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INVESTIGATING COMMERCIAL URBAN CORRIDORS - A PILOT STUDY IN BEIRUT LEBANON

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INVESTIGATING COMMERCIAL URBAN CORRIDORS - A PILOT STUDY IN BEIRUT LEBANON

Abstract

Urban environments are multifaceted, varied, dynamic, complex, and evolving as are the underlying features for human health and wellbeing (Bai, Nath, Capon, Hasan & Jaron, 2020). Healthy and resilient cities can be entry points and platforms for change, adaptation and innovation to achieve optimal health for urban communities and the environment (Regional Framework for Urban Health in the Western Pacific 2016–2020: Healthy and Resilient Cities, 2016). Planners considered urban corridors, which are connection and access between urban districts, as major elements in shaping the city image and forming its identity and investigating them are vital for enhancing healthy and resilient cities. Narrowing the scope on commercial urban corridors, which are a concentration of retail stores that serve a common trade area and lie along a single street (Catherine Dyste, 2012). These corridors can be seen as a dynamic space, but at the same time, they are created to create a range of experiences (Shaban et al., 2018). Improving commercial urban corridors requires several indicators for reviving the companionable and sociable life of a street. Problems occur when space use is not driven. The society therefore uses the urban commercial corridor according to their own interests. This condition may generate conflict between users of the 'Link' and users of the 'Space', may make the corridor an uncomfortable location, and may decrease its livability. Rapid urbanization and unplanned rapid changes of commercial activities in corridors that have an impact on the surrounding streets and users' activities imposes burdens on surrounding land use and mobility. However, this problem has contributed to various issues such as traffic congestion, pollution, decrease in green areas and degradation of the urban quality of living. That's why investigating these corridors is imperative to know its utilization and functioning to identify the existing problems and chaos in the corridor since they are facing significant challenges, which is the lack of reliable knowledge on their characteristics and development; important for local authorities to provide wealth of knowledge and data collection. The paper aims to investigate commercial urban corridors to identify and analyze livability aspects and indicators for reviving its companionable and sociable life that can be implemented in a way of a considerable checklist which acts as a systematic structure for communicating the data required, diagnosing issues, and defining the strengths and limitations of the efficiency of a commercial urban corridor to promote a healthy and resilient urban context. To achieve the aim, the research investigates a commercial urban corridor focusing on one of the urban corridors in Beirut, Lebanon. By using Geoportal Interactive Tool, conducted by UN-Habitat and UNICEF to create cartography of the existing conditions of the pilot study, and then analyzes the aspects and indicators of livability based on cartography, walk through analysis and face-to-face interviews with inhabitants in area. After analyzing the commercial urban corridor and identifying the effective indicators, the research resulted in proposing some guidelines for enhancing livability in commercial urban corridors, which were mainly related to the physical aspect since it defines the most inadequate quality and performance.

Keywords

Commercial Urban Corridors, Livability, Urban Health, GIS, Community

1. INTRODUCTION

As a starting Point, Commercialization has been one of the primary reasons behind urbanization. Commerce comes from the Latin commercium, cum ("together"), merx ("commodity"). Trade has evolved over the centuries from a simple exchange of goods to complex trade. It has greatly changed over the centuries, and now it is a major part of all urban areas. The exchange of goods and marketing has created and added to the growth of cities. Urbanization affects the physical environment through the impacts of the number of people, their activities and the increased demands on resources. It has a negative impact on health due to pollution and overcrowded living conditions. The most important aspect of a good city is its vibrant commercial spaces. Planners considered commercial spaces as major elements in shaping the city image. Investigating them are prominent for enhancing healthy and resilient cities and yet improving livability. A healthy urban context is one of the circumstances of a resilient city.

Initially, corridors can be bundles of infrastructure that connect two or more urban areas. These can be streets, highways, rail links (high-speed trains, intercity lines, local trains or trams), separate bus lanes, cycle paths, canals.... In general, corridor development concerns connections that use different transport modes (e.g. car, train, aeroplane...), and carry both passenger and freight transport. The activities in the urban corridor can be group into two functions: Link and Space. As a Link, the urban street refers to the vehicles users, such as public transportation and private car. A corridor as a Place relates to the pedestrians. Today, urban corridors became a mixture of activities from shopping to hangout, from car parking to buses, in addition to public transport. It has been a place for people to not only cross or walk, but also to engage in commercial, social, and recreational activities. Commercial urban corridor is a concentration of retail stores, which serves a common trade area and surround and/or lie along a single street. They play a significant role in cities. They are not only a means of access and platforms for cognitive communication throughout a city but are also spaces of economic and social manifestation. They deliver a host of economic interactions, thus generating fluxes for pedestrians and vehicles. Contributing to the public realm, they are considered hubs of social and professional activity, while posing a set of challenges to health, aesthetics, the environment, and growth. They are the economic veins of a City. They provide jobs and offer residents local access to needed goods and services. They attract new residents to the surrounding areas when they are safe, clean and vibrant, which can lead to revival of the whole area. As cities strive to improve livability in the built environment, it is important for planners and designers to have a concise understanding of what contributes to quality commercial urban corridors. The commercial street is "a true community space" (Lynch & Hack, 1984, p. 203)." *It is a place where people can shop, talk to and see others, wait for a bus, walk, enjoy sporting activities, sit at shop-fronts and cafés, where children can play and many others* "(Gehl, 1970).

While most of us would say we want to live and work in livable places, we rarely try to divide and understand the precise meaning of the term livability. During the 1970s and 1980s, Donald Appleyard was the first urban theorist to use the term 'livability,' and he specifically referenced the term with regard to the quality of neighborhood corridors. Appleyard (1980, 1982) specified that livable corridors should be places of sanctuary and comfort, places that were healthy and protected from noise, places that were free from pollution and traffic impositions, and places with a defined neighborhood region, sense of community and neighborhood identity. "*Nearly everyone in the world lives on a street*", Appleyard, 1982. Urban Commercial corridors affects city livability; it is one of the urban elements that draws individuals to the city and it has a direct effect on inhabitants' quality of life. The street that is defined as a livable street is a street concept that reflect social justice, economic health and ecological vitality, where automobilists are not excluded, but providing space for vehicles by allowing balance that is more equitable with other street users such as pedestrians and cyclists, so that the street can be equally used for all.

Problems occur when space use is not driven. The society therefore uses the urban commercial corridor according to their own interests. This condition may generate conflict between users of the 'Link' and users of the 'Space', may make the corridor an uncomfortable location, and may decreases its livability. The rapid urbanization; the unplanned rapid changes of commercial activities in corridors that have an impact on the surrounding streets and user's activities and may impose burdens on surrounding land use and mobility. However, this problem have contributed to various issues such as traffic congestion, pollution, decrease in green areas and degradation of the urban quality of living. That's why investigating these corridors is

imperative to know its utilization and functioning in order to identify the existing problems and chaos in the corridor since they are facing significant challenges, which is the lack of reliable knowledge on their characteristics, and development; important for local authorities to provide wealth of knowledge and data collection.

