Accessibility as a Method of Measuring Urban Legibility

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ABSTRACT

Spatial knowledge will always be a complicated and ambiguous issue. Urban legibility is one of the most important issues related to spatial knowledge. The spatial knowledge and mental images are affected by the dynamic nature of urban spaces, and this fact shaped the definition of the legibility of urban spaces. Accessibility of urban paths and linking urban nodes increase clarity and image ability in urban areas. The frequent use of urban space, especially paths, enhances the ability to read visual elements, so ease of access is a key variable in determining the percentages of use of the path and type of movement in it. The importance of this subject arises from the need to re-create "place" within the urban spaces of contemporary cities, specifically urban links and public paths that direct to and link main landmarks, as the paths represent a large percentage of urban spaces within the centers of contemporary cities. This study aimed to build a model of assessment that expresses the relationship between the accessibility of urban paths and their legibility. This study assumes that legibility is related by its objective aspect to accessibility and aims to measure legibility in urban links ("River of Hila as a case study"). The suggested model tries to express the relationship between the accessibility of urban paths and their legibility. This will be reviewed through three levels of intersected measurements that link legibility and accessibility. According to the results of testing the levels of intersected indicators, path [C-3] achieved the highest values according to the survey and questionnaire in the field study. The methodology adopted to achieve the main goal of this research is divided into two parts: 1) Determining the procedural definitions of the study vocabulary, visual legibility and accessibility. 2) Determining the basics of the conceptual link between the concepts of visual legibility, and accessibility. 3) Building the intellectual model that will regulate the measurement framework and its indicators. 4) The final part of this methodology will be the framework structure of intersection indicators and the results of the applied study.

1. INTRODUCTION

Legibility is one of the principles of urban design and a vital element of high-quality urban areas. The capacity to arrange one's surroundings in an orderly and imaginative manner is Legibility's definition [1]. Legibility means the possibility of organizing an environment within an imaginable and coherent pattern. Spatial legibility differs from the concept of reading. The process of reading elements of the urban environment develops through visual absorption of spatial information from the surroundings, processing that information in the mind, then applying it appropriately for its intended use. Gathering spatial information involves two elements: the observer's attributes and the space's features. Spatial-psychological processes in the mind are responsible for the observer's perception and comprehension of a space's properties.

According to Lynch [2], features of space and the characteristics of its users affect the spatial knowledge that leads to urban legibility. River cities were characterized by the specificity of urban network planning; especially the paths perpendicular to the riverbank, which often represent the most legible general paths within the fabric of the city. Later, several transformations occurred in the urban networks, in line with the movement of vehicles. This led to a decrease in the visibility of the vertical paths on the river. Legibility was a central theme and focal point of research related to the urban environment and pedestrian paths. These studies submitted the concept from different aspects: socially, and visually, like in the study of lynch. It also studied legibility according to image ability-base [2, 3] and functionally [4]. Another study discussed the two main variables the complexity of spatial layout and, the saliency of landmarks as they define characteristics deriving from space [5].

The mental image concept depends on legibility as the basic visual quality in urban areas. The clarity of a city's components that allows its residents to recognize and arrange them in a general pattern is known as city legibility [6].

The importance of defining a city as legible is related to the need to elevate and maintain the "continuity between salient elements and viewable fields of the landmarks combine to produce a cohesive structure [7]. The complexity of daily urban life is produced by time and mobility. Legibility

significantly influences how people perceive, experience, and appreciate the city [2]. Employing legibility can eventually support users' "civic pride" and "help cities rethink how they present themes and how they communicate" [8]. Scholars disagree over the definition and significance of readability because of research on the concept and process of legibility. While some researchers [5] insist on addressing subjective representations, others provide objective methods for examining how legible urban layouts are.

Research conducted to compare elements impacting walkability in two Egyptian cases: Heliopolis and New Cairo City, looked at the relationship between urban setting layout and walkability. To what extent does urban fabric influence walkability? What convenient approaches are utilized to assess walkability? What comparative spatial studies are utilized to investigate the improvement of urban structure for walkability? The current work makes a contribution by comparing two examples from Cairo using a mix of spatial analytic methods such as space syntax and walk score [9].

2. SPATIAL LEGIBILITY

Spatial perception is an important factor in spatial legibility. It should be simple to identify urban areas and keep in mind how they are connected [2]. People will feel safer and more confident as a result of this procedure and be able to locate themselves in places [10]. Spatial legibility will help residents find their way about the city, plan their activities, strengthen their mental faculties, and make it easier for them to move around.

In the urban environment, legibility serves a social function by providing the building blocks for shared memories, symbols, and gatherings of citizens. According to Golkar, readability is made feasible by the urban landscape [11]. The physical environment and how it is perceived form the city's mental picture and determine how legible urban places are. Wandering across the surroundings allows one to experience it (Flaneur concept). He or she moves, scans the surroundings, and interprets the situation. Thus, in a readable setting, everything can be summed up by three basic needs: having an activity (clear function), seeing (what is private and what is public), and moving (excellent connectivity) [11]. The outcomes demonstrate compatibility between the needs-based design principles and the visibility graph model, which illustrates the possibilities of both public and private areas [8]. Perception of pedestrian kinetics through global integration Local integration is described. As a good predictor in the space syntax literature today; nonetheless, the findings obtained from utilizing it require segment analysis to be strengthened. The problem here is that this technique is exclusively based on topology, but other studies have highlighted the importance of geometric and metric distance. Further improvement of this study can apply segment analysis with metric radius 400 m and 800 m to provide a reliable and valid forecast of pedestrian movement. Furthermore, segment analysis can give a more solid foundation for selecting gate-count sites [5]. According to the prior, numerous aspects that influence the legibility of the built environment may be identified [12].

