THE CHARACTERISTICS OF PUBLIC SPACE AND URBAN STREETS AND THEIR IMPACT ON PERCEPTION AND FEELINGS OF THE PARTICIPANTS

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ABSTRACT

Without a structured physical layout and a system of street connections inside cities, successful urban development has never been possible. Streets have played an important role in cities from ancient times, connecting areas, people, and things, promoting business, social interaction, and transportation. Cities' cultural, social, economic, and political functions have been partially defined by streets, plazas, and well-designed public areas. They were – and still are – the first feature to distinguish a place's status, from a haphazard and unplanned settlement to a well-established town or metropolis. In many parts of the world, people are reclaiming their streets as public places. Streets are being redesigned to allow communities to use them to their full potential and as a form of social engagement.

However, despite its great importance, not many studies attempted to explore the characteristics and roles of streets and public places, especially within the Macedonian context. The purpose of this study is to explore the sense of comfort and safety of people while being in urban streets and public places. Moreover, in view of the main research objective, besides the characteristics of the urban streets, the demographic variables, such as gender and age were examined as to their relevance for their perceptions.

The research results have indicated that the characteristics of the urban streets have impact on participant's perception and feelings, while in terms of demographic variables, only age has a significant role in the perception of the public space of Skopje from every aspect, but not in the sense of comfort and safety while walking in urban streets and public spaces.

KEYWORDS: Urban streets, public places, comfort, safety

JEL CLASSIFICATION: R10, R14, R49

1. INTRODUCTION

In the mid-seventeenth century, the term "public" was first used to refer to a theatre audience in France. It took on the connotation of "public place containing a vast diversity of individuals and composed of acquaintances and strangers" in the 18th century.

In the modern world, the term "public" has taken on new meanings and connotations. Arendt (2013) distinguishes between the two definitions of the term "publicity." The term can either mean everything that appears in public and it is seen and heard by everyone or it refers to the world that is common to all of us, not the privately owned one. Francis (1989) prefers to treat public space and the public sphere as a single entity. The public realm is defined as areas that are as accessible to the general public as public space. The common ground for civility and a sense of publicness is public space, which is where publicity is generated and articulated. Some studies use the forms of public space to define "public space". Public space "involves all the natural and artificial environment to which the public can access freely; roads and squares in a settlement area which are open to commercial or urban use; open spaces and parks; and also all the public/private spaces to which public access is not limited (at least during the day)" (Bartlett School of Planning, 2016).

Public spaces are locations of personal and social satisfaction, as well as collective living spaces, expressions of natural and cultural diversity, and vital aspects that serve as a foundation for the formation of an identity. In public spaces, the public recognizes itself and watches the evolution of spatial quality (Ozbayraktar, 2017).

2. LITERATURE REVIEW

2.1. Urban Streets as Public Spaces

In the process of studying the phenomena that have historically been named as streets, the review of written documents and works has come to the conclusion that the phenomenon is treated differently in different periods.

In the Middle Ages, street networks took place within the city walls. The exceptional limitation of the space reflects on the maximum thickening of the urban matter and

reduction of the space for streets. Vitruvius (1990) describes the streets as a public space, giving a description of the shape according to which, the squares should be built with the surroundings. He describes the size, proportions of the sides, the primary function for large gatherings and process monitoring, as well as the space it touches (porches and colonnades). From today's point of view, the anthropological, anthropomorphic approach to the introduction of architectural and architectural elements (porches, colonnades) that are in direct contact with large public spaces such as streets or squares is extremely important, especially given the fact that it is evidently absent in modern shaped vocabulary of architects and urban planners (Blazhevski,2019).

