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# Developing a Criteria Framework for the Evaluation of the Image of the City Case Study: Mansoura Downtown

Ahmed Mohamed Thabet\*

## KEYWORDS:

*Downtown Evaluation, Imageability, Image of Mansoura Downtown, Criteria Framework*

*Abstract— Downtowns are important as the open new horizons of development through contribute to the upgrade of traditional communities. The presence of city centers and downtowns has been approved as a major influential component on the image of the city as it can serve as a unifying force in a city or town through triggering force for community enrichment. Lynch [1] described the environmental image in terms of five structural features which are essentially making sense of cities urban spaces: districts, edges, paths, nodes, and landmarks. These elements face continuous transformations that make their perception more complex and multi-oriented. The urban space becomes full of overlapping and intertwined stories that have made a continuous change, complexities, and multi-characteristics in the urban image. The purpose of this paper is to develop a criteria framework from different studies and worldwide experiences, using both urban indicators and Lynch's method in the evaluation of urban spaces. This would allow urban planners and designers to receive immediate feedback on the relative quality of urban design and perception decisions. The downtown in Mansoura City was selected as the subject of this case study. Three observation points were taken along Mansoura downtown and proposed for evaluation. The results show that it is possible to produce a list of indicators which represent the axis of the evaluation process developing an effective method that better models the complex information concerning urban design elements.*

## I. INTRODUCTION

**L**YNCH, [1] described a city design as a temporal art that can rarely use the constant and limited sequences of other temporal arts such as music. On different occasions and for different people, cities evaluation and perception are reversed, interrupted, abandoned, cut across. There are the moving elements of a city, in particular the people and their activities; they are similar to the stationary and physical parts in their importance. In this context, visual

assessments of city image are skilled combinations of objective and subjective examinations of its structural five elements of Lynch [1, 2]. The subjective evaluation requires both a specialized opinion from an expert with wide experience of analyzing the visual aspects and other stakeholders' views to ensure the quality and value of this evaluation [3].

Downtown development has become a central issue in general planning schools of thought and goes hand in hand with the forefront of planning theory and practice [4, 5]. The goal of downtown evaluation is to understand its role and to draw the general requirements or design experiences forming the theoretical framework of the development process [6, 7]. The

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researchers applied this understanding to evaluate the current downtown of Mansoura in order to identify its successful points and explore problems that need to be improved or changed. The evaluation process needs to assess the downtown visual qualities and compare them with the desired views. The urban experts will be looking for visual features even though they may not always be direct. Fumes, smoke, spray, dust, and scavenging birds may all affect the element of urban space specially its landscape. Thus, the value of urban scene to an individual depends on` his personal perceptions and preferences of viewers and what is attractive to one of them may not be the same to another. Culture, upbringing, familiarity, literature and religion are major factors affecting the personal perceptions of urban experts [7]. Therefore, urban experts will try to find a new strategy that can handle the complexity of the evaluation of urban values forming the image of the downtown. Criteria framework based on urban indicator system can add a new value on urban perception processes and evaluation. Because, as mentioned above it can handle imprecise, insecure and complex terms related to urban qualities and features [8].

**II. PROBLEM IDENTIFICATION**

The local council often implements urban renewal and development projects for downtown areas, but without looking at the visual, aesthetic, and cultural value that the elements of these projects will add. The image of the city has become noisy with many elements and a lot of aesthetics has been distorted and searching for the elements that creates the city’s mental image has become a very difficult objective. It is necessary to build a system of urban connotations compatible with the urban characteristics and the continuous and unexpected variables that exist in this type of urban areas, Mansoura downtown. At the same time, these indicators should be derived from the five elements of Kevin Lynch: nodes, districts, edges, paths, and landmarks, and to be able to represent them in the evaluation process [9]. Therefore, the main research problem is that Mansoura downtown has a complex image which consists of different physical, social and technical elements, and confronts continuous evaluation and decision-making processes, and therefore using only Lynch’s five elements in evaluating its image can lead to loss of numerous information and inaccurate evaluations.

Most of indicators related to urban design and imageability are complex and may imply many evaluations, so they need to be treated by using a framework dealing with this complexity and multiplicity of orientations, shown in Table 1. Using Lynch's method in the assessment of downtown images added more complexity and multi-orientations to the process. The Lynch's five elements of image ability are complicated in themselves; they are technical elements creating a complex system with multiple factors, multiple indicators, and multiple objectives. Thus, their complexity and imprecision in the descriptive system increases with the deficiencies of urban design and evaluation. People evaluate a subject through reasoned judgments affected by their personality. Therefore, imprecision and personal perceptions tend to be random and complex as well, so the ultimate decision can be an imprecise decision.

TABLE 1  
COMMON URBAN INDICATORS THEIR RELATIONSHIP TO LYNCH’S IMAGE OF THE CITY ELEMENTS.