3. ASPECTS OF SPATIAL LEGIBILITY

Legible surroundings are defined by several notions in the literature including easy to understand coherent, understandable, perceivable, and so forth. Each of these ideas suggests traits derived from the space's structure. However, these notions cannot be used to judge legibility. Morphological, perceptual, social, visual, functional, and temporal are the six dimensions of urban space; many more might be added to address the subjective and objective components of legibility. The concepts of reading space subcomponents and spatial legibility are distinct [5].

3.1 Objective aspect of legibility

Spatial legibility and spatial layout are related according to the factors that influence how easily perception the environment. The urban landscape is one of these factors. These factors indicate the properties of space; however, these ideas cannot be used to quantify legibility [12]. To gauge the spatial interdependence of legibility, two factors are identified:
1. the level of spatial arrangement complexity
2. landmark identification [5].

In contrast to local spaces, public spaces have to be accessible to all members of society, and people should be able to find out how to move about and successfully receive and comprehend environmental stimuli. A street is a gathering place for diverse individuals [12]. While landmarks indicate a three-dimensional understanding of space, spatial arrangement relates to a two-dimensional understanding of space. Way-finding behavior also makes use of these two variables [5]. Human factors: elements that influence how the environment is seen [11].

3.2 Subjective aspects of legibility

The two primary purposes of the environmental picture, according to Lynch's model (1960), are: A way-finding means and planned activity in the city. Additionally, he divided it into three components, which are:
• Identity: the capacity to recognize the city's components within its broader context.
• Meaning: efficiency and feelings worth to the viewer [2].

When using way-finding behavior, these two variables are also utilized as components of spatial information. There are different strata in an urban environment. The first is the physical layer, which has intricate topological relationships and buildings. The second is the historical layer, which shows the signs of past development in the physical settlement. The third layer includes a variety of cultural experiences, including social, personal, and religious ones [5].

4. LEGIBILITY AND MENTAL IMAGE

The research focuses on clarity in the visual dimension of urban space users, especially the urban path which can be the key to explain legibility in its objective aspects. The mental image is the internal impression that is formed in the user's mind through his spatial experience [5]. There are a number of variables that affect visual legibility with its objective aspects, including the morphology of urban fabric, land uses, building patterns [2]. Urban paths are defined by the components of plots, buildings, the configuration of the networks, and the scale of edges [13]. It is essential to detail the vocabulary associated with these effects. So, the concept of visual legibility in urban paths related to the following aspects:

1. Structural dimensions that depend on the organization of the visual elements of the path's edges.

2. Intangible aspects which Identifying by the use of symbolic components.

3. Functional aspects which can be related to the comfort zone criteria or ecological elements. These aspects taking into account the proportions and volumetric composition, a clear mental image should be created and enhanced utilizing clear and motivating aspects of closeness and appropriate height. The quality of the path can be defined through appropriateness of the location in terms of the availability of hierarchy of urban squares, green axis, pocket parks, land use, and reachable amenities. Quality of place, is also, defined by blue and green Infrastructure and park systems. Distinction of place identity is takes into consideration, sign, edge, node, and significant urban areas [11].

In order to create a healthy and happy environment where residents may have visual contact and more easily recognize and interact with the design, it is crucial to install beautiful impressive urban signage. Environmental quality and utility values of places are directly and positively correlated with its optimal visual quality. The introduction of visual quality that individuals find appealing is necessary to influence their visual perception [12].

4.1 Accessibility and visual legibility

In organizing his movement within the city network, the user relies on a number of mechanisms, including choosing the most easy-to-reach path to the target. Paths are the main elements which have high densities of daily use in cities. So, city residents spend most of their outdoor time travelling in urban paths. Accessibility increases the possibility of using space. So, accessibility can be related to legibility in its functional side. According to the previous statement, layout of urban form, spatial layout's complexity, land use, Land marks defined the identity of paths, and these are factor relates to functional legibility. In the other hand, the three-dimensional details of a place and landmark saliency can be related to concept of legibility as a whole [14]. Accessibility can be related to landmark saliency as it is related to permeability and walkability. These factors affect the ability of people to read their surroundings in order to find and define their way and built a connection to the place. So, we'll defined legibility factors according to accessibility concept (Figure 1).
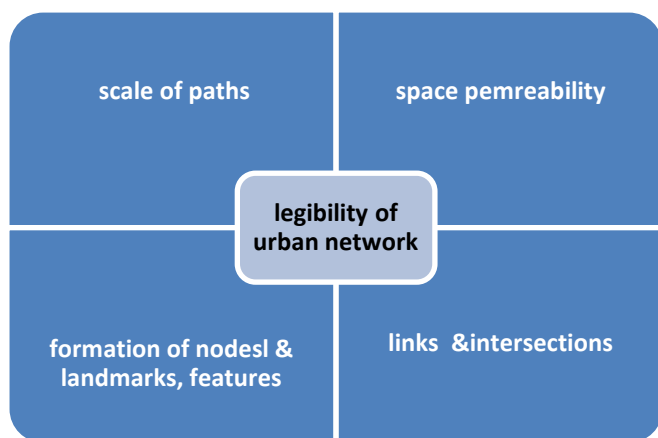
Figure 1. Urban network aspects and functional legibility
source: the researcher

4.1.1 Readability and walkability

Cities around the world began a current tendency to improve the spatial quality, which is one measure of life quality. Enhancing Street life was one of the basics of these policies. This idea has been highlighted since the end of the modern era in writings of Jane Jacobs, Oscar Newman, Kevin Lynch, and others. They highlighted the role of planning and design of urban environments in enhancing the effectiveness of spaces cognitively and socially. The three Ds (design, density, and diversity) have the greatest effect on walkability, with the 'design' aspect being the most important. In other words, urban form has a major role in displacements. The urban form is a distinct urban grid, and a systemic notion of urban form should be addressed [13]. Some indicators of integration, connectivity, and the like played a major role in the measurement of Space Syntax, as a tool of evaluating spaces and network. Theory was utilized and included into the database (Barros, 2014), which consists of four categories of characteristics influencing walkability: (a) geometric; (b) syntactic; (c) transit accessibility; and (d) activities.