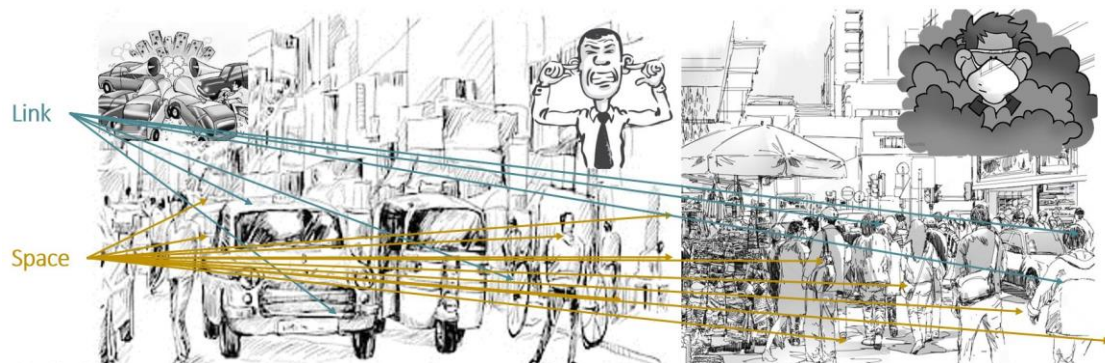


Fig.1: showing the problem when there is contradiction between Link and Space in urban corridors
Source: Diagram illustrated by the Author, 2020

The Pilot study is selected in Tarik Al Jadideh Area: Sabra Neighborhood due to several issues, first it is one of the most popular commercial corridors in a dense urban context targeting Low to middle income society that houses a variety of commercial activities that needs to be investigated according to livability indicators for further development. It is on the priority list of Beirut Municipality. It is one of the Project-based initiatives in BAU Urban Lab, which is a creative, interdisciplinary platform for innovation and knowledge exchange that integrates education with research and innovation. It creates mechanisms for the coproduction of knowledge to develop innovative solutions for urban challenges. It was the focal point of different studies done previously by Students at BAU, Faculty of Architecture, Design and Built Environment. The aim of the research is to investigate commercial urban corridors in order to identify and analyze livability indicators for reviving the companionable and sociable life of corridors that can be implemented in a way of a considerable checklist which acts as a systematic structure for communicating the data required, diagnosing issues, and defining the strengths and limitations of the efficiency of a commercial urban corridor in order to promote a healthy and resilient urban context. To accomplish this aim, the research achieves the following objectives. First, to provide data acquisition and basic knowledge about commercial urban corridors livability in urban contexts based on literature and sources, to provide a theoretical background about livability key dimensions and indicators, to comprehend a livability checklist based on existing literature and theory, to apply the comprehended livability checklist in a Pilot Study in Beirut in order to analyze the different aspects of livability and recognize the issues that inhibit such corridors from becoming livable and full of life, and to propose guidelines for enhancing livability of the commercial urban corridors based on previous analysis.

2. THEORITICAL BACKGROUND

The research provides data acquisition by providing a brief theoretical background about commercial urban spaces and livability characteristics in commercial corridors in order to identify different aspects and indicators for enhancing livability in commercial corridors.

2.1. Historical Evolution of Commercial Spaces

According to historical evolution studies by Peter Coleman and Rem Koolhaas, shopping streets: By the 18th century, the shopping streets were firstly developed in Europe because of the rise of the bourgeoisie. Just before the Industrial Revolution, city marketplaces were no longer spatially enough for the evolving trade. As a result, the central streets of the cities were lined with shops, coffee shops, starting from Italy during the 16th century and in northern Europe in the 17th century, where the shops were organized by type into the same street. In general, the shopping streets were organic developments as shown in main streets, where the ground floors of the domestic buildings were gradually transformed into shops. In the evolution of arcades, the shopping streets are very crucial. The

concept of shopping street has also been made more comfortable and safe with the later separation of pedestrian and vehicular traffic, and has led to our present shopping malls and pedestrian malls. The following figure (Fig.2) shows the historical development of commercial spaces and highlights (in red) the beginning of shopping streets (Ergun Kocaili, 2010).

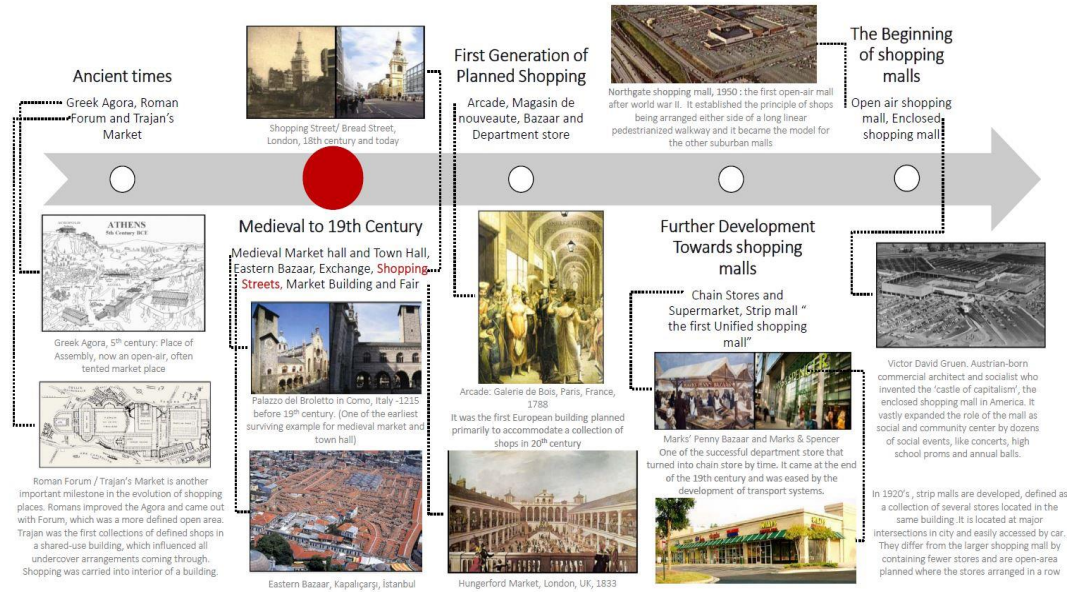


Fig.2: showing the Historical Evolution timeline of Commercial Spaces, red marked circle is the start of commercial shopping streets

Source: (Ergun Kocaili, 2010), diagram illustrated by the Author, 2020

2.2. Urban Formation of Traditional Markets

Commercial Street is a road or corridor lined with shops providing a variety of options and business, shopping and services, which attract visitors and provides entertainment through the vitality of its industry. To create, a body filled with activity, the elements of the urban environment are integrated around and across them. You can divide traditional markets by time, function and urban form. Time Classification means classifying the market by the time it is held. It may be throughout the year at seasonal or regular intervals (monthly, weekly), or daily. Classification of functions is based on whether it is intended as a commercial function or is specialized in a given or non-specialized commodity. Function Classification is based on whether it is intended as a commercial function or is specialized in a given or non-specialized commodity. The general composition of the market or commercial corridors is the ultimate result of a simplified clustering method for adjacent module cells in a parallel assembly that generates a middle void in which the visitor exposes his specific trajectory on the retail sector and produces blocks and open spaces on the outside and central though parallel assembly and network accumulation. Urban form classification depends on it being linear, ramified and aggregated. (Mehanna, 2019)

2.2.1. Linear Markets

Linear markets are categorized as follows:

- a. *Pedestrian Commercial Corridors* (Full Malls) that have paths for pedestrians only. Typically, they are situated in city centers and strive to be shaded by trees. In this case, shopping behavior is safe (Mehanna, 2019). (See Fig.3).