According to Mughtin (2003), it is impossible to start a classification of streets of any kind without taking into account the Vitruvius' approach. He specifically refers to the part where Vitruvius (1990) describes the three basic types of scenery used in Greek theatrical performances. The description of the scenes is in the form of streets or public spaces that should serve as a space for theatrical play, as follows: for tragedies - pillars, tympanums, porches are built behind the scenes or in other word the ambience of city streets that stretch into perspective in the depth of the scene. For comedies - backdrops that illustrate streets along simple houses, with balconies and windows reminiscent of ordinary buildings are build, while for satirical representations, Vitruvius (1990) envisages a setting in nature with trees, vegetation, relief motifs and the like. In his approach, Vitruvius (1990) mentions the construction of porches behind the scenes and next to the theaters that would serve as a place where visitors can take shelter in case of rain. He also describes the porches as form elements that would be used for walking in the cities. They should be planned with greenery and drainage.

Leon Battista Alberti in the book "Ten Books on Architecture" gives special emphasis on materialization, as well as the proportions and shape elements of architecture (physical structures) that stretch along the so-called. "routes" – streets (Vitruvius,1990). Therefore, Mughtin (2003) points out that it was Leon Battista Alberti, and later Andrea Palladio who were the first authors to distinguish between city and suburban streets and were used to connect the same. Andrea Palladio pays particular attention to the access paths he uses in his villa projects accentuates with

tree lines on both sides. In this way it provides shade along the road and emphasizes the axes of symmetry in the composition of the landscape (Blazhevski, 2019).

Consequently, from the very first definition, it is believed that the machines and vehicles have a great influence over the city and its development and shape. This impact acts through the communications, the streets and the roads along which the vehicles move and along which the buildings and the neighborhoods develop (Blazhevski, 2019). In this directions, Buchanan (1978) shows that if in the process of traffic planning the primary importance was given to the quality of the environment in the urban space, then only some types of vehicles would be allowed and to a limited extent. The fact is that the individual transport - by car occupies the largest area and participates with the highest percentage in air pollution of the city per capita. On the other hand, rail public transport is also incomparably more efficient and less polluting. Although these comparisons are clear, it is obvious that no one has engaged in realistic application on a larger scale (Blazhevski, 2019).

The streets have always been identified as one of the first levels of organization of the urban space. Hays (2000) in his extensive review of architectural theory emphasizes Aldo Rossi's interest in the tasks of the so-called human geography and morphology of the city. According to Rossi (1966), this discipline has the task of studying urban structures in correlation with the places where they appear. It is a sociological study within a limited space. However, in order to proceed with the analysis of the site, it is necessary to determine in advance the boundaries within which it will be defined. For that reason, Rossi (1966) relays on three levels:

- a) street level, which covers the buildings and the undeveloped space around;
- b) a level consisting of several blocks with common features;
- c) a level of the whole city, understood as the sum of city quarters.

The street can be seen as a road that has an urban character, or as an urban place that serves as a right of way, or as an ensemble of objects, sequences from different spaces with different functions.

Influenced by the modern world, the treatment and observation of the street as an urban road is dominant. In parallel with this view, a basis is being created which explains the street as a multifunctional urban place (Marshall, 2005). Streets are the

most important symbols of the public realm, as they make up a large portion of open communal space. They take into consideration the practical, social and recreation needs of people which are strongly linked with the growth of the economy, physical health and community sense (Chadha,2017).

2.2. Theories about the Relationship between People's Behavior and Physical Form

Lynch (1961) in his book "Image of the City" suggests new approach of understanding the order of urban city. This theory, known as E-B research, is based on the city memories of the people and its essence is to study the relationship between physical environment and people's behavior associated with it. From here, it is believed that there is a connection between people and urban streets. The most appealing theory to academics and designers interested in creating better environment is the theory of behavior settings introduced by Baker (1968). This is due to the inclusion of both human and non-human conditions and entities within the theory, which sets apart from person-centered theories (Baker et al., 1983). The theory has been further developed by Wicker (1979), who combine the theory with psychology-related concepts. The Wicker's theory undermined the "physical milieu" thus become subject of criticism to other scientists who see the theory as a violation of the original Baker's theory.

According to Daniel et al. (1981), some environmental factors are determinants of the value for the perceived place. These factors are the degree of accessibility, uniqueness, availability and activities. Yet, some activities are more "demanding" than others (Wicker,1987). The required "fit" between the physical environment and user's activities depends on the activity's nature.