Walkability is the level to which a built environment encourages and enables pedestrian walking with accessibility and security. It's the efficient for connecting between various destinations, and offering aesthetic appeal during navigation within the network [9].

4.1.2 Networks permeability and picturesqueness

City's paths network demonstrate in two types that characterized by the distinction of stereotypical language that are; (typical language and formal language). This language explains how humans interact with the urban environment and propose practical solutions that have grown and developed over the years [15]. The aspects of connection and relationship among the primary axes are more significant than the layout style [16]. The basic means of mobility is the reading of the articulations of street grid layout or the degree of density between buildings and inhabitants [17]. This explains why some areas are more legible than others. Configurations of urban fabric influences walkability in terms of connectivity [18]. According to the previous, walkability may be viewed in terms of sites of origin and destinations, or the possibility of the locations to become routes or points of arrival. The choice of pathways is a logical process which expressing individuals' preferences for one route over another [19]. Urban form is characterized in this context as a geometric composition of the city's elements (streets, buildings, blocks, facades, street furniture, vegetation, and so on) in terms of size and proportions. Furthermore, it is critical to study the concept in light of how the elements in urban space are arranged and connected to one another, either from a two- or three-dimensional perspective [20].

According to the previous discussion, the interpretative vocabulary that is related to the interpretation of the relationship between legibility and accessibility is shown in Figure 2.

These sets of factors describe physical conditions that allow or not allow people to move through places with minimum obstructions, which can be called the conditions of walkable environment [21]. In addition to influencing mobility and circulation, urban forms' spatial arrangement aids in understanding and creating mental images of the relationships between various spatial aspects [21].

mental Image
- Urban elements enhance environmental legibility
- A distinct and attractive mental image in individuals' thoughts, which will improve the quality of space.

movement and meaningful physical elements
- Urban elements with traditional and indigenous style that has a positive impact on increasing the legibility and quality of the environment
- types of movement enehancing the users' sence of place
- connectivity has the imapct on mental image

Figure 2. Legibility terms explained according to terms of connectivity [5, 12]

5. THEORETICAL FRAMEWORK

In this part of the research, concept of accessibility will be explaining according to elements that enhance urban legibility in order to find variables that connected between the two concepts. In the research hypothesis the concept of legibility is the dependent variable, so the concept of accessibility will be the independent variable.

5.1 Method of merging measurements
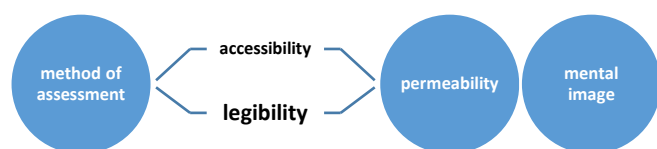
Figure 3. Method of merging measurements
source: the researcher

Legibility has a significant impact on users' comprehension, experience, and enjoyment of the city. Intelligible in urban places leads to a strong correlation between spatial configuration and movement patterns.

Research uses mixed method, qualitative and qualitative research (Figure 3). The study in its applied part merges the two concepts (legibility and accessibility) according to the below steps:

I. Accessibility assessment in path (from certain source to a certain destination) in terms of network connectivity and permeability. According to Hillier [8], the spatial arrangement of the environment is impacted by certain predictable outcomes when an object is positioned here or there inside a spatial system. Although humans can employ these effects to create spatial and social consequences, they are completely independent of human wishes or purpose [18]. The main impact of space planning is the creation of movement in the spaces, whether of people or cars. Additionally, this movement promotes a proliferation of uses (i.e., movement generators and attractors) [22, 23].

II. Legibility assessment for most accessible path according to a questionnaire. The questionnaire centred on the degree to which urban features work as indicators to raise the standard of urban areas (paths) and instil a sense of vitality in the minds of the populace.

III. Measuring the intersected indicators according to (Table 1).

Measurements will be:

- **First: permeability** of linear spaces, which can be measured by a collection of mathematical equations and descriptions methods in order to assess movement behavioural patterns within the spatial configuration [1]. This variable will give a direct assessment of the occupancies of the paths within the city's districts. Urban form and amenities will be explanatory factors of walkability.
- **Second: mental image** as an indicator of functional legibility will be examined within the higher occupancies paths according to the permeability scales.

Table 1. Method of assessment

Intersection of Concepts			Walkability Scale of the Path	Accessibility Amenities Quality of the Path	Preambility Nodes and Links
Legibility	Urban form	Regularity of Paths Permeability Connectivity	Level one of intersected indicators	-Network identification -Least depth -Zone of influnce	Level one of intersected indicators
	Land use	Diversity and consentration	Level three intersected indicators	-Location -Type -Obstacles	Level three intersected indicators
	Land marks	Number and Location in the path	-Type of journey -Visual attributies	-Repitetion of use Level three intersected indicators	-Type of journey -Visual attributies

source: the researcher

6. APPLIED STUDY

After illustrating the theoretical foundation of the legibility and accessibility, the conceptual framework was formed (Table 1). The applied research will depend on mixed approach which used a mathematical and descriptive-analytic approach to the study area, and citizen interviews were utilized to collect data.