Sample Indicators	Usage/Description	The problem
<i>Orientation</i>	Drawing attention towards items through a certain method of other items arrangement	May be seen Good, Bad, or average.
<i>Dynamic Shaping</i>	Feeling dynamic of included items	May be seen dynamic or not.
<i>Buffering</i>	Providing separation between items	May be seen available, suitable or not.
<i>Circulation</i>	Vehicular and pedestrian movements	May has good, bad, or average evaluation.
<i>Rhythm</i>	The certain arrangement of items with certain method	Its feel and type rely on personal perception.
<i>Central</i>	Focal point for interest or special usage	May be identifiable or not because of its surroundings.
<i>Human Scale</i>	The quality of relationship between humans and their surroundings	Identified by size variation between objects.
<i>Mass</i>	The three-dimensional combination of items used describe their form and shape	It value is more visually measures.
<i>Mixed Use</i>	An area containing different uses together as a development attitude	May be seen Goodly or badly affect its area.
<i>Modulation</i>	patterns of recurrence of one material or shape	May be seen homogenous or not
<i>Amenity</i>	Design features giving high value for included items	May be seen useful, suitable, or not.

**III. RESEARCH METHODOLOGY**

The researcher adopted a multi-criteria evaluation technique involving a multi-stage process for defining required outcomes, figure 1. The research methodology is based on three stages that can be integrated in an appropriate manner dealing with the complexity of elements contributing to formulating the mental image of urban spaces, which may lead to imprecision in the human decision-making when processing wide range of unstructured and complex data. The first stage is to choose a suitable system of criteria relevant to the term imageability, this criterion is derived from the key elements of the mental image of the city mentioned by Keven Lynch. The second stage is to construct a framework based on the urban indicators related to these elements to be applied for the study area to evaluate urban spatial features and their influence on the quality of the image of the city.

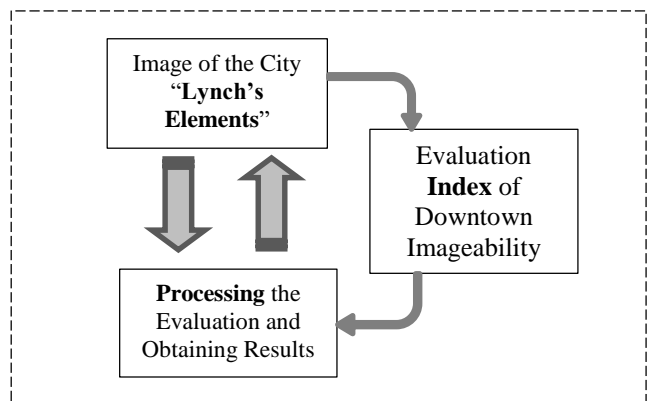


Fig. 1. Research methodology flowchart, the author

**IV. IMAGE OF THE CITY AND URBAN INDICATORS**

As mentioned by Moughtin, et al. [10], there are some methodological aspects of the analysis urban space. The visual aspect is the main concern of this research because it is the most powerful one as it is shaping the identity of urban spaces which are affect users' perception. The visual analysis of downtowns, is subdivided into three parts, a two-dimensional analysis, a three-dimensional analysis study, and finally a comprehensive analysis of the architectural details which give the area its special identity, figures 2 and 3 [10]. The aim of this visual analysis is to provide urban spaces giving a sense of emotional security establishing a harmonious relationship between the preceptor and his surrounding environment. Nevertheless, the images of a certain area which are perceived by different users are not the same in their characteristics and varying according to what is seen by each user [1].

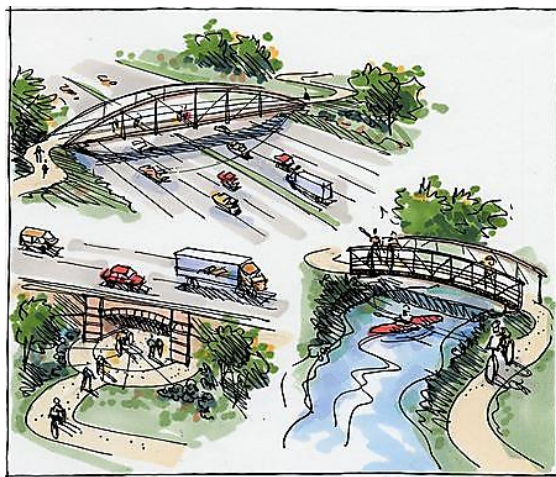


Fig. 2. Samples of perceptions of some urban open spaces done by an urban expert [11]



Fig. 3. Samples of the strong image of some urban open spaces done by an urban expert [11]

There is a type of evaluation deficiency accompanied by the complexity of the visual perception process since the process of image making is usually resisted by the differences between varying environments and multiplication of their users. Lynch [1] gave a good example of this type of difference, claiming that

any given form such as a fine sculpture or drawn portrait would have an image with a high or low degree of visual quality among different observers. Because each observer has his own image, the visual analysis process is always proceeded by a group of qualified number of specialists such as city planners, urban designers, and architects. Each one creates his own image and then reports the comprehensive analysis of his adopted perception [12].