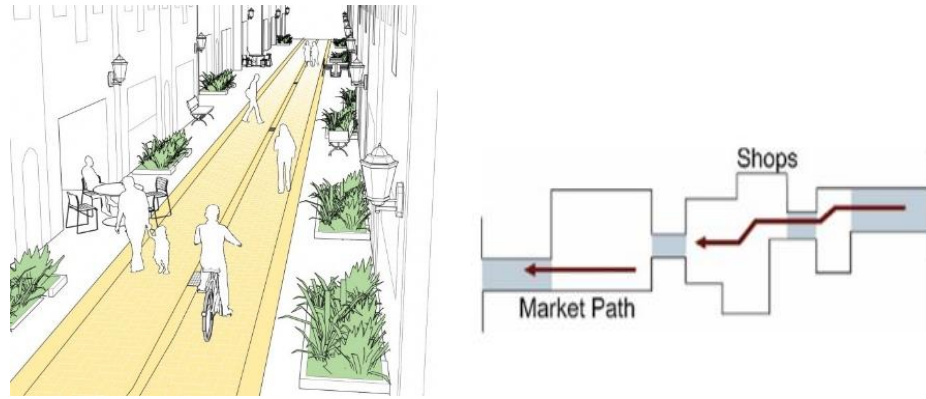


Fig.3: showing an Illustration for Pedestrian Commercial Corridors
Source: on the right (Mehanna, 2019), on the left (Urban Street Design Guide, n.d.)

- b. *Pedestrian and Automated traffic corridors (Semi Malls) have pathways where motorized and pedestrian traffic meet at specific times, or all the time. It should be designed to make pedestrian movement a primary focus by increasing pedestrian space should calm the movement of cars by allowing wide pedestrian pathways next to the movement of cars and reducing or preventing car parking on both sides of the road. This is considered the pattern, which offers pedestrians the least safety (Mehanna, 2019). (see Fig.4)*

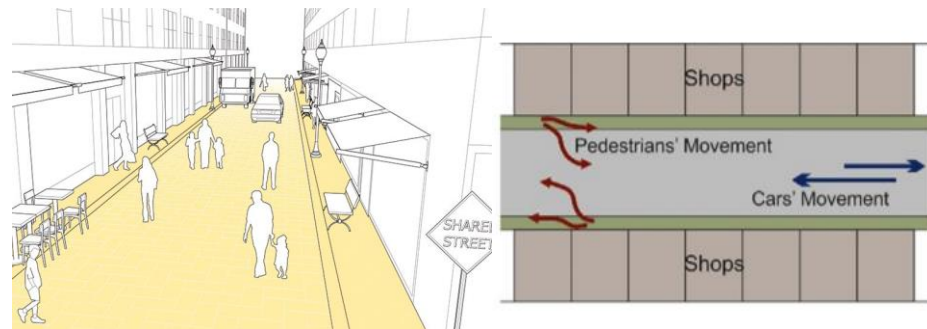


Fig.4: an Illustration for Pedestrian and Automated Traffic Commercial Corridors
Source: on the right (Mehanna, 2019), on the left (Urban Street Design Guide, n.d.)

- c. *Commercial corridors for pedestrians and transport (Transit Mall) are meant for pedestrians and public transport (bus routes, metro stations, etc.) and are inaccessible to private vehicles. Parking in these streets is not allowed but is given at a distance. The width of the pavements should be increased, adding complementary elements to the commercial market and pedestrian traffic. This type appears in the city center, and can use pedestrian bridges and tunnels for cars (Mehanna, 2019).*

2.2.2. Ramified Markets & Aggregated Markets

They are ramified linear markets (Fig.5-1) in some trading point or urban space, which are characterized by a particular activity, such as the space in front of a mosque from which linear markets are ramified, ensuring that the important routes leading to this point are the commercial routes that make up the market. While aggregated markets are commercial, markets grouped around an urban space. Things are bought and sold in these markets, which provide a safe pedestrian movement as well as space in which to make transactions. (Fig.5-2)

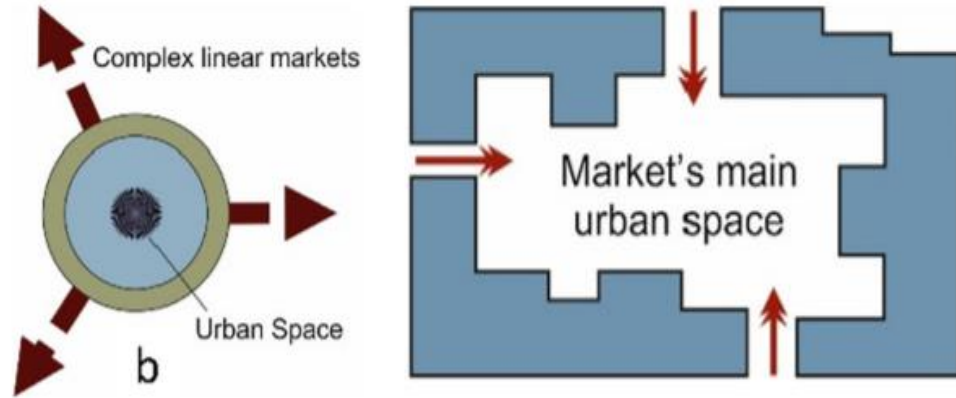


Fig.5: (1) on the left showing a drawing illustration for Ramified Markets and (2) on the right showing a drawing illustration of Aggregated Markets
Source: (Mehanna, 2019)

2.3.Factors affecting the Development of Commercial Corridors

Factors affecting the development of commercial areas include Functional, Natural, Social, Economic, Political and Legal Factors are illustrated in the following table below. (See Table 1)

Table 1: Showing the Factors Affecting the Development of Commercial Corridors

Factors affecting Development of Commercial Corridors		
Functional Factors	Traffic Movement	The ways of coping with the expected traffic congestion in the surrounding streets and reducing the number of cars in the commercial street. Parking should be provided near the commercial area.
	Pedestrian Movement	The walkability in the area is prominent taking into account a spec
	Infrastructure	Location of infrastructure lines in the commercial street should be considered to assess whether to accommodate development or need to be adjusted.
	Existing Buildings	Their existing status, architectural character, historical value as well as the heights and skyline, facades and details, finishing materials, and texture, construction methods, which are important for local authorities for further development.
	Maintenance	The repair of damage should not be forgotten for resilience of the area as well as cleaning, rain water disposal, alteration of lighting units, attention to landscape elements
Natural Factors	Climate	Planners need to control the protection of commercial spaces through the reduction of direct or reflected sunlight and balancing the humidity of the atmosphere
	Soil and Ground Water	The ability of the soils for agriculture should be determined, meanwhile identifying activities that can be practiced in a commercial street.
	Topography	The slope of the commercial street is very important they affect the activities in a commercial street.
Social and Economic Factors	-	Includes social interaction and communication, analysis of the market for economic stability by Balance between costs of developing the street and the returns
Political and Legal Factors	-	Politicians are interested in deciding whether to close a commercial street to cars, and whether to offer peddlers fixed places in a market, while the law concerns the penalties imposed for irregularities in the street.