6.1 Study area description

Rivers have a role in developing cultural landscapes, producing spatial networks and layers of urban tissue, connecting space and society. The relationship between the river and the growing road network results in the formation of the riverfront city [23]. So, it's essential to study the legibility in urban paths in their relation to river side. The importance of

the river in the city is generated from the fact that it is one of the important land uses. Rivers, in the traditional parts of city, shaped the axes which penetrates old fabric in which most of the community activities of the population are concentrated. In contemporary urban areas, axes are located parallel to the course of the rivers and formed as basic effective paths [23]. These cases are found in Hila city in Babylon provenance in Iraq and made Hila city center suitable for applying the framework. The city of Hila is the administrative center of the province of Babylon, and is 100 km from the city of Baghdad and 45 km from the city of Karbala and 65 km from the city of Najaf and 85 km from the city of Diwaniyah and 200 km from Anbar, and linked with these cities lines of transportation, and the city is located on both sides of the Shatt al-Hila one of the branches of the Euphrates River in a position where the longitude intersects 44.26 degrees east with a latitude of 32.29 degrees north. In order to apply the theoretical framework, an area located between the 40 Street and Hila riverside (the new development area adjacent to Shatt Al-Hila) was chosen (Figure 4). This part represents the heart of the city.

Figure 4. Urban Network (paths and nodes in the study area)
source: the researcher

Studying legibility of urban layout is the main key factor that relates the two concepts, and according to this study hypothesis, definition of the level of accessibility with certain layout terms must be accomplished. So, the applied part of this research will be arranged according to the bellow steps:

First: choosing research sample that is suitable in its social and physical aspects. The scale of the sample and the time variable must fulfil the measurement requirements (Table 2).

Second: study area will have classified into types of paths according to the level of accessibility with the river. This level will be previously measured according to the physical variables that determine level of accessibility that mentioned

in the theoretical part of this research, and this will be measured by the below equations:

$$\text{ADT less p} = 2v^2 - 6v + 4 \qquad (1)$$

V= number of nodes

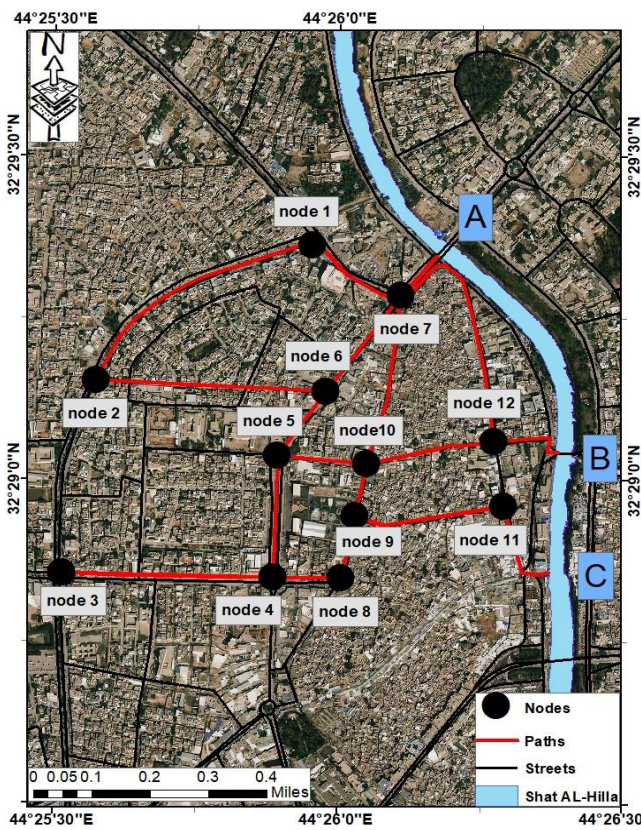ADT less P= Depth between nodes and nodes (path with lower depth and highest permeability)

$$\text{ADT highest p} = (v-1)3/3 + (v-1)2 + 2(v-1)/3 \qquad (2)$$

ADT highest p Lower depth of paths (highest permeability)

$$\text{P} = \text{ADT less d-ADT less p-ADT highest p} \qquad (3)$$

Third: survey and questionnaire applied for measuring walkability and available amenities. The random sample of population consisted of 30 people. A survey of the most occupied paths (accessible) with full description had been made.

Forth: the last stage of the applied study is a comparative analysis according to the survey of the three paths that achieved the higher percentage of indicators (Figure 5).

Table 2. The measurement requirements for paths

Path No.	Path Length
1-A	**0.502**
1-B	**1.159**
1-C	**1.300**
2-A	**1.272**
2-B	1.639
2-C	1.751
3-A	1.776
3-B	1.783
3-C	1.474
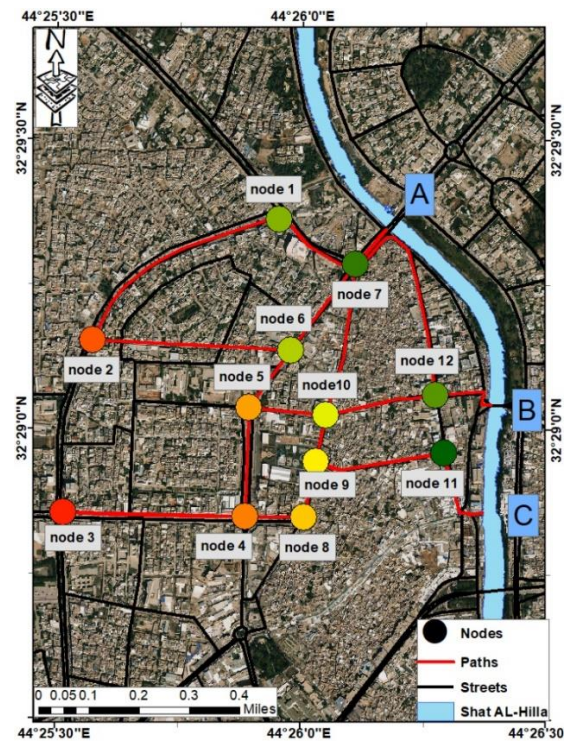
Figure 5. Nearest path measurement [from generation nodes to destination nodes and the length of the paths [the researcher depending on survey]]

