Designing street furniture: A protocol to enhance the quality of life in urban spaces

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**ORIGINAL RESEARCH
PAPER**

ABSTRACT

In order to develop and enhance the quality of life in Tunisian urban spaces, the integration of street furniture became a new challenge for urban designers to use new methods and techniques to combine functionality and aesthetics into their design. The main objective of this paper is to focus on the analysis of the street furniture user's needs in urban spaces to understand and discuss the requirements that should be considered while designing.

KEYWORDS

urban development, street furniture design, social integration, design requirements

1. INTRODUCTION

To lead a better life in urban spaces, street furniture is considered an essential element found on the streets; it has many functions related to the usages of these streets, whether directly or indirectly. Not considering only passages of movement, these streets might be negatively affected by the lack of street furniture designs. The presence of street furniture invites people on foot, usually, to frequent by giving it a vital comfort [1, 2]. This research aims to resolve one of the most critical issues of urban space morphology in Tunisia. Sidi Bou Said was chosen for further study as it became the favorite place of artists and men of culture who were seduced by the village and its atmosphere at the beginning of the 20th century [3].

It is a village in the northern suburb of Tunis, 17 km from the capital. Sidi Bou Said is located at the top of the promontory of "Cape Carthage." It is limited to the north and the east by the sea, to the south by Carthage, and the west by La Marsa, as presented in Fig. 1.

The research is structured in two main parts; the first part presents the questionnaires with Sidi Bou Said community members to assess the applicability of urban street furniture. The second part summarizes the findings and the research results and highlights recommendations for integrating urban street furniture in public spaces.

2. RESEARCH METHODOLOGIES

2.1. Defining a questionnaire analysis

To answer the research aims, the questionnaire was chosen to give an overview about the community of Sidi Bou Said satisfaction with the street furniture design and their knowledge
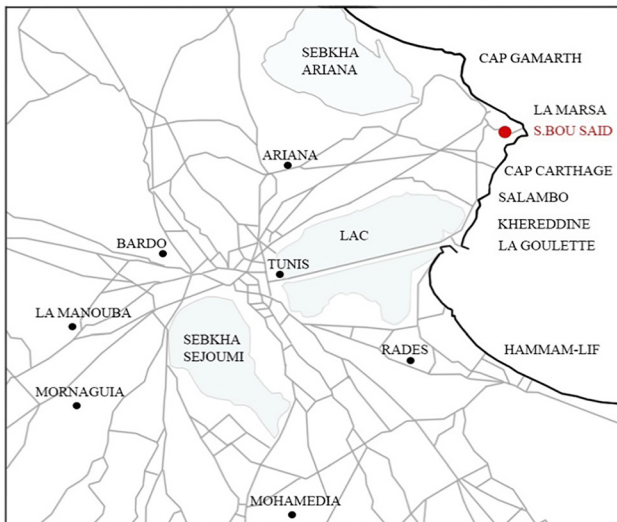
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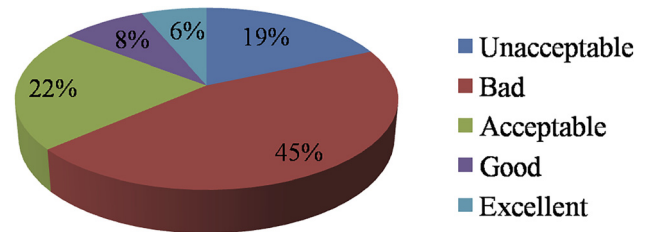Fig. 1. Geographical situation of Sidi Bou Said
(*Source*: Author)

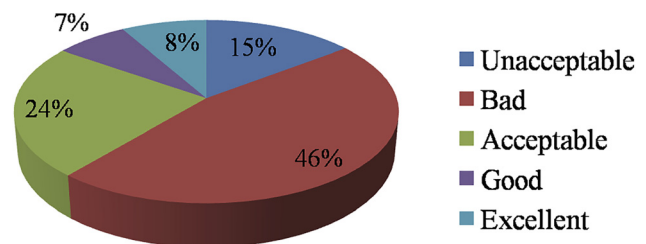Fig. 2. How do you rate the street furniture comfort?
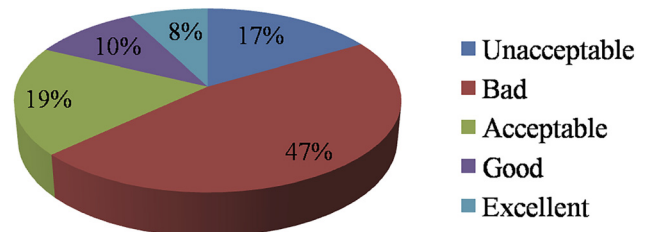

Fig. 3. How do you rate the street furniture accessibility?