Source: (Mehanna, 2019), table illustrated by the Author, 2020

2.4.Characteristics of Livability

According to Donald Appleyard, he identifies the street as an important social milieu and an asset of the greatest importance for Livability, sociability, neighborliness, friendliness and community life. According to Wagner and caves, he mentioned the characteristics of livability as shown in Table 2.

Table 2: Showing the Characteristics of Livability

Characteristics of Livability	
Physical Condition of Buildings	Concerns the quality of materials, construction, and design of the residence and streets and their maintenance / physical attributes that creates more comfort and users' satisfaction.
Size of Residences and how they are structured to manage crowding and privacy	How the residence structures space to give people control over their social interactions
Safety and the Perception of Safety	Relates to crime in the area, social fear of crime, and the physical and social characteristics of the neighborhood that create defensible space
Social Interaction and Sense of Community	provide emotional and social support to residents/ social interaction between pedestrians and neighbors that increase the sense of belongings to the area such as walkability, density, and local social spaces such as shops, parks, and recreation areas, community participation
Compactness And Density	Minimize sprawl and transportation use, protect the surrounding rural environment, and reduce energy consumption and pollution
Mixed land use	Reduces the use of cars for commuting, shopping, and recreation. It has been linked to increase in neighborhood social interactions and sense of community.
Sustainable transportation	Uses walking, cycling, and public transportation to reduce energy consumption and pollution. It promotes neighborhood interactions and human health. / Different means of transportation.
Integrating Nature into the Urban Environment	Reduce pollution and help to preserve ecological diversity
Economic Prosperity	Provide Employment and income, to meet the actual needs of the population, It is key to building the economy; convergence alone is not sufficient. To enhance quality criteria for the streets to attract more business and visitors.

Source: (Wagner, F. and Caves, R., 2012), table is illustrated by Author, 2020

3. METHODS AND TOOLS

The research uses a mixed method approach: A qualitative and quantitative research method where it follows four methods. First, the Inductive Method, to create theoretical knowledge about the working title by providing general definitions of key terms, Urban Formation of traditional Markets Factors that affect the development of Commercial Urban Corridors, Livability Aspects and Indicators and Overview about the Pilot Study. Second, the Field method through Walk through analysis, Taking live photographs in the study area and undertaking Face to Face Interviews and in depth conversations with residents to study more about people opinion in their street, life. Third, the Analytical Method by concluding a Comprehensive Checklist for Livability based on Data acquisition and Investigating a commercial urban corridor in Beirut: The Pilot Study using Geoportol Interactive Tool to create Cartography of the Existing Conditions of Pilot study conducted by UN-Habitat, UNICEF. Then, analysis of Aspects of Livability based on cartography, and analyzing the results of walk through analysis and face to face interviews with inhabitants in area to prospect livability in the area. Last, Deductive method by evaluating the pilot study based on Livability Checklist and based on evaluation scale. Then, identifying indicators that affected the livability in the area. Then, proposing some guidelines for enhancing livability in the commercial urban corridor. To deduct general conclusions & recommendations for future research.

3.1. The Pilot Study

Sabra Commercial Corridor (Fig.6) is one of the most popular commercial corridors in a dense urban context targeting Low to middle-income society that houses a variety of commercial activities that needs to be evaluated according to livability indicators for further development. This area is identified as one of the 251 most vulnerable cadasters. 52.7 % of the buildings in the area are mixed-use (residential and commercial), and mostly located on Sabra Street, the main souk in the area including public and private entities (UN-habitat, 2018).



Fig.6: (1)Map showing the location of Beirut, Lebanon (2) & (3) Maps showing the location of Tarik Al Jadidah (4) Map showing the location of the Pilot study in Beirut Lebanon
Source: Google Earth and Google Maps, Analysis by Author, 2020

3.2. Geoportal, Web-App Builder using ArcGIS

Using GEOPORTAL interactive Tool as shown in fig.7 below, which is a live interactive tool that presents the collected mapped data for UN-Habitat–UNICEF neighborhood profiles. It allows users to filter data, change map scales and extents, analyze spatial relationships by selecting specific layers, compare different neighborhoods, and interact otherwise according to individuals needs to view the existing conditions of Sabra Commercial Corridor.



Fig.7: Screenshot by the Author of Geoportal for Profiling Sabra neighborhood.

Source: <https://un-habitat.maps.arcgis.com/apps/webappviewer/index.html?id=3a38c8bbdc104a7ebb41089644aa1505>

3.2.1. Commercial Corridors in the Urban Area

Sabra Commercial Urban corridor is classified as an Urban Road: Primary Commercial Street (Location and Function), Local Road, Two way (Hierarchy), Width= 12 m, Length= 335 m (Dimensions), Vehicular (cars, motorcycles, bus, truck) Pedestrian (Traffic Type), and High Traffic Road (Traffic Volume). The Red marked commercial urban corridor is the selected Pilot study as shown in fig. 8 below.



Fig.8: showing the commercial urban corridors in the urban context; red marked corridor is the Pilot study

Source: Map exported from Geoportal and analyzed by the Author, Data by (UN-Habitat–UNICEF, 2018,).

3.2.2. Building Use

52.7 % of the buildings are mixed-use in the area (residential and commercial), and mostly located on Sabra commercial corridor containing retails offering several services for street residents and visitors, these highly active buildings offer a lively space all the day (UN-Habitat, 2018).

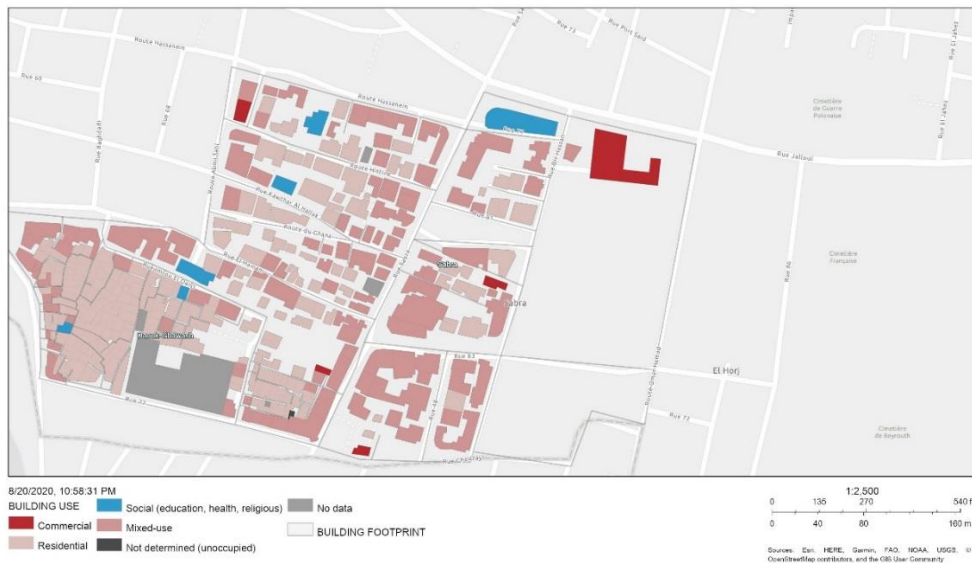


Fig.9: Showing Building use in Sabra Commercial Urban Corridor
Source: Map exported from Geoportal and analyzed by the Author, Data by (UN-Habitat–UNICEF, 2018,).