6.2 The results

The first stage results showed in Table 3 and Figure 6. The second stage of results showed in the below graphs which summarized the ratios of questionnaire in the study area (Figures 7-13).
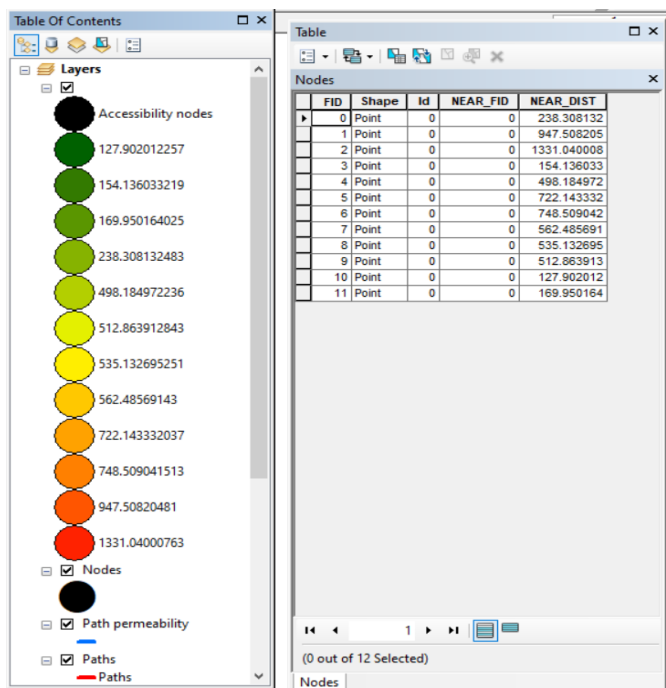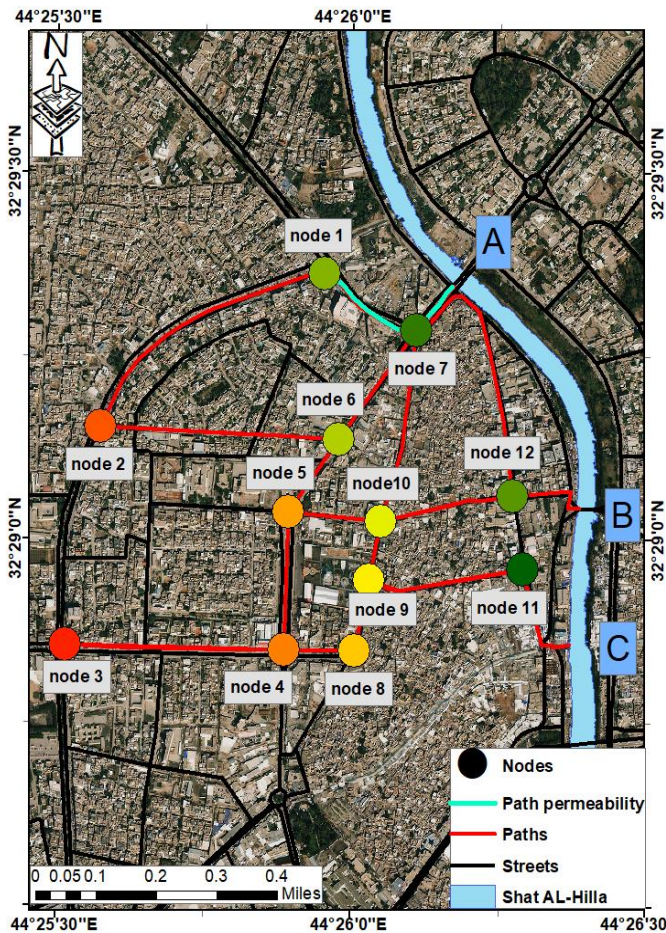

Figure 6. Preamiability plan of the study area
source: the researcher

Table 3. Level of accessiability of paths linking the detrmined nodes between 40 streets and the river of Hila

Path Name	No. of Node	Depth	Measurement
1-A	3	Less	0.238 km	$ADT_{less\ p} = 2v^2 - 6v + 4$ $2(3)^2 - 6(3)+4=4$ $ADT_{highest\ p}= (v-1)^3/3+(v-1)^2+2(v-1)/3=8$

P1A = $ADT_{less\ d}$ - $ADT_{less\ p}$ / $ADT_{less\ p}$ - $ADT_{highest\ p}$
P1= 0.238-4/4-8=0.94

Path Name	No. of Node	Depth	Measurement
1-B	4	Less	1.159 Km	$ADT_{less\ p} = 2v^2 - 6v + 4$ $2(4)^2 - 6(4) +4=12$ $ADT_{highest\ p}= (v-1)^3/3+(v-1)^2+2(v-1)/3 =20$

P1B [path permeability] = $ADT_{less\ d}$ - $ADT_{less\ p}$ / $ADT_{less\ p}$ - $ADT_{highest\ p}$ = 1.159 -12/12-20=1.36