The model developed by Kaplan (1983), include the required or discouraged behavior in a particular setting and the plan and willingness of the people; what they are trying to do. Here, the emphasis is put on supportive environment where individuals strive towards goals and outcomes. The perception and knowledge of the people regarding the world is mainly influenced by the external information from the environment. Therefore, the clearer the information is, the easier is for a person to accomplish his

plans, while lack of information can lead to frustration, feelings of helplessness and distraction (Kaplan, 1983).

Another model, developed by Generaux et al. (1983), suggest that there are necessary actions that are decided by the person. Depending on the environment, their fulfillment can be easy or difficult, but yet they are clearly goal-directed and needed.

Although the architecture is an important for urbanization, therefore any great street, it is a place where community truly “bloom”. Today, the rapid growth and the city constructions have an enormous impact on the relationship of the people, as they are the urban users, and the social spaces. Dynamic and well-used streets are places where everyone enjoys; people coexist, find mutual interests and experience vibrant link (Chadha, 2017). Therefore, it can be said that the user of the street directly influences the street character. It all depends on the purpose and function of the location, physical form and user cultural characteristics (De Simas, 2017)

In addition, the psychical characteristics of the streets such as location, appearance, landscape features and quality play important role in creating sense of the place. Location is emphasized due to ability to make the street accessible through using the strategic location, well-connected with the other parts of the city, accessible by different modes of transportation and by making the street recognizable by the locations’ buildings, landmarks or any other street elements. Besides that, the physical appearance such as the height, size, color, materials, age has a role in making the street to be recognized. These features make the street safe and comfortable for the users. Moreover, the trees, streetlights, sitting areas, pedestrian level, traffic, and walkways have an essential contribution in people’s perception whether the street is safe or not (Musaab et al., 2015).

3. METHODOLOGY

This paper aims to explore the sense of comfort and safety of people while being in urban streets and public places. Moreover, it examines how do the variables ‘age’ and ‘gender’ influence the perception and feelings on public places.

In this research, the authors tried to bring together the data and information available in expert literature and legislation, in university lectures and research, on the Internet pages of relevant academic and state institutions, as well as satellite and aero photometric data about sections of the city – made available through global networks and browsers. The graphic materials were vectorised on a level of diagrams that offer a visual presentation of the central characteristic of urban streets – their cross section. These graphic materials were analysed following the theory of graphs. They were overlaid and grouped with visual comparison. The extremes of the phenomena, the lowest and highest values, were discarded as exceptions, while the border areas of the phenomenon were included for the purpose of defining the range in the shape of a cloud zone of most common positions on the graph.

In addition, in order to collect data, an online questionnaire was used as a main survey method. Subject of analysis in the research are all citizens of Skopje, Republic of North Macedonia. The data was collected over a three-week period of time from July to August 2021. A link to the online survey was sent to all potential participants. The invitation email contained information on the purpose of the research, as well as the voluntary and anonymous nature of the survey. A total of 105 participants submitted fully completed surveys.

Overall, there were 408 respondents in the study (54% females and 46% males). The age dissemination suggested that the majority of the respondents (29%) are between 36-45 years old, followed by the 25-35 years old (23%) and 46-55 (23%), while the respondents aged 55+ account for 22%.

4. RESULTS AND DISUCSSION

This study provides an insightful result based on the dimension of the different part in the city, shown in Table 1. The quay of Vardar, the boulevard Partizanski odredi, boulevard Metropolit Teodorsij Gologanov and Ilinden boulevard are considered to be “hosts” of many buildings per m2, while the boulevard Partizanski odredi and Ilinden boulevard have highest percentage of greenery thorough the street. In terms of number of people using the mentioned streets, the quay of Vardar, the old town and the city park are 100% pedestrian, followed by street in old town of Skopje(49,1%),

railway station (32,3%), the boulevard Partizanski odredi (31,5%), the Ilinden boulevard (30,3%).