Lynch [1] identified that the contents of city image can be evaluated by using five-elements criteria: paths, edges, districts, nodes, and landmarks, outlined in figure 4. Furthermore, Shita [12] has developed a comprehensive guideline, shown in table 2, summarizing the considerations which are required for achieving the quality of these elements which are outlining the image of urban spaces. According to Lynch [1] paths are defined as the movement channels such as, streets, walkways, etc. Edges are any linear and continuous elements shaping boundaries between elements, such as riverbanks, walls, or the like. Districts are sections of the city with identifiable and recognizable style character. Nodes are the strategic movement stations used by users in travelling to and from, such as, conjunctions between paths, etc. Finally, Landmarks are often well defined and attractive objects that may be considered as references of some city sections, such as, isolated towers, signs, sculptures, or mountains [1, 12-14]. Shita [12] restated the evaluation criteria of Lynch's elements to be employed by language-based judgments, table, 2 which are hard to be precisely described because of the disparity and difference of their estimation that may occur by different experts, such as Wang, et al. [15]. Therefore, urban experts should have clearly defined rules with boundaries to make accurate evaluation with concepts of precise judgments. Thus, using a framework based on urban indicators can be a suitable basis for an evaluation method can be more accurate and closer to the best specification of the image of the city [15].

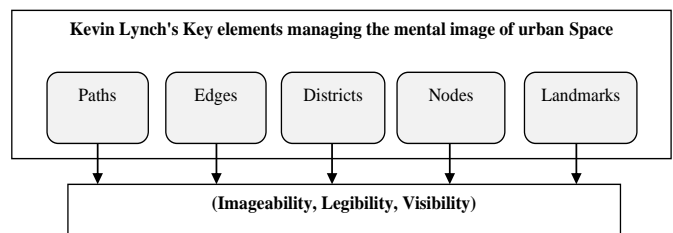


Fig. 4. Lynch's basis for the perception of the image of the city. Adapted from [1], data processed by the authors.

TABLE 2  
GUIDELINES FOR KEVIN LYNCH'S ELEMENTS

		Elements				
		Paths	Edges	landmarks	Nodes	Districts
Guidelines	Clarity			Positioning	Orientation	Style
	Continuity		Continuity	Singularity	Clarity	Contrast
	Orientation			Contrast	Attraction	Continuity
	Dynamic		Noticeable	Clarity	Simplicity	Harmony
	Hierarchy		Strength	Identity	Circulation	Variety
	Melody		Functionality	Compatibility		



Recently, scholars have used two main approaches to evaluate the qualities of urban spaces: the objective approach which is based on data confined from official data collections of governments, and the subjective approach which depends on social surveys gathering data on individual level [16]. For city image evaluation, people’s behaviors, perceptions, and their own point of view of aspects of life inside urban spaces are considered axial elements should be implied in the process of city image evaluation [1, 16]. Indicators are tools developed by urban planners and proved to be useful for urban evaluation processes. Thus, a system of indicators can be effective and useful for developing evaluation criteria of the qualities of urban environments and their included aesthetic and visual elements. In this context, investigative checklists and subjective indicators can be employed to develop criteria frameworks aggregating many of their benefits to evaluate urban spatial features and their influence on the quality of the image of the city [16].

**V. CASE STUDY: MANSOURA DOWNTOWN EVALUATION**

The researcher intends to prove that evaluation of Mansoura downtown image can be similarly applied by using sets of properties concerning the elements forming the urban feature of the area. In order to managing and dealing with the inaccuracy and complexity of the linguistics related to Lynch’s method, the researchers have adapted the method by adding indicator-based framework; the Lynch’s method becomes in a form of indicators based on guidelines built on the logical relationships between Keven Lynch’s elements and their guidelines. The method will be proceeded and discussed as in the following subsections:

*Map of Observation Locations*

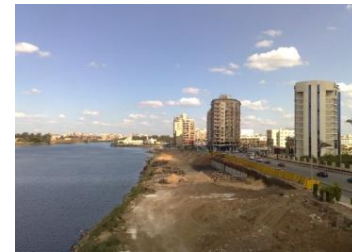
The research intends to analyze the Mansoura downtown; an area which is considered a vital urban extension full of motions, uses, and people. As shown in Figures 5 and 6, three observation points are taken for this study to create a better imagination of the existing visual quality and character of the downtown.