Path Name	No. of Node	Depth	Measurement
1-C	5	Less	1.300 km	$ADT_{less\ p} = 2v^2 - 6v + 4$ $2(5)^2 - 6(5) +4=24$ $ADT_{highest\ p}= (v-1)^3/3+(v-1)^2+2(v-1)/3=40$

P1C = $ADT_{less\ d}$ - $ADT_{less\ p}$ / $ADT_{less\ p}$ - $ADT_{highest\ p}$ 1.41=

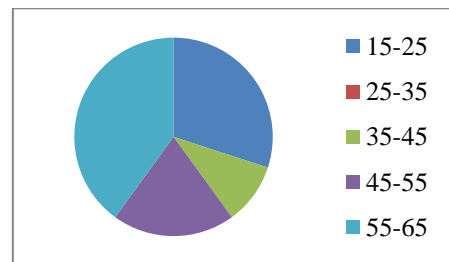| Path Name	No. of Node	Depth	Measurement
2-A	4	Less	1.272 km	$ADT_{less\ p}= 12$ $ADT_{highest\ p}= 20$
				P2A=1.34
2-B	6	Less	1.639 km	$ADT_{less\ p}= 40$ $ADT_{highest\ p}=70$
				P2B= 1.28
2-C	7	Less	1.751 km	$ADT_{less\ p}= 60$ $ADT_{highest\ p}=112$
				P2C= 1.12
3-A	6	Less	1.776 km	$ADT_{less\ p}= 40$ $ADT_{highest\ p}=70$
				P3A= 1.27
3-B	7	Less	1.783 km	$ADT_{less\ p}= 60$ $ADT_{highest\ p}=112$
				P3B= 1.12
3-C	6	Less	1.474 km	$ADT_{less\ p}= 40$ $ADT_{highest\ p}=70$
				P3C= 1.28

source: the researcher

Figure 7. Sample clssification (age)
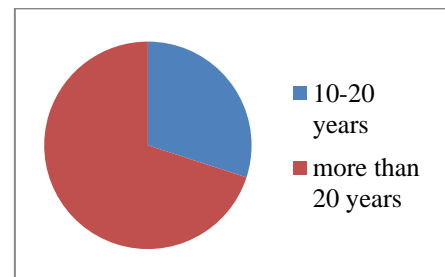
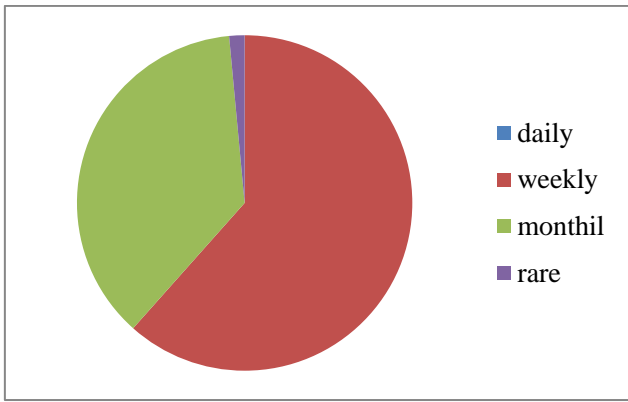**Figure 8.** Sample classification (period of living in the place)

Figure 9. Repition of use

Figure 10. Type of transportation

Figure 11. Ratio of the use
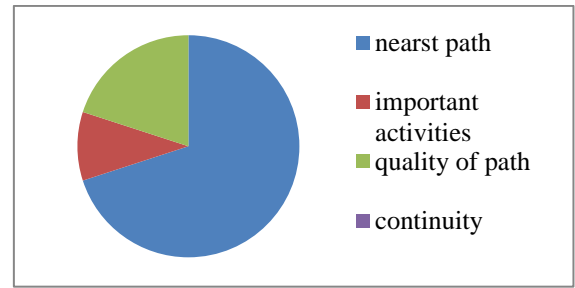

Figure 12. Type of activity

Figure 13. Reason of path choice

According to the results of survey, the three paths that achievd the hightes ratio of path choice between nodes of trip generation and trip destination achived the below result for the identification of landmarks (Name the building or featurs that you remember in the path) (Figure 14):
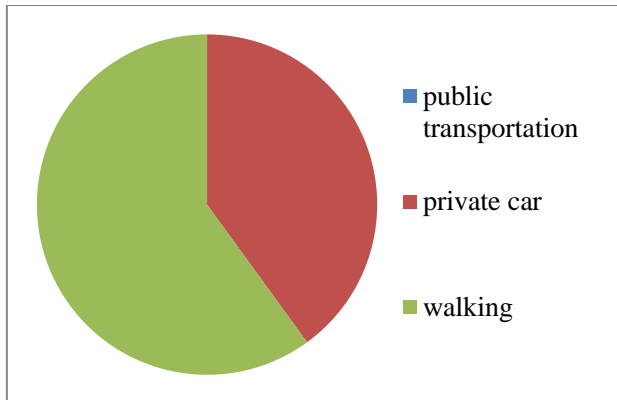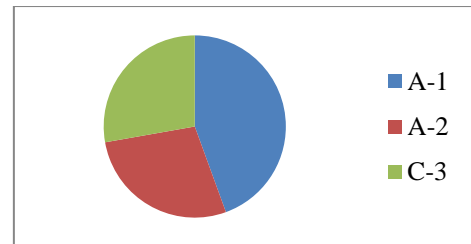