3.2.3. Communal Spaces

Tackling the physical aspect, most of the communal spaces of the buildings have various defects including malfunctioning gates, electrical wiring problems as shown in fig. 10 below.



Fig.10 showing the communal spaces in Sabra commercial urban corridor
 Source: Map exported from Geoport and analyzed by the Author, Data by (UN-Habitat-UNICEF, 2018,).

3.2.4. Building Age

Building Age along the commercial urban corridor varies from 1920 until 2000 where there are no historical buildings along the corridor as shown in fig.11 below.

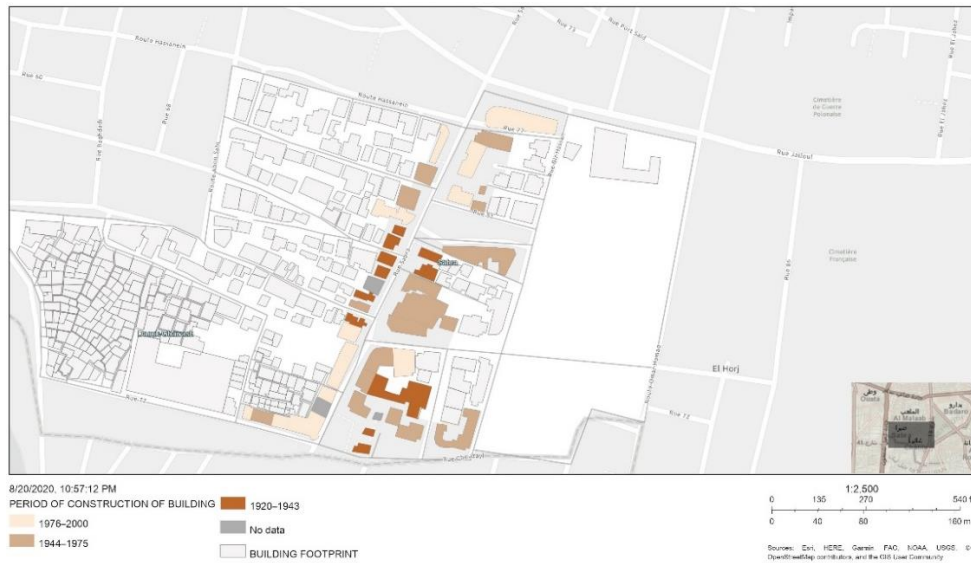


Fig.11 showing Building age along Sabra commercial urban corridor
 Source: Map exported from Geoport and analyzed by the Author, Data by (UN-Habitat-UNICEF, 2018,).

3.2.5. Exterior Building Conditions

Majority of Buildings have poor exterior conditions, which includes cracks, deteriorations, and distinct signs of failure as shown in fig.12 and 13 below.



Fig.12: showing photographs of the exterior building conditions in Sabra



Fig.13: Showing a map of the exterior building conditions along the corridor
 Source: Map exported from Geoportal and analyzed by the Author, Data by (UN-Habitat–UNICEF, 2018,).

3.2.6. Open Space Type and Usage

Tackling the physical and social aspect and due to Limited amount of Parking Spaces & overcrowding of the street vendors and street customers, vehicular movement becomes problematic. Thus, there are informal gathering along the corridor with limited amount of green spaces and trees as shown in Fig. 14 below.



Fig.14: showing the open space type and usage along the corridor
 Source: Map exported from Geoportal and analyzed by the Author, Data by (UN-Habitat–UNICEF, 2018,)

3.2.7. Building with shops- Type of Commerce on Ground Floor

Shops are mainly located in corridor. None of the workshops (mechanic, metalwork ...) is located in this corridor. They are concentrated in secondary commercial corridors in the area. Shops open more than 12 hours/day while shops supplying food are the only type of commerce that opens 24/7. Butcher shops, vegetable shops, food and groceries as well as boutiques are dominant in the area as shown in Fig. 15. Stores selling furniture are only located in the south of the corridor.



Fig.15: showing the variety of shops along the corridor



Fig.16: Showing the Type of Commerce on Ground Floor along Sabra Commercial Urban Corridor

Source: Map exported from Geoportal and analyzed by the Author, Data by (UN-Habitat–UNICEF, 2018,)

3.2.8. Building Heights

Building heights along the corridor vary from one to seven storeys and more which creates an enclosure to the street tackling the physical aspect.

3.2.9. Lighting Conditions

Lighting Condition in the corridor vary from functional lighting to lighting with defects to no lighting which triggers the safety measures and crime rate especially during the night as shown in Fig. 17 below.

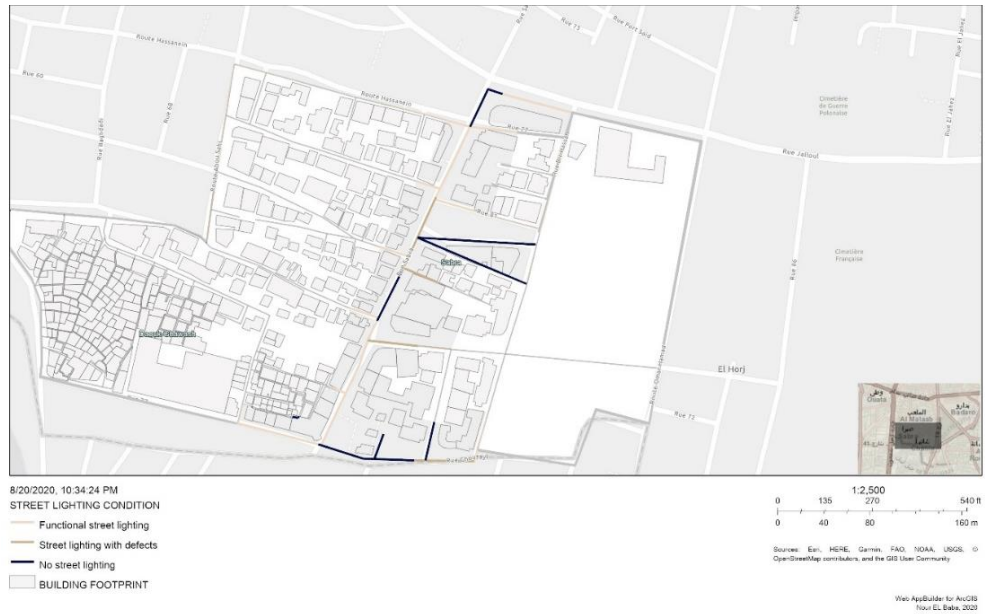


Fig.17: showing the lighting conditions along Sabra Commercial Urban Corridor
 Source: Map exported from Geoportal and analyzed by the Author, Data by (UN-Habitat–UNICEF, 2018)

3.2.10. Sidewalk Conditions

Some Sidewalks condition are wide with obstructions and some are narrow with obstructions that have parked vehicles, shop goods, utility structures. Most of the shopkeepers extend their goods on the sidewalk, which causes pedestrian, and vehicle crowd in addition to some street vendors as shown in Fig. 18 below.