Fig. 5. Map of Mansoura City with its downtown and study area highlighted, processed by the author (from “Google Earth and AutoCAD”)



(1) (2)



(3)

Fig. 6. Map of study area with observation points, processed by the author (from “Google Earth”)

**CASE STUDY: MANSOURA DOWNTOWN**

The research intends to add the definition of ‘indicator system’ to architectural and urban design evaluation. The proposed framework shows a new method transforming non-intuitive and imprecise concepts to more accurate and precise criteria. In this framework indicators-based approach is used to converting the urban characteristics and architectural terms of downtowns, which are gained from literature and transformed into indicators referring to their degree of success. The assembled data is processed in the framework depends basically on urban designers and experts’ predictions and experiences. Therefore, the framework is behaving like an evaluation checklist in field of architecture and urban design. In order to analyze the image of the city’s downtown, the researcher defined the evaluation criteria in terms of indicators. The criteria which are used in the evaluation process are based on Lynch’s theory of imageability and therefore they are divided into his famous five elements: paths, edges, nodes, districts, landmarks. As stated in table, each of the five elements of criteria has a number of indicators referring to their validity. The stream of the evaluation process of Mansoura downtown is discussed in the following sub-sections, figure 7:

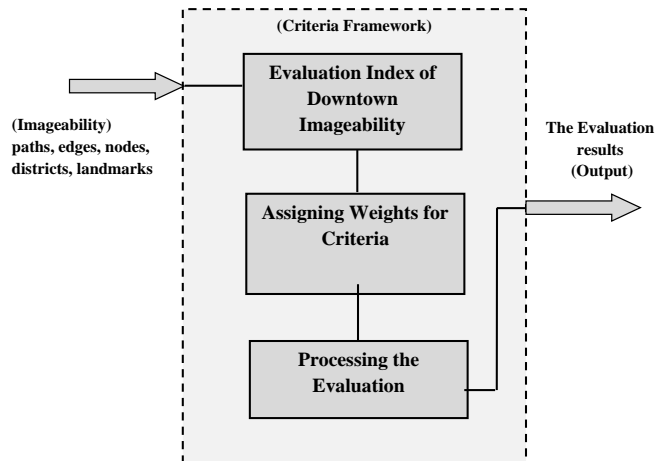


Fig. 7. Mansoura downtown evaluation stream, the author

*Evaluation Index of Downtown Imageability*

In order to evaluate the image of Mansoura downtown, the researchers have established a criteria system called "Evaluation Index" based on Lynch's five-elements criteria and their related linguistics developed by Shita [12]. This index will facilitate the understanding of these elements and the relationships between their influencing linguistics, which is required to build the fuzzy If-Then engine described above. In other words, the evaluation index of evaluating waterfront image derived from imageability discussed in Lynch [1] and the guiding linguistics used in Shita [12]. The proposed evaluation index is addressed as in figures 8, 9:

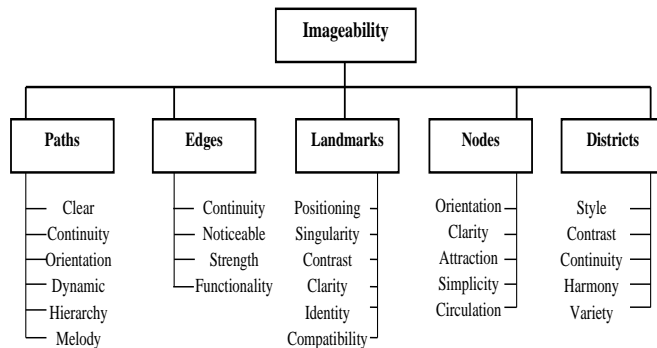


Fig. 8. Indicator Index for evaluating the image of Mansoura downtown , data adapted from[1, 12], arranged and used as criteria by the author

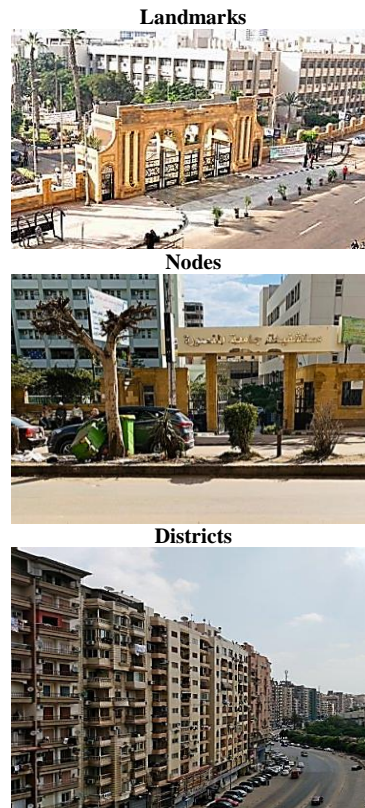


Fig. 9. Examples of case study evaluation criteria Source: Author

*Assigning Weights for Criteria*

There are several methods of the calculation of the weights of evaluation criteria items. Estimation is based on professional experience, analytic hierarchy process, neural networks, integrated sequence law, and so on. In this paper, the researchers used Analytic Hierarchy Process (AHP) to assign weights of the criteria elements according to their relative importance to each other. The weighting and scaling process and its values are summarized in the following steps:

*Step1:* Comparing the Five elements of imageability criteria according to the importance indications described in table 3, which results in the values listed in tables 3 and 4 below:

TABLE 3 INDICATIONS OF SCALING WITH THEIR MEANINGS

Importance	Meaning
1	Equally important
3	The former element is slightly important
5	The former element is obviously important
7	The former element is strongly important
9	The former element is vital important
Reciprocal	The importance ratio is a <sub>ij</sub> between elements i and j, the importance ratio is a <sub>ij</sub> = 1/a <sub>ji</sub> between elements i and j

TABLE 4  
COMPARING CRITERIA ELEMENTS USING IMPORTANCE INDICATIONS OF

	Paths	Nodes	Districts	Edges	Landmarks	Priority vector or weight
Paths	1	3	0.2	3	3	$\lambda_{max} = 5.24$
Nodes	0.33	1	0.14	3	3	
Districts	5	7	1	9	9	C.I = 0.05
Edges	0.33	0.33	0.11	1	1	
Landmarks	0.33	0.33	0.11	1	1	C.R = 0.04 C.R < 0.10 (Acceptable)
Summation ( $\Sigma$ )	6.99	11.66	1.56	17	17	

TABLE 5  
NORMALIZATION VALUES AND WEIGHING CALCULATIONS

	Paths	Nodes	Districts	Edges	Landmarks	Priority vector or "weight"
Paths	0.14	0.26	0.13	0.17	0.17	0.17
Nodes	0.05	0.09	0.09	0.18	0.12	0.12
Districts	0.72	0.60	0.64	0.53	0.53	0.61
Edges	0.05	0.03	0.07	0.06	0.06	0.05
Landmarks	0.05	0.03	0.07	0.06	0.06	0.05

Step2: Normalization of cell values resulted in step1 by dividing the rate score of each cell by its column summation, see table 5 above, and determination of weights through calculating the mean value of each rows in table 5 above.

Step3: Calculating consistency ratio [17]:

$$CI = (\lambda_{max} - n) / (n - 1)$$

where,  $\lambda_{max}$  is the principal Eigen Value;  
 $n$  is the number of factors;  
 and  $\lambda_{max} = \sum$  of the products between each element of the priority vector and column totals  
 Then,  $\lambda_{max} = (6.99 * 0.17 + 11.66 * 0.12 + 1.56 * 0.61 + 17 * 0.05 + 17 * 0.05) = 5.24$   
 $CI = (5.24 - 5 / 5 - 1) = 0.05$

**CR = Consistency index (CI)/Random Consistency Index (RI)**

Where RI can be calculated form the following Saaty's rule as 1.12:

n-	1	2	3	4	5	6	7	8	9	10
RI-	0	0	0.58	0.90	1.12	1.24	1.32	1.41	1.45	1.49

Then  $CR = CI/RI = 0.05 / 1.12 = 0.04 < 0.10$  (Acceptable)

As shown in the three steps above, the researchers have established a judgment matrix for the elements of imageability extracted from the earlier judgment's experiences. The priorities of importance between elements are ranked and passed the consistency test which was applied by of Saaty [17] [18] to check their accuracy, see tables 3 and 4 above. After calculating and Consistency Ratio [17] as shown above,

consistency Index (CI) equals 0.04 ; when  $CI < 0.1$ , the degree of consistency was proved as satisfactory; when  $C.R. < 0.1$ , the rate score between criteria elements represented in table 4 was realistic according to experience. Comparing factors with importance priority is stated in tables 4 and 5 above. Therefore, elements weights are acceptable and stated as shown in table 6.