Figure 14. Features identification

The third stage: according to the survey for the main features that identified by the users of the three most higher accessable paths (A-1, A-2, C-3) (Figures 15-17, Table 4), a question has been asked to the users to mention the featurs or landmark of the paths and the nodes (the results are shown in Figures 18 and 19).
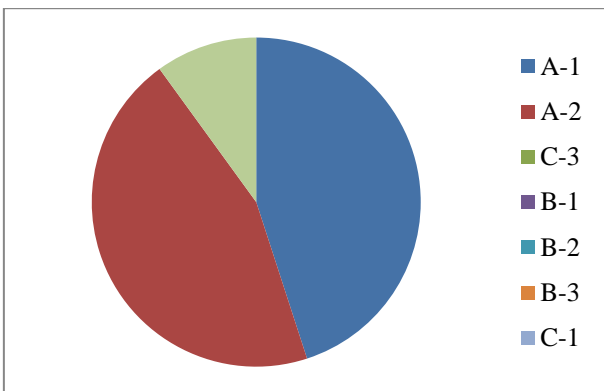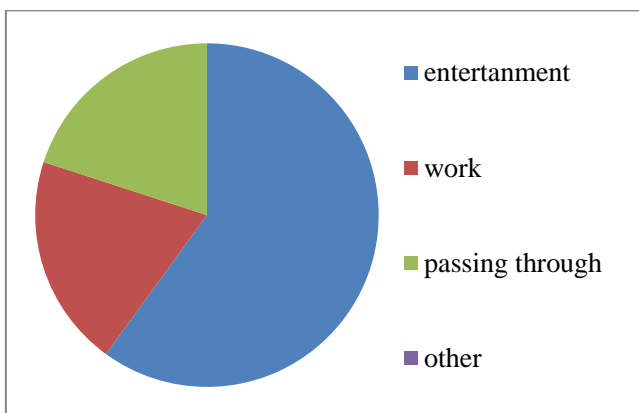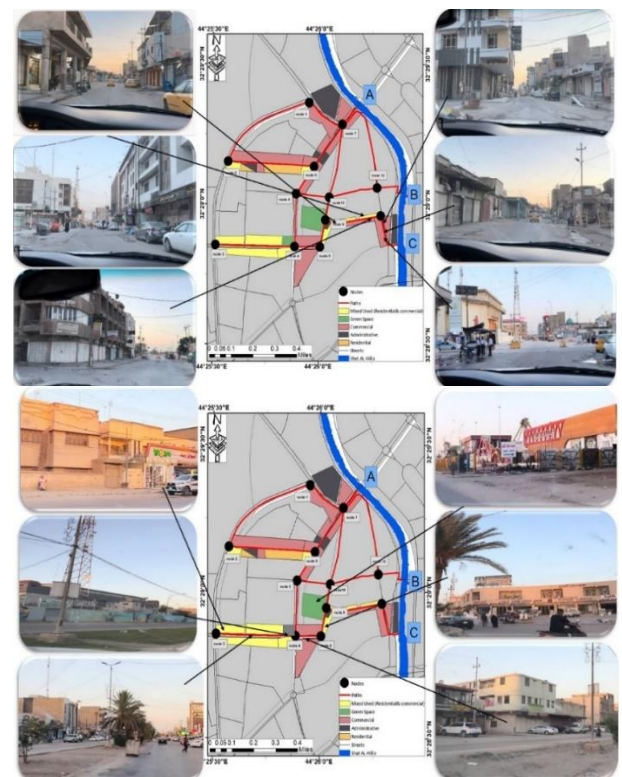

Figure 15. Identified features of path [C-3]
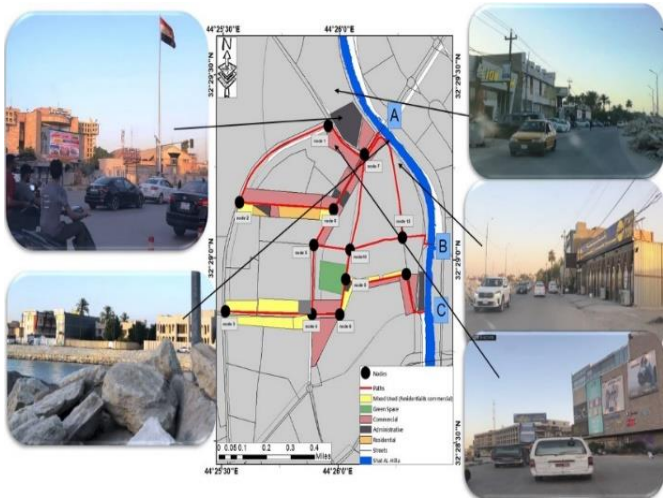source: the researcher

Figure 16. Identified features of path [A-1]
source: the researcher

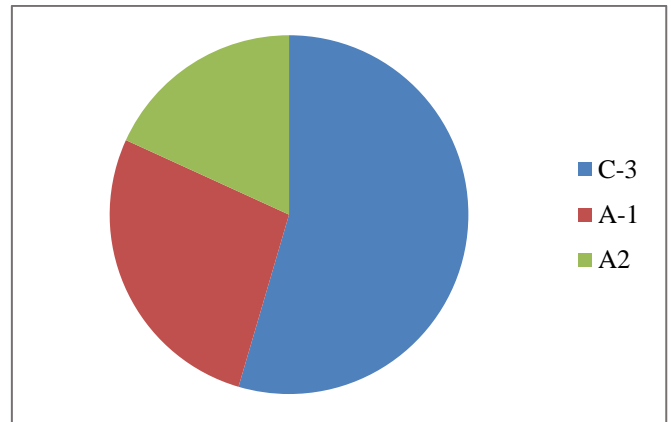**Figure 17.** Identified features of path [A-2]
source: the researcher