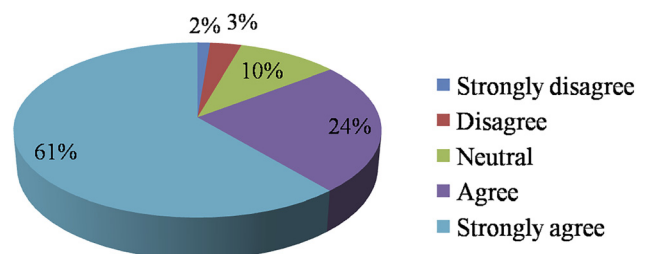Fig. 4. How do you rate the street furniture design?

Fig. 5. Revalorizing street furniture is important in promoting the city image

on its importance into the city development [4, 5]. Basing on the percent in Table 1, 22.9% of the asked participants are very dissatisfied, 44.6% are dissatisfied, 12.1% choose to neutral, 14.7% are satisfied, and 5.7% are very satisfied.

The participants were also asked to rate the street furniture integration and adaptation into its environment if they were satisfied with its comfort, accessibility, and design (see Figs 2–4).

This part is conceived to understand the participant's points of view about the impact of the revalorization of street furniture on the development of the city. They agree with a percentage of around 85% that revalorizing street furniture is important in promoting the city image (Fig. 5) and about 82% think that street furniture design plays a significant role in the culture of the city (Fig. 6). Most participants, about 83% agree that street furniture is an important element of the character and the identity of a certain area (Fig. 7), and about 81% think that it is important to take into consideration the small-scale planning (street furniture implementation) (Fig. 8).

Basing this research on the questionnaire results analyses, it seems possible to evaluate and precise the importance of street furniture's influence on its users and the urban space.

2.2. Proposing a protocol

Sidi Bou Said was chosen as it receives a high number of visitors during the weekends and summer months; it has a population of 5,911 inhabitants [6]. The city hosts international cultural and artistic events as it helps promote the city's image to investors. According to the Sidi Bou Said

Table 1. How satisfied are you with the street furniture design in Sidi Bou Said

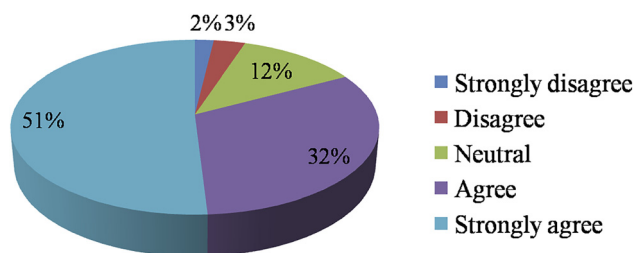|		Frequency	Percent	Valid Percent	Cumulative Percent, %
Valid	Very dissatisfied	36	22.9	22.9	22.9
	Dissatisfied	70	44.6	44.6	67.5
	Neither	19	12.1	12.1	79.6
	Satisfied	23	14.6	14.6	94.3
	Very satisfied	9	5.7	5.7	100.0
	Total	157	100.0	100.0	

Fig. 6. Street furniture design plays a significant role in the culture of the city
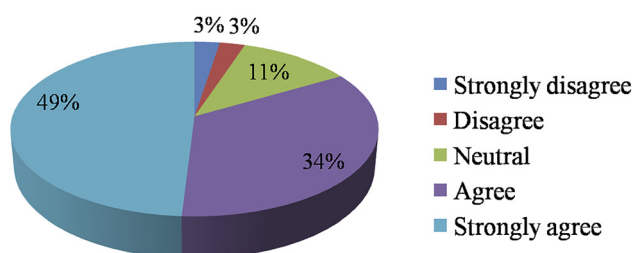

Fig. 7. Street furniture is an important element of the character and the identity of a certain area
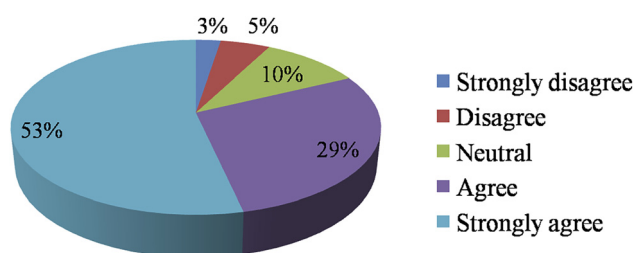

Fig. 8. It is important to take into consideration the small-scale planning (street furniture implementation)

municipality, the village has different street furniture that refers to all fixed or mobile objects or devices installed in public space to provide a service to the community [7, 8].