Table 1. Different locations and their dimensions

Location	W _{pedestrians} (m ¹)	W _{cars} (m ¹)	W _{greenery} (m ¹)	W _{section} (m ¹)	H _{buildings} (m ¹)	A _{scs} (m ²)	W _{section} / H _{buildings}	P _{pedestrians} (%)	P _{cars} (%)	P _{greenery} (%)
Railway Station in Skopje	10.0	21.0	0.0	31.0	10.0	310.0	3.1	32.3	67.7	0.0
Blvd Boris Trajkovski	4.0	14.0	0.0	18.0	9.0	162.0	2.0	22.2	77.8	0.0
Street in Old town of Skopje	13.0	12.0	1.5	26.5	10.0	265.0	2.7	49.1	45.3	5.7
Blvd. Partizanski odredi	14.0	19.0	11.5	44.5	20.0	890.0	2.2	31.5	42.7	25.8
Blvd. Mitropolit Teodosij Gologanov	5.0	14.0	0.0	19.0	26.5	503.5	0.7	26.3	73.7	0.0
Vardar riverbank	24.0	0.0	0.0	24.0	15.0	360.0	1.6	100.0	0.0	0.0
Blvd. Ilinden	10.0	14.0	9.0	33.0	15.0	495.0	2.2	30.3	42.4	27.3
Стариот дел од Градски парк	5.0	0.0	0.0	5.0	1.0	5.0	5.0	100.0	0.0	0.0
City park (old part)	7.0	0.0	0.0	7.0	1.0	7.0	7.0	100.0	0.0	0.0
Minimum	4	0	0	5	1	5	1	22	0	0
Maximum	24	21	12	45	27	890	7	100	78	27
Avarage	10.2	10.4	2.4	23.1	11.9	333.1	2.9	54.6	38.8	6.5

On the other hand, the opinion of the respondents provides initial insight into their perceptions and feelings regarding the urban streets and public spaces. According to the research results shown in Table 2, the respondents feel most comfortable while moving on boulevard Partizanski Odredi (M=3,95), followed by the Quay of the river Vardar (M=3,73), the Ilinden boulevard (M=3,45) and boulevard Metropolitan Theodosius Gologanov (M=3,11).

Table 2. Respondent's opinions on safety

I feel comfortable and safe moving like a pedestrian or cyclist along...	Mean
The boulevard Partizanski Odredi	3,95
The Quay of the river Vardar	3,73
The Ilinden boulevard	3,45
The boulevard Metropolitan Theodosius Gologanov	3,11

Besides that, according to Table 3., the research results show that on a scale to 10, the respondents evaluate the public space with below than the average score (M=4,25).

Table 3. Respondent's evaluations on public place

Issue	Mean
On a scale of 1 to 10, evaluate the public space of Skopje from every aspect.	4,25

The research results shown in Table 4., as well, show that most of the respondents do not feel safe while being in the City Park, boulevard Boris Trajkovski and Skopje Rail Station, the old part of the City Park and old Skopje Bazaar.

Table 4. Respondent's opinions on feeling safety and security in different locations

Issue	Yes	No
The part of the City Park around the lakes gives a feeling of safety and security for movement around the clock	25%	75%
The old part of the City Park gives a sense of security and safety for moving in a new all day	45%	55%
Do the narrow streets in the old Skopje Bazaar give you a sense of security and safety?	47%	53%
Do you feel safe moving along the pedestrian or cyclist along Boris Trajkovski Boulevard?	17%	83%
Do the area in and around the Skopje Railway Station feel safe at night?	13%	87%

To sum up, according to the provided results, the quay of the river Vardar, the boulevard Partizanski odredi and Ilinden boulevard offer the best results. In other words, these places have multiple functions in the public space; there are motor vehicles, cyclists, pedestrians, etc., which result in high level of frequency uninterruptedly. At the same time, these places have excellent tall foliage and exceptional organization on the transverse profile of the street in terms of physical protection from motor traffic. What is also important is the length of the streets greater than a few kilometers, which creates an ambience that lasts longer during the usage and the stores, cafe bars and restaurants positioned on the streets which make them having multiple functions.

