These are urban areas with various activities and services ranging from 2 to 2.5 km2, serving between 600,000 and 1 million people in a 20 km radius	Urban diversity	24.3 %of the total number of university students in the Kingdom will be accepted. A faculty representing 29.6% of the total faculty members in the Kingdom's universities and institutions of higher education will be enrolled in five private universities in Riyadh besides 6 colleges, (Represented by the centers of industrial and commercial gatherings and companies)	Cognitive grouping strategy
Residential use of 11% and commercial 20% And mixed) commercial / office / hotel by 18%, accommodates 44 thousand people, and 12.5 thousand housing units, and the maximum height of buildings in the center of the four floors to 32 roles. (Riyadh Investment Climate Report, 1436H)			
The high proportion of foreigners' population was accompanied by increased regional segregation and gender segregation, which is a requirement of society and culture in general. The new centers were	Social diversity		

designed to include more open communities and behaviors from the local community(Al Atni,2015)			
The oil sector and associated industries are the mainstays of the Kingdom's economy: -31 %of the total industrial and commercial activities in the Kingdom are concentrated in Riyadh, representing 13.6% of the GDP -It will have 1000 factories and 600,000 commercial establishments -The city of Riyadh is building on its competitive advantage to encourage the information services sector and develop its infrastructure and tourism (hotel sector) (Riyadh Investment Climate Report, 1436H) Providing financial, accounting, and legal services at competitive prices - Social barriers and culture of the place of the constraints to the development of an open and integrated business environment with its urban environment is another obstacle to attracting investments in creative and cultural fields (Al Atni,2015)	Economic diversification	-Joint associations between the Chamber of Commerce and Industry and the Council of Real Estate and business incubators to form a supportive regulatory environment to start a new business -Expert systems in line with the services sector and the government sector - Increasing communication with global networks and reducing trade restrictions (Riyadh Investment Climate Report, 1436H)	2- Knowledge Networks Strategy
	cultural diversity	The rapid growth in the percentage of subscribers in the services of technology and the quality of services	

Source: Author's own

6.4. Vision of the capital elements of knowledge in the city of Hila in Iraq
The research examined the potential of applying knowledge-based urban development strategies within a local case study. Based on the previous studies that included the city, the analytical framework for KC indicators will be a baseline for investigating the possible locations for enhancing the cluster, and diversity characteristics. These studies include the structural plan for Babylon province. It included reports of five phases prepared between 2009 and 2010 and the master plan for Hila 2006. A survey of the case's reality to collect the required information from the government departments and use the latest available statistics about the city. The maps of the basic design of the city were analyzed, updated according to the reality of the situation and the composition of the activities" [33]. The data of population and employment were classified and arranged according to the previous knowledge capital tables. The results will be on the possibilities and opportunities for realizing the concept locally. For specific indicators.

Table 4. Knowledge city strategies - local situation.

The vision of the city of Hila - pivotal development			
3 - The diversity of urban capital - a field of urban - cognitive development in the center of the city of Babylon archaeological, which represents the extension of the river and passes the old city center	Cognitive conglomeration		
A nucleus for a universal area and a suitable field	Urban diversity	Location of the proposed northern city assembly	-1Cognitive gatherings
To implement urban development and rehabilitation policies		The proposed assembly location south of the city	The center of the northern and southern Hila gate marries the new city center
Availability of land suitable for expansion (East side of the city to accommodate the residential need		The educational capital is concentrated in Babel University - the main center, the Future College, and the Islamic University. Research and development activities can be strengthened in these universities	
And the diversity of housing patterns in locations near knowledge parks (multi-story housing) to suit the groups that the city aims to attract			
The existence of the river is a focal point that paves the way for the development of river transport			
(Structural plan of the province of Babylon — report stage 3,2010)			
The proposed master plan for the city proposed to empty the old residential use area and allocate it to trade, and by strengthening the supporting services for archeological tourism and maintaining the Babylonian archaeological site with drawing and implementing policies for preservation and urban development in the old Hila center. Population increase and discharge of the old area)		There are industrial clusters and areas for future industrial expansion	
(Masterplan report of Hila,2007)			
The expansion of the city towards the eastern side provides a balance in the exploitation of land on both sides of the river and relieve pressure on the west side, and requires expansion of the road network and services		The city is characterized by the concentration of vocational schools and technical institute (Hila Karbala road)	
(Structural plan of the province of Babylon — report stage 3,2010)		(Masterplan report of Hila,2007)	
The city is witnessing a decline in the ethnic diversity of only 2% of the foreign population	Social diversity	Developing existing and proposed industrial complexes around the site to be knowledge-intensive industries.	
(Structural plan of the province of Babylon — report stage 3,2010)			
Is a national industrial and commercial hub, and there is a shortage of human resources within these sectors in	Economic diversification	Implement participatory mechanisms for group management, including	2. Knowledge networks