Fig.18: Showing the Sidewalk conditions along Sabra Commercial Urban Corridor
 Source: Map exported from Geoportal and analyzed by the Author, Data by (UN-Habitat–UNICEF, 2018)

3.2.11. Road Conditions and Features

Road Surface is in a fair condition where there are minor signs of deterioration but in some areas, there are potholes and water ponding. In addition, the corridor lacks speedbumps. (See Fig. 19 below)



Fig.19: showing Road conditions and Features along Sabra Commercial Urban Corridor
Source: Map exported from Geoportal and analyzed by the Author, Data by (UN-Habitat–UNICEF, 2018)

3.2.12. Solid Waste Collection System and Features

There is available solid waste collection system along the commercial urban corridor. All waste disposals are on street disposal as a solid waste feature. No dumpsters, no Garbage Bins, no dumping site along the corridor unlike other commercial corridors in the area. Residents claim that there is no cleanliness in the area. (See Fig. 20 below)

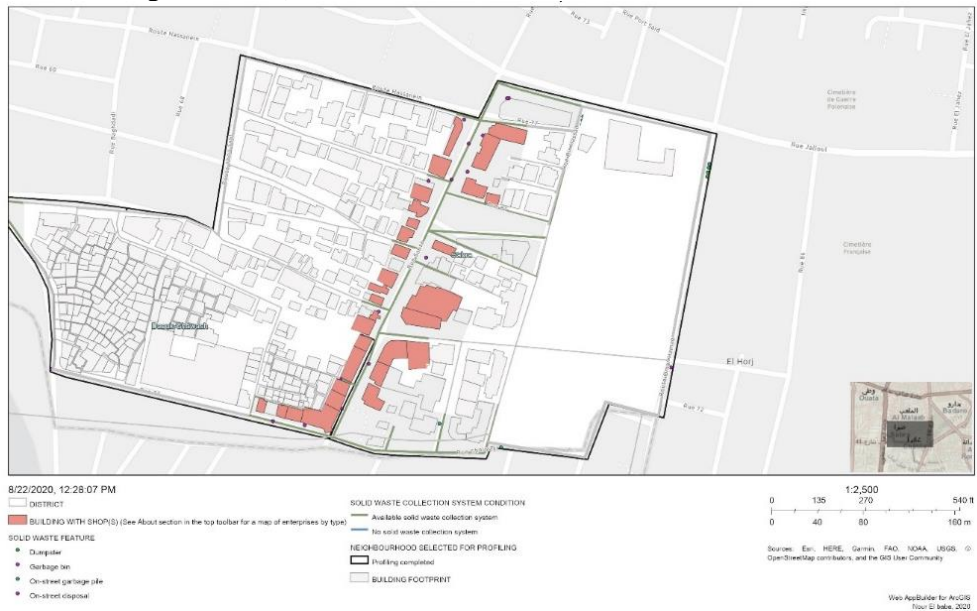


Fig.20: Showing Solid waste collection system and features along Sabra commercial urban Corridor
Source: Map exported from Geoportal and analyzed by the Author, Data by (UN-Habitat–UNICEF, 2018)

3.2.13. Other Basic Urban Services

Wastewater network is malfunctioned in some parts of the corridor, which causes a bad smell, flooding, and recurrent clogged pipes. In addition, along the Corridor, most of the parts of the corridor have no storm water drains, and some are blocked. While concerning water supply issues, some part of the corridor do not have

water supply and other part have available water supply. Moreover, concerning public Electrical network is in medium condition which has unorganized wires with some uncovered wires that may cause electrical hazards, tangled wires; unstable condition.

4. RESULTS AND DISCUSSION

The aim of the checklist developed in this study is to detect the strength and weaknesses of the commercial urban corridor: the pilot study regarding the key aspects of commercial urban corridor livability based on an evaluation criteria based on qualitative knowledge as below using the five point Likert scale of quality, which includes the following evaluation parameters. The evaluation is based mainly on a visual assessment of the identified indicators as well as an interview with frequent visitors. Precisely, the physical aspect along the commercial corridor are assessed through the observational assessment /walk through analysis in addition to the Geoportal Web App Builder using ArcGIS collected mapped data for UN-Habitat–UNICEF neighborhood profiles. This includes answers to questions like *'How many people visiting the space? 'What are they doing there, 'How do they use the space?'* In addition, the Social and Cultural Aspect along the commercial corridor are analyzed through Face-to-Face Interviews with corridor users (workers, owners, residents, and visitors) to study more about people opinion in their street, life problems and the change happened in the social relations between people as well as the Economic aspect through socioeconomic survey. *Why are they doing that?'* Since this question cannot be answered by a walk-by, field observation and/or behavior mapping. Yet, the following checklist illustrates the different aspects of livability, which includes several indicators and sub indicators to be assessed along Sabra Commercial Urban Corridor as shown in table 3 below.

Table 3 Showing the Comprehensive Livability Checklist for Sabra Commercial Urban Corridor

Aspect	Component	Indicators	Sub Indicators	SABRA COMMERCIAL URBAN CORRIDOR	EVAL.	
Physical Aspect	Design components	Safety	Crime Safety	Through Retailers	Poor	
			Traffic Safety	High Traffic	V.Poor	
			Pedestrian and Child Use Safety	Insecure for Both	V.Poor	
			Appropriate Lighting	Weak Lighting at night	Poor	
			Opening Hours of retail shops	Café 24/7 retails 12 h/day	Good	
			Corridor Design	Bicycle Lanes	No bicycle Lanes (unsafe)	V.Poor
				Suitable Sidewalks width	Goods extended to sidewalks/ many obstacles / mainly taken by shops	V.Poor
				Good Side walk conditions	Some are wide with obstructions and some are narrow with obstructions that have parked vehicles, shop goods, utility structures. Retailers extend their goods on the sidewalk	Poor
				Pedestrian Crossing	No Pedestrian Crossings	V.Poor
				Hardscape	Asphalt	Good
				Intersections	T- Intersections	Good
				Traffic Calming Measures	Some Traffic Calming measures	Poor
				Suitable Corridor width	12 m width, two way corridor	Good
			Trash and Bins	No trash bins, no dumpsters, only on street disposals	Poor	
Suitable Road Condition	Minor signs in some areas there are potholes and water ponding.	Fair				
Speed Bumps	1 speed bump, no blocked road	Fair				
Sustainable Infrastructure	No storm drains, waste water network is malfunctioned, public	Poor				