Street furniture was determined considering some necessary essential elements that should be found in Sidi Bou Said:

A. Rest (Shelter, benches, leaning rails…);
B. Information (Banners, signs, mailboxes, message boards, information boards…);
C. Street signage (Traffic signs, traffic lights…);
D. Stalls, stands (Kiosks, stalls…);
E. Parking (Bicycle racks…);
F. Playing furniture (Swings…);
G. Sanitation (Wastebaskets, dinking sinks, toilets…);
H. Lighting (Road lamps, foot lamps, decoration lamps…);
I. Furniture for people with limited mobility (Signs in Braille, tactile paving…);
J. Landscaping (Sculpture, fountains, patterned pavement, planting boxes, pots…);
K. Protection (Billboard, barriers…).

To complete the collected data, interviews and open-ended questions were a better way to understand the society and municipality management [9, 10]. According to informal interviews, features were identified by the land-owners and the community of Sidi Bou Said, explaining how it is important to work on street furniture degradation. Street furniture was degraded to the point of eliminating several features in the last years that led to disuse and lack of activities in public spaces.

Within the Mediterranean garden, there is not enough street furniture to create social comfort in the space and create a relation to the identity and culture of the unique city of Sidi Bou Said, just like mentioned in Fig. 9, which could be used by the community and promote the city image for the tourists. The Mediterranean garden was selected for further analysis considering some characteristics: touristic, cultural, and social group's diversity and geographical situation (in the entrance of the most visited part in Sidi Bou Said).

At this point of research, it seemed necessary to develop a protocol to assess street furniture design considering and evaluating the following features [11]:
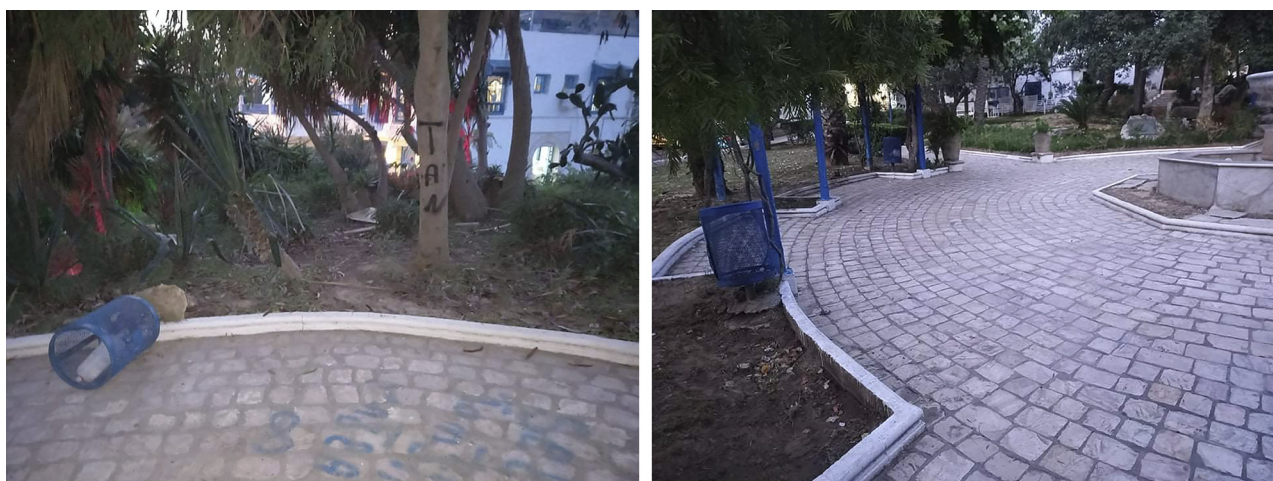

Fig. 9. Lack of street furniture in terms of design and social comfort (Photo: Author)