addition to a lack of services, finance, and infrastructure (Health, education, culture, business, and hotels relative to their surroundings) (Field study by the researcher)		planning, financial and tax support, provision of basic services, and exchange of experiences Joint activities between higher education and industrial activity to develop human resources and vocational training for future human capital and provide a test environment for scientific innovation (Field study by the researcher)
Historical Monuments in the city of Babylon and the sites of Borsiba and the ancient heritage in the (city center) and landmarks of various historical stages It includes green spaces and orchards adjacent to the river and surrounding the outskirts of the city Lack of contemporary features Management of urban design to highlight these landmarks	cultural diversity	The entire area is covered by a network of Internet and mobile services
Babylon Festival is an important annual event and a title for marketing the identity of the city of Hila globally)city branding(Can enhance its activities and expand to include activities in other locations of the city (benefiting from the river link between the center of the ancient city of Hila and Babylon's archaeological site), which enhances the social, urban, and economic diversity of the city		

Source: Author's own

6.5. Discussion and analysis of application results on the four cities

- Comparison of the experiences of the three cities was carried out in accordance with its own concept of the application of the concept; the cities of Shanghai in China (China Industrial Center and its face to the world), and Munich in Germany (an ancient industrial city characterized by high social and economic diversification and excellence in research and development). Since Saudi Arabia has a national strategy for the transition towards knowledge-based development, Riyadh is the administrative and economic capital of the country and has a high percentage of social diversity.
- The three selected experiments represented various models of how cities deal with new urban challenges: the shift from the industrial economy to the knowledge economy and how urban capital influences the transformation process.
- Cognitive Consciousness Strategy: The implementation of this strategy was following the priorities of the local situation in the three cities as follows:
  Human Capital: The visions of the three cities focused on common factors such as raising the proportions of students, university graduates, higher education teachers, and increases in labor in knowledge-intensive activities

Educational capital: The three experiments focused on the availability of educational institutions, such as solid universities, research and development centers, and vocational schools, and pointed to the role of these institutions in attracting creative knowledge and young people (interfere with the achievement of social diversity and the availability of adequate housing)

- Network strategy: The implementation of this strategy depends on:

    Administrative capital: It seems to have a significant impact in translating cities' goals in increasing human capital and education, as each of the cities that have been reviewed has their administrative system and means to ensure the implementation of strategic visions on the ground. We find that Shanghai and Riyadh are characterized by a central strategy (Spatial focus is clear and oriented), while the experience of Munich has adopted multi-purpose projects and sites that place environmental conservation, balance, and social justice at the forefront of its objectives.

    Technology Capital: The Shanghai City Knowledge Strategy focused on developing a global communication node linking China to the world, taking advantage of the city's features and developing its digital infrastructure

    In the Munich experience, the Bavarian region's management, in cooperation with the city administration, is directing the projects that support innovation activities, especially the IT sector in the rest of the economic sectors.

- Urban Capital Support Strategy: Urban Capital has played its role in translating clustering and network strategy into spatial and functional policies in the three cities:

    Shanghai City: The impact of urban capital in its urban dimension (represented by limited land for expansion and multiple advantages of Pudong coastal area):

- The city has a dominant nucleus that includes the basic knowledge communities and activates urban capital dimensions (urban, economic, and cultural). Characterized by four types of clusters (including educational activities, research and development, technologically intensive industries, major creative activities, and local creative activities), each supported by particular policies, including financial support, management, and infrastructure.

- Cognitive gatherings were concentrated within a specific range located within the inner and middle ring roads around Pudong, and traditional industrial activities were moved out of this range, with the interconnection of a network of productive relationships between the knowledge-intensive activities within the assembly site and the industries outside the assembly site.