Aspect	Component	Indicators	Sub Indicators	SABRA COMMERCIAL URBAN CORRIDOR	EVAL.
				electrical network include tangled and unorganized wires	
			Suitable Corridor Configuration	Straight Street	Good
			Shared street	Contradiction between pedestrian and vehicular movement	Poor
	Form/ Scale	Building Heights	Building Heights	Suitable	Good
		Good Existing Building Condition	Good Existing Building Condition	poor exterior conditions which includes cracks, deteriorations, distinct signs of failure	Poor
		Enclosure	Enclosure	Defined by buildings with shop on GF	Good
		Human Scale	Human Scale	Street to Building Ratio: High Buildings but majority include shops on GF	Fair
		Edge effects	Edge effects	Soft edges	Fair
	Features/ Furniture	Benches and Seating	Benches and Seating	No public Benches and Seating	Poor
		Handicapped needs	Handicapped needs	No handicapped needs	V.Poor
		Lighting Elements	Lighting Elements	Vary from functional lighting to lighting with defects to no lighting	Fair
		Signs	Signs	Few signs	Poor
	Visual Characteristics	Architectural Style	Architectural Style	No architectural style/ commercial residential buildings with shops on GF	Poor
		Identity and Character	Identity and Character	doesn't reflects the aspirations of the immediate community	V.Poor
		Visual Aesthetics	Visual Aesthetics	Visual Pollution, Billboards, open storage of trash, electric wires and even overcrowding	V.Poor
		Shading Elements	Shading Elements	Shading for shops only which are in a dilapidated state also, no shade for corridor	Poor
		Attractiveness/ Art	Attractiveness/ Art	No street art	V.Poor
		Cleanliness and Maintenance	Cleanliness and Maintenance	No Cleanliness, bad maintenance	Poor
	Location Components	Accessibility	Permeability	Ability to reach the area from many directions, or to easily access goods, services, activities, and destinations	V.Good
		Connectivity	Connected street system	connected	V.Good
			Spatial Hierarchy	Shops and workshops are not evenly distributed	Fair
		Multiple Transp. Modes	Bus, Motorcycles, vehicles	No public transportation	Poor
		Active Transportation	-	Very active	V.Good
		Parking Spaces	-	Inadequate parking spaces	Poor
Social & Cultural Aspect	Social Components	Gathering Spaces	Sidewalks	In front of shops	Fair
			Gathering nodes	Informal gathering areas	Poor
			Sitting areas	Sitting on cars, on sidewalks to socialize, no benches	Poor
	Social Interaction	Face to face communication	Part of daily routine, strong social interaction between residents, shopkeepers, and children	V.Good	
	Community Participation	Volunteer activities...etc.	Didn't recognize any	Fair	

Aspect	Component	Indicators	Sub Indicators	SABRA COMMERCIAL URBAN CORRIDOR	EVAL.
		Personalization	User Needs and Satisfaction	Residents are claiming about their current situation in the neighborhood	Poor
		Vending and Kiosks	-	Street vendors causes crowdedness	Fair
		Shows and Performances	-	No shows and performances along the corridor	V.Poor
		Activities	Recreational facilities and play areas	children play in the street, No facilities, child labor, just cafes and restaurants	V.Poor
		Desires and Needs	People's Presence	Pedestrian crowd due to variety of shops	V.Good
			Variety of Goods	Mainly butcher, boutique, grocery	Good
		Public Art	Graffiti / Personal Presentations	No art expressions and drawings	V.Poor
		Perception of Safety	Residents' Cognitive Feelings	Residents fear that there is no safety in the area	Poor
	Cultural Components	A Sense of Belonging	Place Identity	Not measured	N/A
			Cultural Factors	-	No historical buildings along the corridor
Environmental Aspect	Natural Components	Climate Conditions	Sunlight	Natural illumination	Fair
			Shading Elements	Buildings shade the commercial corridor	Good
			Noise Pollution	Continues vehicle beeps	Poor
			Air Pollution (Fumes from transportation modes)	Motorcycles crowd and vehicular crowd mainly cause fumes; air pollution	Poor
		Topography	Slope of the corridor	Appropriate for pedestrian and vehicular	Good
		Vegetation	Green Open Spaces	Limited amount, some trees along the corridor	Poor
Economic Aspect	-	Diversity	Mixed Land use	Mainly commercial and residential	Good
			Variety of Retail shops	On Ground floor, mainly butchers, boutiques and grocery	Good
	-	Prosperity & Vitality	Income level	low wages and poverty of the neighborhood's inhabitants	Poor
			Rental Value	Most of the shops are rented with high value and not owned	Poor
			Business Age	More than half of the neighborhood's enterprises are businesses that have been functioning for more than 10 years	Fair

After Analyzing the different aspects of livability of Sabra Commercial urban Corridor: Pilot study, it is noticeable that this commercial corridor requires development in its Physical Aspect mainly which defines the most inadequate quality and performance. While concerning the Social and Cultural Aspect, it represents the most efficient performance, because residents' perspectives and views are affected by commercial urban corridor performance, which shows positive results on the urban level. Economic Aspect requires prosperity and vitality due to resident's claims about the economic situation in the area; low wages and poverty of the neighborhood's inhabitants although it is a mixed-use neighborhood with various building uses, which boosts the economy. Last, the Environmental Aspect needs development and enhancement due to the traffic noise caused along the corridor since there is contradiction between pedestrian and vehicles.

Indicators that mostly affect the economic prosperity, social interaction, thermal comfort, and physical quality corridor layout along the commercial urban corridor are below:

- Physical Aspect : Traffic Safety, Pedestrian and Child safety, Suitable Sidewalk Condition, Pedestrian Crossings, Trash and Bins, Street Layout (pedestrian, vehicles, bicycle) , Good Existing Building Conditions, Street Furniture: Benches, Seating, Handicapped needs, Lighting elements , Visual Aesthetics , Cleanliness and Maintenance, Adequate Parking Spaces
- Social and Cultural Aspect: Gathering spaces, Shows and performances, Community participation, Activities (recreational, play areas), Public Art
- Environmental Aspect: Shading Elements, Vegetation
- Economic Aspect: Economic Prosperity and Vitality (income, rental values, standard for living)

After analyzing the commercial urban corridor and identifying the effective indicators, the research resulted in proposing some guidelines for enhancing livability in commercial urban corridors, which are as shown below:

a. Traffic Safety, Pedestrian Safety

Physical Aspect: Buffers between Pedestrians & Vehicular Traffic. Designing streets where people walking, parking, shopping, bicycling, working, and driving can cross paths safely as shown in Fig 21 below. Safe



Fig.20: Showing before and after photo of Sabra Commercial Urban Corridor showing the proposed guideline in creating buffers between pedestrian and vehicular traffic

b. Shows & Performances, Special events that highlight local culture

Social & Cultural Aspect: Changing the corridor function during different days or times for special events like Souk Al Akel, Bazaars by street vendors and many others as shown in Fig 22 below. *Flexible*



Fig.21: Showing before and after photo of Sabra Commercial Urban Corridor showing the proposed guideline in creating shows and performances in the area

c. Urban Forest

Environmental Aspect: Trees add beauty, improves air quality making the area a healthier place to live in, reduces air and noise pollution, conserves water and reduce soil erosion, saves energy, modify local climate, provide shade, increase economic stability since it will attract more visitors and business as shown in fig 23 below. Comfort