1. *Location and implementation rules:* Accessibility to all people with good circulation;
2. *Comfort:* When it comes to comfort, urban furniture can encourage city dwellers and tourists to take their time to enjoy the present moment and the surrounding landscape;
3. *Accessibility:* The urban furniture must be arranged in such a way as to promote the development of an obstacle-free route in outdoor public spaces;
4. *Technical design measurement:* Analyzing the model's design and quality may lead users to create new activities in the space;
5. *Harmonization and city image promotion:* Street furniture could advertise and affect the city image in terms of aesthetic/visual appreciation;
6. *Design and city identity:* Urban furniture becomes a real issue for municipalities to create an identity;
7. *Materials and sustainability:* Design for use of recycled materials with a minimum negative impact on the environment.

3. PROPOSED RECOMMENDATIONS: TESTING THE PROTOCOL

As a necessary factor to have functional street furniture, it must fit the human ergonomic [12, 13]. The proposed protocol presented in Tables 2 and 3 allows identifying necessary features and characteristics to design each street furniture by giving it a specific profile.

As a result, all street furniture types described from A to K were considered and evaluated in order to extract and identify any relationship with the features mentioned above:

- Street furniture types A, C, and H were the only ones, which all features considered could be found but with a distinct lack of maintenance;
- Street furniture types D, E, F, and I were not found in the Mediterranean garden;
- Street furniture type A, B, G, J, and K had a significant lack of quality and maintenance.

The proposed protocol allows researchers to identify critical physical characteristics of each street furniture, thereby classifying its location and occupancy aspects. Through this protocol, the main aspects of each street furniture can be outlined, focusing on the user's comfort. It is a valuable tool when mapping is needed regarding multiple aspects of street furniture, but it can also be used to analyze public spaces. The data collected are easily obtained because the practical aspects are mainly quantitative. This study conducted questionnaires and interviews with street furniture users to complete the data collected. After analyzing the results, street furniture types A, C, and H were set as the street furniture to be studied in the next phase of

Table 2. Proposed protocol for street furniture observation in terms of location and implementation rules, comfort, accessibility, and technical design measurement

		Location and implementation rules		Comfort		Accessibility		Technical design measurement	
		yes	no	yes	no	yes	no	yes	no
Street furniture	Rest	x	–	x	–	x	–	x	–
	Information	–	x	–	x	–	x	–	x
	Street signage	x	–	x	–	x	–	x	–
	Stalls, Stands	–	x	–	x	–	x	–	x
	Parking	–	x	–	x	–	x	–	x
	Playing furniture	–	x	–	x	–	x	–	x
	Sanitation	–	x	–	x	–	x	–	x
	Lighting	x	–	x	–	x	–	x	–
	Furniture for people with limited mobility	–	x	–	x	–	x	–	x
	Landscaping	–	x	–	x	–	x	–	x
	Protection	–	x	–	x	–	x	–	x

Table 3. Proposed protocol for street furniture observation in terms of harmonization and city promotion, design and city identity, and materials and sustainability

		Harmonization and city image promotion		Design and city identity		Materials and sustainability	
		yes	no	yes	no	yes	no
Street furniture	Rest	x	–	x	–	–	x
	Information	–	x	–	x	–	x
	Street signage	x	–	x	–	–	x
	Stalls, Stands	–	x	–	x	–	x
	Parking	–	x	–	x	–	x
	Playing furniture	–	x	–	x	–	x
	Sanitation	–	x	–	x	–	x
	Lighting	x	–	x	–	–	x
	Furniture for people with limited mobility	–	x	–	x	–	x
	Landscaping	x	–	–	x	–	x
	Protection	–	x	–	x	–	x

this research to answer the above question; what requirements and standards should be considered when designing street furniture? This street furniture represents a fundamental aspect that allows research to be carried out and improved.

4. CONCLUSIONS

To appropriate public space, it has to be tangible. It must offer joy to its users by arranging street furniture that is accessible easily, functional and attract individuals to use it legitimately and frequently. According to functions, a classification protocol was illustrated. It is important to classify street furniture to understand and avoid dangers that might exist while practicing life activities; it should facilitate the public space's users to make them feel safe. More research will be accomplished with the further study of Sidi Bou Said. As a result, street furniture will be shaped to satisfy its community and enhance its quality of life there.

ACKNOWLEDGMENTS

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