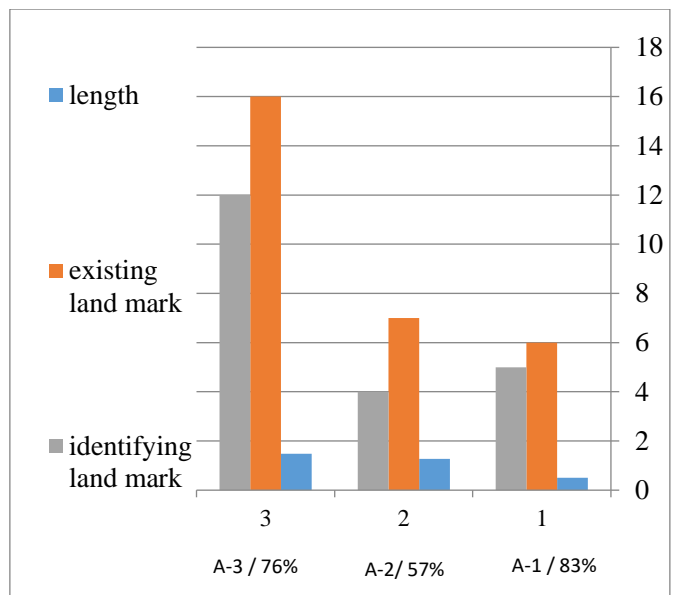**Figure 18.** No. of identified features in the three paths

Figure 19. Comparison of the results of basic variables of the three paths

Table 4. Analysis of result of intersected indicators in paths [A-1, A-2, C-3]

		Path Indicators According to Results Showed in Figures 8-18		
		A-1	**A-2**	**C-3**
Levels of Intersected Indicators	**Level one of: Network identification least depth zone of influence**	Short -direct route between point of source and destination. Path contains two nodes and limited permeability	Short indirect route between point of source and destination. Path contains three nodes and high permeability	Long indirect route between point of source and destination. Path contains five nodes and high permeability
	Level two: Location type obstacles repetition of use	-High percentage of daily use. types of Land use (housing & retail stores, administrations) -Very fast rhythm of movement, and two intersections	-High percentage of daily use types of Land use (housing, restaurants retail stores) -Very fast rhythm of movement four Intersections, car traffic, and bridge traffic	-High percentage of weekly use. types of Land use (housing, restaurants retail stores, administrations, open markets, plant nurseries, services, weekly sale market) -Slow movement rhythm Density of human gatherings Temporary and irregular land uses
	Level three: -Type of journey -visual attributes	-Journey mainly made by cars -One land mark, harmony in street scene	-Journey mainly made by cars -Two land marks, some variety in street scene	-Journey made by cars, pedestrian& other types of transportations -High level of variety in street scene, many land marks related to different historical eras and styles

source: the researcher according to the results of survey

7. CONCLUSIONS

As urban sprawl increases, people's perceptions of spatial structure decline. Urban paths represent the most occupied spaces in the city. Legibility in these parts of city is a core issue in because it helps citizens find themselves in spaces. Its function related to elevating feelings of safety and security of users in the space. Legibility means having a clear picture of the space n environment in mind which can help users easily moving from one place to another. Legibility relates to knowledge that gained through experiencing surroundings and it's the base for building a strong mental image. In order to emphasize the concept of legibility in urban, urban planning and design should direct to create and enhance efficient urban Tables elements. Characteristics of space affect legibility. The arrangement in the two dimension plans, the intricacy of the design, and the importance of the architectural elements in the third dimension all affect how readability of a place. There are two types of aspects defining legibility in urban environment that are; the subjective aspects and the objective aspects. Clarity is related to ease of access through the user's definition of linear spaces or urban paths. The urban route achieves clarity through the degree to which it defines the relationship between the source of the journey, the destination of the trip and the direction of the trip. The basis for defining and clarifying an urban route is determined by the length of the route, the journey time and the means of transportation available within each route. So, urban accessibility is representing part of the objective side of the concept of legibility. This can be demonstrated as the physical representation of each element that defines urban legibility, in particular, aspect related with urban links or paths. The morphological components are interrelated in as network. Land use planning have role in developing the shape of the city and creating a lively, beautiful and cheerful atmosphere. This shape is a continually formed by linkages that shaped by transportation, type of network, structure, forms of masses and spaces. Structures of urban space manifest with several of types. Urban signs serve as unique components of an urban area, shaped by the styles of the local populace, and serve to introduce the location to both residents and visitors. Spatial configurations and street networks are a crucial to improving the walkability. Objective types of legibility aspects depend on capturing the attraction of users through the design of proportions in appropriate positioning, successive views with varying visual values along the axis, and taking into account clarity principles such as user and plant diversity. Results of applying the intersected indicators in the study area showed that the relation between path permeability and length is not an absolute criterion for path clarity, so route usage intensity is a key determinant of the clarity of features and nodes within the path for users. Also, the permeability and length of the path is not a major determinant in determining the intensity of use, especially for the movement of the road (knowing that the field study was conducted under time limits, which is the period between February and March, it characterized by moderate weather, which allows a fair choice between the movement of the vehicle and the movement of pedestrian. According to the results achieved for the highest values in the path within the samples selected in the field study (between the points of source and destination specified), which is the path [C-3], where it is one of the relatively long paths linking the street 40 and the Shatt al-Hila riverside, but it is characterized by high visual and functional diversity, in addition to the multiplicity of nodes and the permeability of the path for several sub-paths. This path witnesses a high diversity of means of mobility and the intensity of the movement, so it is one of the slow paths for the movement of cars, and this slow rhythm has helped to stimulate the user's perception of visual images and their succession within this path. The C-3 track also includes a number of historical monuments and diver architectural styles. This path contains a high diversity. The rhythm of the track is characterized by spatial and temporal diversity, as the path landscape changes throughout the week according to the presence of a number of temporary events such as open markets.

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