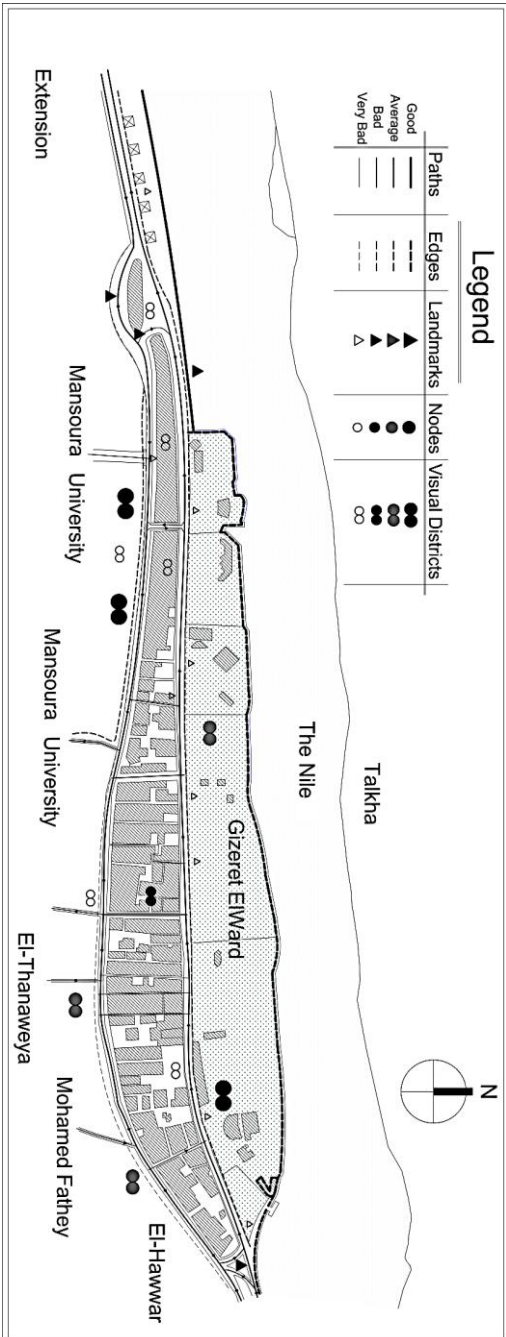
TABLE 6  
ASSIGNING WEIGHTS OF EVALUATION CRITERIA OF DOWNTOWN IMAGE

Target	Criteria	Sub-Criteria	
		Items	Weight (1/n)
Imageability of Mansoura Downtown	Paths (0.17)	Clarity	(0.17)
		Continuity	(0.17)
		Orientation	(0.17)
		Dynamic	(0.17)
		Hierarchy	(0.17)
		Melody	(0.17)
	Edges (0.05)	Continuity	(0.25)
		Noticeable	(0.25)
		Strength	(0.25)
		Functionality	(0.25)
	Landmarks (0.05)	Positioning	(0.17)
		Singularity	(0.17)
		Contrast	(0.17)
		Clarity	(0.17)
		Identity	(0.17)
		Compatibility	(0.17)
	Nodes (0.12)	Orientation	(0.2)
		Clarity	(0.2)
		Attraction	(0.2)
		Simplicity	(0.2)
Circulation		(0.2)	
Visual Districts (0.61)	Style	(0.2)	
	Contrast	(0.2)	
	Continuity	(0.2)	
	Harmony	(0.2)	
		Variety	(0.2)



*Processing the Traditional Evaluation*

The researchers evaluated the five-elements, paths, edges, nodes, landmarks, and districts, of the study area using the visual perception guidelines prepared by Shita [12] in his research to develop Kevin Lynch's method. Moreover, they performed the traditional evaluation process using some surveys and interviews that are supportively required to gain the sufficient information needed to complete the process. The results of the traditional evaluation of the study area are summarized in the following mind map, shown in figure 10, and the final assignments recorded by the researchers, shown in tables 7 to 11.



10. Mind map of traditional evaluation results, processed by the author (from "Google Earth and AutoCAD")

TABLE 7  
PATHS GUIDELINES CHECKLIST

Criteria	Sub-Criteria	Indicators	Check
Paths	Clarity Continuity	Existence of obvious start and end.	√
		Quality of finishing materials and Pavements.	×
		Treatment using landscapes and streetscapes.	×
		Addition of levels and other excitement prompting for movement.	×
		To be one continuous channel for movements .	√
		To be safely connected to spaces.	×
		To be ensured using, landscape elements and colors.	×
		To be amusing and safe in doing its job	×
Orientation		To be with formations , colors, materials, and landscape elements giving a clear direction.	×
Dynamic		To contain dynamic elements giving different. characters with continuous sense of variation.	√
		To get renewable experiences of perceptions.	√
Hierarchy		To be without branching to equivalent paths.	√
		To be recognizable and perceptible.	√
Melody		Containing different arrangements of visual elements with dynamic and static formations.	×
		To give a homogenous rhythm with contrast and compatibility.	×

TABLE 8  
EDGES GUIDELINES CHECKLIST

Criteria	Sub-Criteria	Indicators	Check
Edges	Continuity	To be logically and gradually connected to spaces.	×
		To be ensured using clear identifiable objects.	√
		To be safely continuous .	√
		To be with visual quality.	×
Noticeable		To be clear and observable	√
		To be strongly identified using concaving or raising	√
		Quality of its Landscape, colors, and materials	×
Strength		Using high quality materials giving the desired sense of inside and outside sense	×
Functionality		To have function if they have internal spaces	√