    Munich: Do not have a unified and central knowledge development strategy, but directed development efforts towards several sites spread within the city and its parties to achieve the following:

- Urban and Social Integration (Old Railroad Development Project)

- Enhancing urban and economic integration through the transfer of the airport site and exhibition structure in the Raim area

- Economic, social, and urban integration was demonstrated by directing the development of immigrant housing areas and creating a mix of land uses to enhance the housing stock and employment opportunities.

- Munich is characterized by high technological and administrative capital, which led to the development of urban efforts towards several sites of the city and its diversity (economic, cultural, and social construction)

    Expansion of the city and the establishment of sub-centers in the city of Riyadh:

- Adopted a central approach in the implementation of cluster strategy and the strengthening of networks through technological capital development, and adopted the expansion approach for creating independent economic centers, as follows: Expanded land served in sub-centers linked to urban and digital networks with the city center.

- Representing companies' locations, housing, and trade occupied by companies and expatriate workers and isolating them from the local city community. The decentralized planning

approach was adopted in the new sub-centers, where they were developed according to project criteria.

- The experience of the city of Riyadh focused on urban and economic diversity (the center of financial services at the level of the region), and the cultural dimension was the focus of the aim to create a global image of the city and an interface to review its development.

- Analysis of the potential of the city of Hila according to the framework of the three strategies:

- First: to identify sites to be the nucleus of knowledge groups and to study the reality of the situation are two main sites:

- Universities site (Babil University Center, Future College, University and Islamic University) and the existing and specialized industrial zones in the south of Hila city (Najaf governorate)

- Universities site (the University of Babylon at the site of Morjan) and the existing and allocated industrial areas located north of Hila, towards Baghdad.

- The importance of identifying these two sites for the implementation of the knowledge gathering strategy is focused on achieving the following:

- Strengthening educational and human capital:

- These sites represent the main entrance to the city of Hila and linked with the movement's axes (forty and sixty streets), which include several governmental and private colleges such as the Faculty of Medicine, Pharmacy, Dentistry, and Girls' Science of the University of Babylon and the University of Hila and religious sections of the College Future University.

- The city administration can take the initiative (as in the Shanghai experience) to support the change of land use in these two sites, which have been designated within the design as industrial zones) for technology-intensive activities and services to support knowledge activity.

- Knowledge Networks: The network building strategy is to intensify the active exchange of information, collective learning, and innovation, intelligent of residential and commercial uses. They rely on complex functional connections to improve horizontal links extend across the individual, institutional organizations boundaries, and vertical links within the institution's organizational structure. The city of Hila has a deprivation of administrative vision and imbalance in the relations between the parties to the economic process (planning, service, and legal). The other obstacles are to respond to the technological capital mechanisms for spreading technologies and employing techniques to improve the performance and functions. A high percentage of technological capital indicators have emerged for the availability of equipment and networks.

- The examination of the support urban capital diversity strategy in the city of Hila showed the high possibility of elevating the strategy's indicators within two locations:

- First: the northern gate of the city, linking the city of Hila to the capital Baghdad.

- Second: the location of the old city center and the indicators of diversity in this site are the following dimensions:

- Diverse requirements for urbanization patterns, urban form, scale, coverage, quality of life, open space, etc. These variables defining a general framework for the study of urban transformation according to the concept of knowledge cities as follows:

- Multiple-housing options: Includes the availability of land suitable for the residential expansion, the diversity of housing size, occupancy, and housing types.

- The master plan proposed to substitute the residential use and expand the commercial use in the old parts of the city while providing new residential expansions within the old center, and the new residential areas will be on the southeast side (design area 470).

- The urban housing strategy is based on the type of housing and the variety of its styles to meet the knowledge-intensive communities' needs (universities and productive institutions, and research activities). The types of housing available near the proposed knowledge clusters include the following:

- Separate or semi-detached housing type consisting of one or two floors.
- Multi-story housing type is located in several clusters of apartment buildings consisting of 3 to 5 floors. Therefore, the cluster strategy's implementation will be suitable in this location because of the new set of patterns, the presence of unused land, and the existence of multi-story residential complexes on the road Hila - Najaf and near the University of Babylon.
- Other styles began to appear along the arterial streets in the city's new center. These styles are more diverse and appropriate to the requirements of student groups and small families.
- The northern location expansion will not have the same characteristics due to housing density in this area. However, this area will be characterized by the existence of the river and large areas near the University of Babylon's other site. This location can employ to accommodate cultural and scientific events.
- Multiple options of navigation:
- The possibility of connecting both heritage and archaeological centers will be provided by the river paths and organizing land uses to strengthen this axis (heritage sites - open spaces and archaeological city).
- Expanding mobility options for the population: The lack of efficiency and inadequacy of existing roads while increasing vehicular traffic density, while there is potential for developing river transport between these two sites. The bridge project (the incomplete bridge can be the focal point between the city center). The southern university site will enhance the densities and expand transportation options.
- The social dimension: The city of Hila generally has strong foundations for social diversity because of the role of the proposed two elements in the strategy of supporting urban capital. It is attractive to visitors and strengthens the axis between the archaeological site and Hila's heritage center. This study proposed to revive the role of the city's urban center in social and economic life.
- The economic dimension: The axes between the city and the proposed nucleus are characterized by the following:
- The development of traditional sectors in the industrial zones in the southeast of the city, and the industrial facilities on the main axes and their branches between the north and south of the city, and these areas include most of the areas defined by the basic design for the expansion of industrial activity.
- The proximity of these proposed sites to the universities is preparing to form an integrated nucleus in the future to be a gathering of knowledge-intensive activities (as in the Pudong site in Shanghai)
- The possibility of developing the services that supporting the KC activities will be suitable in 60th Street. This axis is characterized by administrative and government use. Hotel services and restaurants. The 40th street is witnessing large changes driven mostly by the private sector where increased commercial use areas (retail and hotel services are available).
- The Cultural dimension: The importance of the proposed knowledge-gathering site in the north of the city is to enhance the cultural dimension due to its proximity to the archaeological site of the ancient city of Babylon and near the Shatt al-Hila. This site extends to the new city center through the hub of the road Hila – Baghdad. The city is an intersection of Street forty to link between the old sites in the Babylonian archaeological area and religious sites as the site of the response of the sun), and the tourism sector is a great opportunity to attract tourists and employment of labor because of the presence of elements of this sector in the city. The river-link hub also provides the opportunity to extend the annual Babel Festival activities to the old city center and create new events and expand them to include activities related to the city center's heritage character. Table (5).

Table 5. Mechanisms and strategies involved in city trials.

The strategy	Mechanisms	City
Support of knowledge groupings - the central nucleus	Investment in education and training Formation of the nucleus for the reactivities within four patterns	Shanghai
Support of knowledge networks	Expand Internet Services Incorporate technology into everyday life	
Support for urban climate catalysts	Consolidation of local arts and culture in international frameworks Modernization of coastal facilities, transport and supporting services (port city and airport Climate oriented to attract international companies and investments	
Support for knowledge grouping - site proliferation	Quality educational institutions The spread of advanced activities and innovation The development of human capital Investing in education, training, and research excellence	Munich
Support of knowledge networks	High-performance networks for commercial impact and advanced infrastructure Regulatory institutions for responsive systems create advanced knowledge and innovation	
Support for urban climate	Attracting and retaining qualified immigrants Development of city facilities to attract elite immigrants in the field of knowledge and promotion of social diversity (integration of housing and worksites for various groups - development of the Old Railroad site (Redirecting the movement of workers within the city (transfer and replacement of the airport and exhibition structure)	
Support of clusters and networks of knowledge - sub-centers	Educational strategy and networks of technical and vocational schools	Riyadh
Support of knowledge networks	Dissemination of communication technology among the population and adoption of expert systems in different institutions	
Support for urban climate	Urban design compatible with the settlement of more open communities (urban isolation(Development of urban facilities to enhance the image of the international city (around the arterial axis in the city)	
Support for urban climate	-Development of urban facilities around the arterial axes in the city to link the historical contract with the contemporary academic and industrial contract -The possibility of developing services supporting the activity Street sixty characterized by administrative and government use, hotel services and restaurants while the major motor hubs in the city of large-scale changes driven mostly from the private sector where the increased space	Hila