Fig.22: Showing before and after photo of Sabra Commercial Urban Corridor showing the proposed guideline in adding vegetation and creating an Urban Forest in the area (the Author?).

d. Public Art

Physical Aspect & Social Aspect, Visual Aesthetics; Welcoming storefronts with colorful awnings where color creates ideas, expresses messages, triggers attention, and generate certain emotions. This can transform the aesthetic and the social psychology of the whole area; turning public urban spaces and deprived places into inspiring artworks of monumental size as shown in fig 24 below. Inviting



Fig.23: Showing before and after photo of Sabra Commercial Urban Corridor showing the proposed guideline in adding colorful awnings and Street Arts to walls of enclosure buildings at human scale

e. Corridor Design

Physical Aspect: Corridor Design: An environment should be considered in places where pedestrian activity is high and vehicle volumes are either low or discouraged. To maintain access for vehicles operating at low speeds and are designed to permit easy loading and unloading for trucks at designated hours. Considering the detailed information about the urban qualities for the street environment including (sidewalks and roadway design, open spaces, street furniture, handicapped needs) in addition to quality of infrastructure, yet availability of maintenance is one of their major needs to feel livability. (See Fig.25)



Fig.24: On the left Brain storming for corridor design proposal in Commercial Urban Corridor. On the right Sidewalk designs according to urban street guide
Source: Urban Street Design Guide & the Author, 2020

f. Physical Condition of Buildings

Physical Aspect & Social Aspect: the physical conditions of buildings is very important since these buildings and edges that creates a sense of enclosure define the commercial street. Since this area targets low to middle-income people. Inhabitants can participate in upgrading the physical conditions of buildings by painting the exterior walls of the buildings to create a holistic story of place and can convert this non-urban oriented commercial urban corridor into a livable place. It will be as part of the labor and simultaneously it will be a source of income. (See Fig. 26)



Fig.25: showing the colorful buildings. On the left: Photo in Istanbul, Turkey. On the Right: Photo in Stockholm, Sweden

Source: <https://theculturetrip.com/europe/articles/these-are-the-most-colourful-streets-in-europe/>

5. GENERAL CONCLUSIONS

This research ends up with a set of general conclusions, which includes:

- A theoretical, inductive review conducted by this research provided an extensive study of the most important theories and literature addressing the concept of livability as an essential factor in enhancing livability in commercial urban corridors, creating a comprehensive knowledge base for the most significant indicators to raise the efficiency of a corridor's performance and to increase its livability.
- The comprehended checklist functions as a broad framework to present needed knowledge, identify problems, and recognize the strengths and weaknesses of a commercial corridor's performance to enhance its livability.
- Based on this research, it is concluded that there should be a consideration of the most influencing indicators on enhancing a livability in the urban commercial corridor to develop a future sophisticated list of more influencing indicators to measure the livability in different commercial urban corridors.
- Geoportal interactive tool; Web App Builder using ArcGIS is an important decision support tool to help decision-makers/ local authorities , to be provided with necessary cartography vital for data collection and knowledge for the existing physical environment for future developments.

6. RECOMENDATIONS FOR FUTURE RESEARCH

This research ends up with a set of recommendations, which includes:

- It is recommended to use simulations in measuring people's behavior in commercial urban corridors like Space Syntax which is a way to represent urban space, and describes patterns of spatial relationship and how urban grid configuration influence the existing movements.
- It is recommended to use and develop a Geoportal interactive tool, Web App Builder for ArcGIS an intuitive application that allows user to build 2D and 3D web apps without writing a single line of code used for viewing the data and tracking the errors accordingly important for local authorities, researchers and students which could be developed in BAU Urban Lab.
- It is recommended to conduct further research about the Pilot Study especially after Beirut Port Explosion (August 04, 2020) that maybe caused modifications in the existing condition in the area and affect its livability.
- It is recommended to study the commercial activity especially during COVID-19 pandemic, an important temporal variable affecting livability in commercial areas.

REFERENCES

- Mehanna, W., & Mehanna, W. (October 2019). Urban renewal for traditional commercial streets at the historical centers of cities. *AEJ - Alexandria Engineering Journal* 58(4), Retrieved, from https://www.researchgate.net/publication/336708111_Urban_renewal_for_traditional_commercial_streets_at_the_historical_centers_of_cities.
- Nacto. "Urban Street Design Guide." *National Association of City Transportation Officials*. Adapted from the Urban Street Design Guide, published by Island Press, Web. <https://nacto.org/publication/urban-street-design-guide/>
- Ergun Kocaili, B. (2010). *EVOLUTION OF SHOPPING MALLS: RECENT TRENDS AND THE QUESTION OF REGENERATION* (In Partial Fulfillment of the Requirements for the Degree of Master of Science in Interior Architecture). Çankaya University.
- UN-Habitat, Unicef,. (2018,). Geoportal: Web App Builder using ArcGIS. ArcGIS Web Application. Retrieved from <http://un-habitat.maps.arcgis.com/apps/webappviewer/index.html?id=3a38c8bbdc104a7ebb41089644aa1505>
- Atef Elsaywy, Ahmed, Hany M. Ayad and Dina Saadallah. "Assessing livability of residential streets – Case study: El-Attarin, Alexandria, Egypt." *Alexandria Engineering Journal* (2019) 58, 745–755. (2019)
- Wagner, F. and Caves, R. (2012). *Community Livability, Issues and Approaches to sustaining the well-being of people and communities*. USA and Canada: Routledge.
- Shaban, L., Suleiman, S., Abdel-Aziz, D. and Y. Isawi, H. (2018). Evaluating the Visual Pollution in Urban Corridors-Case of Al-Madina Al-Munawara Corridor, Amman. *Research Journal of Applied Sciences, Engineering and Technology*, [online] 15(8), pp.288-294. Available at: https://www.researchgate.net/publication/325257434_Evaluating_the_Visual_Pollution_in_Urban_Corridors_-_Case_of_Al-Madina_Al-Munawara_Corridor_Amman.
- Catherine Dyste, D. (2012). *Kris Nelson Community-Based Research Program, Understanding Strategies and Tactics in Commercial Corridor Revitalization*. [ebook] Available at: <http://www.cura.umn.edu/publications/search> [Accessed 7 Feb. 2020].
- STILLWELL, J. and CLARKE, G. (2004). *Applied GIS and Spatial Analysis*. England: John Wiley & Sons Ltd, the Atrium, Southern Gate, Chichester, West Sussex PO19 8SQ.
- Mazin Ghazi, N. and Radi Abaas, Z. (2019). *Toward liveable commercial streets: A case study of Al-Karada inner street in Baghdad*. Heliyon.
- Bai, X., Nath, I., Capon, A., Hasan, N., & Jaron, D. (2020). Health and wellbeing in the changing urban environment: complex challenges, scientific responses, and the way forward. *Science Direct*. Retrieved from <https://www.sciencedirect.com/science/article/pii/S1877343512001169>
- HEALTHY CITIES for embedding health in urban planning policies. (2020). Retrieved 27 July 2020, from <https://urbact.eu/healthy-cities-embedding-health-urban-planning-policies>