TABLE 9  
LANDMARKS GUIDELINES CHECKLIST

Criteria	Sub-Criteria	Indicators	Check
Landmarks	Positioning	To be located in observable intersections.	√
		To get feasible perception.	√
		To be safely integrated with spaces	×
		To be without movement interruption	×
	Singularity	Shaping different skylines.	√
		To be more attractive than surroundings.	√
		To be with featured formation	×
		To get unmatched perception	√
	Contrast	To draw attention because of its difference	√
		To be with intended dissimilarity with its surroundings.	√
	Clarity	Quality of finishing materials and pavements.	×
		With a clear general form.	√
	Identity	To be provided with quality of architectural style.	×
		To be with unmatched character.	√
	Compatibility	To be homogenous with surroundings	×
	To be complemented with the other landscape elements.	√	
	To be compatible with surrounding architectural features.	×	

TABLE 10  
NODES GUIDELINES CHECKLIST

Criteria	Sub-Criteria	Indicators	Check
Nodes	Orientation	To be attached with elements giving a clear direction towards and outwards.	×
		To include concentrated activities.	√
	Clarity	Quality of finishing materials and Pavements.	×
		Strong perception.	√
	Attraction	To be with featured formation.	√
		To get unmatched materials.	×
	Simplicity	To be with attractive simplicity.	√
		To be with carefully collected of landscapes and streetscapes	×
	Circulation	To be safely connected to movement channels	√

TABLE 11  
VISUAL DISTRICTS GUIDELINES CHECKLIST

Criteria	Sub-Criteria	Indicators	Check
Visual Districts	Style	To have a different architectural identity in a recognizable arrangements of buildings and uses.	√
		Contrast	To be with intended dissimilarity with its surroundings.
	Continuity	To be logically and continuously connected to surrounding spaces.	×
		To get continuous visual quality	√
	Harmony	To have homogenous and similar formations	×
		To have intimated elements with the same style.	√
	Variety	To have collection of architectural details in facades , lights, materials, textures, and other landscape and streetscape elements.	√

VI. RESULTS

The total aggregated score of evaluating Mansoura downtown imageability is twofold, an evaluation done manually by experts and another evaluation results from using the proposed criteria framework. As listed in table 12, the imageability measurement results are recorded manually as 5.12 of a maximum of 10.00, and model-based as 5.90 of a maximum of 10.00. By comparing the two types of results, it is noted that the model results are approaching traditional method result. Therefore, the model proved that it is succeeded and valid for usage.

TABLE 12  
IMAGEABILITY MEASUREMENT RESULTS USING THE MODEL COMPARED TO MANUAL RESULTS FOR A CALIBRATION

Target	Criteria	Sub-Criteria	
		Items	Summation of Results * Weights
Imageability of Mansoura Downtown	Paths	Clarity	7
		Continuity	5
		Orientation	4
		Dynamic	4
		Hierarchy	3
		Melody	3
	<b>Summation*weight</b>		<b>26/6* 0.17=(0.74)</b>
	Edges	Continuity	6.5
		Noticeable	5
		Strength	5
		Functionality	4
	<b>Summation*weight</b>		<b>20.5/4* 0.05=(0.26)</b>
	Landmarks	Positioning	6
		Singularity	8
		Contrast	7
		Clarity	8
		Identity	7
		Compatibility	5
<b>Summation*weight</b>		<b>41/6* 0.05=(0.34)</b>	

Continue in the next page

TABLE 12: Continued

Target	Criteria	Sub-Criteria	
		Items	Summation of Results * Weights
Imageability of Mansoura Downtown	Nodes	Orientation	5.5
		Clarity	6
		Attraction	4.5
		Simplicity	6.5
		Circulation	5.5
		<b>Summation*weight</b>	<b>28/5* 0.12=(0.67)</b>
	Visual Districts	Style	5.5
		Contrast	3.5
		Continuity	4.5
		Harmony	5
		Variety	7
		<b>Summation*weight</b>	<b>25.5/5* 0.61=(3.11)</b>
	<b>Overall Evaluation for Imageability</b>		<b>5.12/10.00</b>

## VII. CONCLUSION AND RECOMMENDATIONS

The paper showed that converting qualitative terms and linguistics used in urban design and planning into more accurate evaluations would add more complexity and diversity to visual perceptions and processes of evaluation of urban spaces and downtowns. Furthermore, urban-indicators-based evaluation introduces an efficient method to manage and deal with impreciseness and complexity accompanied by the processes of evaluation. The research presented a framework that could deal with this complexity coming with linguistics and technical language related to urban visual characteristics. Some tools were identified in literature to be used in urban evaluation processes. The research used a criteria framework integrating between the qualitative approach and the mathematical method known as analytical hierarchy process to assign weights of criteria elements, the framework proved to give more effective urban evaluation processes with more accurate results. The use of urban indicators in the evaluation of urban visual characteristics is justified according to the experience of its developer and the typology and properties of subjects in use.