	for commercial use
	-Development of the river link to support the possibility of linking the activities of the annual Babylon Festival to the old city center and the development of new activities and expand to include activities associated with the heritage character that characterizes the city center
Support of clusters and knowledge networks - nodes in which the main motor axes pass	The knowledge-gathering strategy is in line with human and educational capital mechanisms to support the path of cognitive development. The response to human capital and educational mechanisms and the emergence of clusters (knowledge-intensive) include companies, businesses, and academic institutions, and R & D institutions.
Support of knowledge networks	The networks' strategy is to strengthen the institutional links between education and industry in the exchange of experiences and training and adoption of innovations. They also depend on developing the employment of technologies in the educational institution and the industrial establishment. In view of the limited number of qualified workers (the three large laboratories mentioned in the human resources section) And the limited use of expert systems in state institutions, it must be geared towards strengthening KC factors in the proposed locations.

Source: Author's own

7. Conclusions

- The study's main conclusion is to determine the three main KC strategies; group support, support for building networks, and urban capital diversity support.
- The knowledge capital represents a comprehensive base in organizing and adopting the strategic vision of transforming a city into a knowledge-based urban landscape.
- Each city is an individual case that enhances the indicators of knowledge capital components according to their priorities and circumstances. Accordingly, different types of knowledge groups are formed. Knowledge networks are established, and the pattern of their spread and expansion is determined differently.
- The cities examined in this study are Shanghai, Munich, Riyadh, and Hila, which have been evaluated according to the theoretical framework, and the KC capital indicators. Each of the four examined cities has different hierarchical arrangements for the three knowledge cities' mechanisms and strategies. So, the urban form and the pattern of expansion of each city are unique and distinct.
- In addition, this confirms the crucial role of urban capital indicators in activating the spread of clusters based on knowledge activities and activating the construction of knowledge networks locally and regionally.

8. Recommendations;

- The application of knowledge city strategies provides an integrated perspective of the city as potential opportunities for interaction. Therefore, the adoption of new urbanization trends by imposing the mechanisms of knowledge capital to support the knowledge groupings that attract and activate the role of elites in decision-making.
- The activation of sites where the necessary conditions for developing innovation and the development of high technology industries are concentrated, and these gatherings are attractive poles for knowledge flow.
- Support the building of knowledge networks and network power to establish more links and develop innovation.

- According to the nature and opportunities of application in the study, plans should be accomplished for organized interventions to support the three strategies. These plans should concentrate on implementing the cluster strategy in the two axes of the northern site, southern site of the university, and the center of Babylon's ancient city.
- Future research on the KC concept and applications needs to be extended into further detailed spatial scope, including the effects of adopting the three strategies in cities' morphological aspects and demographics.

9. References

[1]   Gritsai, Olga 2007 *Knowledge And Creativity At Work in the Munich Region Pathways to Creative and Knowledge-Based Cities* (University of Amsterdam, ACRE report)

[2]   Yigitcanlar, Tan 2010 *Making Space and Place for the Knowledge Economy: Knowledge-Based Development of Australian Cities* (European Planning Studies) vol 18 pp 1769-1786.

[3]   Elena, Cigu 2015 *The Making of Knowledge Cities in Romania* (Elsevier Procedia Economics and Finance) vol 32 pp 534 – 541

[4]   Ergazakis,Kostas,Kostas Metaxiotis and John Psarras 2004 *Towards Knowledge Cities: Conceptual Analysis And Success Stories* (journal of knowledge management) vol 5 pp 5–15

[5]   Florida, Richard 2002 *The Rise of the Creative Class* (basic books, New York)

[6]   Johnson, Louise C 2009 *Cultural Capitals Revaluing the Arts: Remaking Urban Spaces* (Ashgate   Publishing Limited, Surrey)

[7]   Ergazakis,Kostas,Kostas Metaxiotis and John Psarras 2004 *Towards Knowledge Cities:Conceptual Analysis And Success Stories* (jornal of knowledge management) no 5 pp 5–15

[8]   Evers, Hans-Dieter 2008 *Knowledge Hubs and Knowledge Clusters Designing A Knowledge Architecture for Development* (Proceedings from a conference on Knowledge Architecture for Devel-opment, Challenges ahead for Asian Business and Governance, Singapore) 2008

[9]   Huggins, Robert 2008 *The Evolution of Knowledge Clusters Progress and Policy: Economic Development Quarterly* (Sage Publications, California)

[10]   Yigitcanlar, Tan, O'Connor, Kevin and Westerman, Cara 2008 *Melbourne's Knowledge-Based Urban Development Experience* (Elsevier) vol 25 pp 63–72.