The study examined a way to transform qualitative values into more precise values without impreciseness to be involved in a framework which can be used in similar applications for decision making in urban design evaluation processes. The research opens the way to discuss the application of using the proposed framework in dealing with other subjects with different levels of complexity and diversity in the field of urban design and planning, such as post occupation evaluation processes, environmental impact assessments, urban simulations and predictions, urban monitoring and evaluation, or the like. This will give a chance to calibrating and testing the framework with its capabilities to handle difficulties in different situations. Furthermore, more studies are needed for implementing the model to be transformed to a comprehensive software which is defining quantification standards for urban values that can be generally used in urban design and planning.

The research recommends that a system of indicators can be effective and useful for evaluation processes as it is based on evaluation criteria derived from the qualities of urban environments and their related aesthetics and visual elements. The system of indicators can develop investigative checklists and subjective indicators that can be employed to develop

criteria checklists aggregating many of their strengths to evaluate urban spatial features and their influence on imageability quality or the quality of the image of the city. Thus, developing evaluation criteria based on the qualitative-quantitative approach would allow urban experts to deal with the huge quantity of data related to the spatial qualities and aesthetics in more precise and comprehensive way to receive immediate feedback on the relative quality of the image of the city and its perception decisions.

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الحضريين بتلقي ملاحظات فورية حول الجودة النسبية لقرارات التصميم الحضري والتصوير. لذلك تم اختيار منطقة وسط البلد في مدينة المنصورة بمحافظة الدقهلية كموضوع لدراسة الحالة. وتم أخذ ثلاث نقاط ملاحظة على طول وسط البلد واقتراحات التقييم. تُظهر النتائج أنه من الممكن الحصول على قائمة من المؤشرات التي تمثل محور عملية التقييم التي تقوم بتطوير طريقة جديدة فعالة لامكانية التصور للمعلومات المعقدة والمتعلقة بعناصر التصميم الحضري.

معظم المؤشرات المتعلقة بالتصميم الحضري وعلم التخيل معقدة في حد ذاتها وقد تعني العديد من التقييمات المتداخلة ومتعددة التوجهات. لذلك فإنه يجب التعامل معها باستخدام إطار عمل يتعامل مع هذا التعقيد وتعدد التوجهات، الموضحة في البحث. باستخدام طريقة كيفين لينش في تقييم وسط المدينة أضيف المزيد من التعقيد والتقييمات المتداخلة إلى هذه العملية. تعتبر العناصر الخمسة لطريقة كيفين لينش معقدة في حد ذاتها؛ إنها عناصر فنية تنشئ نظامًا معقدًا مع عوامل متعددة ومؤشرات متعددة وأهداف متعددة. وبالتالي، يزداد تعقدها وعدم الدقة في النظام الوصفي لها مع وجود أوجه قصور في التصميم الحضري والتقييم لها. عادة ما يقيم الناس موضوعًا من خلال الأحكام المنطقية التي تتأثر بشخصيتهم بشكل مباشر. لذلك، فإن الدقة والتصوير الشخصية تميل إلى أن تكون عشوائية ومعقدة أيضًا، وبالتالي يمكن أن يكون القرار النهائي قرارًا غير دقيق. فلذلك يقدم هذا البحث إطارًا جديدًا معنيًا في الأساس باعداد قائمة معايير مبنية على مؤشرات أكثر دقة تساعد على التقييم الأمثل للصورة الذهنية للمدينة

### Arabic Title

تطوير اطار للمعايير لتقييم الصورة الذهنية  
دراسة الحالة: وسط البلد بمدينة المنصورة

### Arabic Abstract:

ان مناطق وسط المدينة تعد مهمة لأنها تحتوي على آفاق جديدة مفتوحة للتنمية من خلال المساهمة في ترقية المجتمعات التقليدية. لذلك قد تمت الموافقة على وجود مراكز المدينة ووسط المدينة كعناصر مؤثرة رئيسية وبشكل مباشر على الصورة الذهنية للمدينة، حيث يمكن أن تكون بمثابة قوة موحدة في مدينة أو بلدة ما من خلال تشكيل القوى اللازمة لإثراء المجتمع. وصف كيفين لينش (١٩٦٠) الصورة البيئية من حيث خمس ميزات هيكلية تفهم الأساس المساحات الحضرية للمدن: المناطق والحدود والمسارات والعقد والمعالم البصرية. تواجه هذه العناصر تحولات مستمرة تجعل تصويرها أكثر تعقيدًا ومتعدد الاتجاهات. من هذا المنطلق تصبح الفراغات الحضرية مليئة بالقصص المتداخلة والمتشابهة التي أجري عليها تغييرات مستمرة وتعقيدات وخصائص متعددة في الصورة الحضرية. الغرض من هذه الورقة البحثية هو تطوير إطار معايير من دراسات مختلفة وتجارب متنوعة في جميع أنحاء العالم ، باستخدام كل من المؤشرات الحضرية وطريقة لينش في تقييم المساحات الحضرية. وهذا من شأنه أن يسمح للمخططين والمصممين