[11]   Chen, Y 2012 *Making Shanghai A Creative City: Exploring the Creative Cluster Strategy from A Chinese Perspective* (Edward Elgar, Northampton)

[12]   Cook, Philip and Schwartz, Dafna 2007 C*reative Regions* (Technology, culture and knowledge)

[13]   Besel, Karl and Viviana Andreescu 2013 *Back To The Future: New Urbanism and the Rise of Neo Traditionalism in Urban Planning* (University Press of America Inc. Lanham)

[14]   Ferreira, João J.M, Mário Raposo and Roel Rutten 2013 *Cooperation, Clusters, and Knowledge Transfer* (Springer, New York)

[15]   Chen, Y 2014 Shanghai city strategy 2050 *Proceedings From Road Map To Knowledge City Conference* (at: https://www.researchgate.net, 29/ October/ 2016.)

[16]   Yigitcanlar, Tan 2011 Knowledge-Based Urban Development: Redefined From Theory To Practice Knowledge-Based Development Of Cities (The World Capital Institute and Ibero American Community for Knowledge Systems, Bento Goncalves, Brazil) pp 389–399

[17]   Harvey and David 1991 *The Condition of Postmodernity; An Enquiry into the Origins of Cultural Change* (Blackwell Publishers, Massachusetts)

[18]   Yigitcanlar, Tan, Koray Velibeyoglu and Scott Baum 2008 *A Knowledge-Based Urban Development Planning and Applications in the Information Era* (Information Science Reference, New York)

[19]   Graham, Stefan and Simon Marvin 1996 *Telecommunication and the City: Electronic Spaces, Urban Places* (Routledge, New York)

[20]   Peter and Bachtold 2013 *The Space-Economic Transformation of the City :Towards Sustainability* (Springer Science, London)

[21]   Nilsen, Andreas and Mathias Dackheden 2005 *The Knowledge City Concept: The Ideal*

Conditions of A Knowledge City (Master Thesis in Strategic Management, School of economics and management, Lund University)

[22] Zukin, Sharon 1995 *The Culture of Cities*, (Blackwell Publishers Inc., Oxford)

[23] Musterd, Sako and Gritsai 2013 *Conditions for Creative Knowledge Cities: Findings from A Comparison Between 13 European Metropolises Going Creative* (AISSR, Amsterdam)

[24] Krätke, Stefan 2011 *The Creative Capital of Cities* (Blackwell Publishing, Oxford)

[25] Cuthbert and Alexander R 2006 *The form of Cities: Political Economy and Urban Design,* (Blackwell Publishing Ltd, Oxford)

[26] Francisco Carrillo 2006 *Knowledge Cities Approaches, Experiences, and Perspectives* (Butterworth-Heinemann)

[27] Cook, Philip and Andrea Piccaluga 2006 *Regional Development in the Knowledge Economy*, (Routledge, New York)

[28] Musterd, Sako and Deulroo 2006 *Amsterdam and the Preconditions Fora Creative Knowledge City* (Tijdschrift voor Economische en Sociale Geografie) vol 97 no 1 pp 80–94

[29] Williams, Laura, Natalie Turner and Alexandra Jones 2008 *Embedding Universities in Knowledge Cities: An Ideopolis and Knowledge Economy Programme* (The Work Foundation, London)

[30] Thierstein, Alain and S.Reiss Schmidt 2008 *Urban Development Management in Munich, Germany Integrated Strategy, Impacts, Learning from External Evaluation* (44th ISOCARP Congress)

[31] Zhong, Sheng, Production 2012 *Creative Firms and Urban Space in Shanghai* (culture unbound) vol 4 pp 169–191

[32] Al Atni, Basim Sulaiman 2015 *The Internationalization of Urban Planning Strategies: Envaronmental Sustainable Urban Centers in The Kingdom of Saudi Arabia* (A thesis submitted to the University of Manchester For the degree of Doctor of Philosophy (PhD) in the Faculty of Humanities)

[33] Directorate General of Urban Planning 2010 *Structural Plan of The Province of Babylon: Phase III Report of Planning Alternatives* (Ministry of Municipalities and Public Works)