Graph 1. Locations and their percentage of pedestrian service

In addition, people with different demographic profiles were asked about their perceptions and feelings while walking in the streets around Skopje. First, to test the

differences in perceptions and feelings, a comparison was made based on the gender through T-Test. The data presented in the Table 5., shows that there is no statistically significant difference among gender groups regarding their sense of comfort and safety while walking.

Table 5. Sense of comfort and safety based on gender groups

	I feel comfortable and safe moving like a pedestrian or cyclist along the boulevard Partizanski Odredi.		
	Mean	SD	Sig (2- tailed)
Female	3,92	1,01	0,13
Male	3,95	1,01	
	I feel comfortable and safe moving like a pedestrian or cyclist along the Quay of the river Vardar.		
	Mean	SD	Sig (2- tailed)
Female	3,69	1,13	0,058
Male	3,72	1,14	
	I feel comfortable and safe moving like a pedestrian or cyclist along Ilinden Boulevard		
	Mean	SD	Sig (2- tailed)
Female	3,42	1,17	0,56
Male	3,45	1,17	
	On a scale of 1 to 10, evaluate the public space of Skopje from every aspect.		
	Mean	SD	Sig (2- tailed)
Female	4,21	1,58	0,11
Male	4,24	1,61	
	I feel comfortable and safe moving like a pedestrian or cyclist along the boulevard Metropolitan Theodosius Gologanov.		
	Mean	SD	Sig (2- tailed)
Female	3,1	1,17	0,82
Male	3,12	1,19	

However, according to the research findings shown in Table 6., there are statistically significant difference among age groups regarding their perception of public space of Skopje from every aspect, but not in the sense of comfort and safety while walking. There is a statistically significant difference among age groups in regard to evaluation of the public space of Skopje from every aspect. People aged bellow 46, consider the Skopje's public space as better in comparison with the older population (aged above 46).

Table 6. Sense of comfort and safety based on age groups

	I feel comfortable and safe moving like a pedestrian or cyclist along the boulevard Partizanski Odredi.		
	Mean	SD	Sig (2-tailed)
25-35	3,94	1,02	0,54
36-45	3,94	1,08	
46-55	3,89	1,02	
55+	3,89	1,02	
	I feel comfortable and safe moving like a pedestrian or cyclist along the Quay of the river Vardar.		
	Mean	SD	Sig (2-tailed)
25-35	3,12	1,19	0,73
36-45	3,13	1,18	
46-55	3,03	1,16	
55+	3,03	1,16	
	I feel comfortable and safe moving like a pedestrian or cyclist along Ilinden Boulevard		
	Mean	SD	Sig (2-tailed)
25-35	3,71	1,15	0,48
36-45	3,72	1,37	
46-55	3,73	1,13	
55+	3,69	1,11	
	On a scale of 1 to 10, evaluate the public space of Skopje from every aspect.		
	Mean	SD	Sig (2-tailed)
25-35	3,47	1,16	0,03
36-45	3,44	1,17	
46-55	3,38	1,19	
55+	3,38	1,17	
	I feel comfortable and safe moving like a pedestrian or cyclist along the boulevard Metropolitan Theodosius Gologanov.		
	Mean	SD	Sig (2-tailed)
25-35	4,23	1,59	0,66
36-45	4,25	1,60	
46-55	4,02	1,61	
55+	4,22	1,60	

On the streets and boulevards, there are increased number of vehicles. People drive much faster every day, so the number of the car accidents and victims is increasing as well. Older people consider this as more seriously than younger population, thus although there is no statistically significant difference in sense of comfort among age groups, they are more concern regarding the number of victims and car accidents.

Moreover, as part of the explanation behind this can be experted from the Skopje 2014, a uniquely excessive project which aim was transforming Skopje from a brutalist Yugoslav city into a modern, attractive, neoclassicist capital up to European standards. While the most of the “intervention” has been focused on the “new” center of the city, the “old” Ottoman center was subject of the major renovation. Although, from that moment on, this space is considered as more secure and much livelier area, it remains bereft of new statues and buildings honoring Alexander the Great. In addition, Yugoslav-era spaces were either destroyed or refitted with neoclassical façades. The research supports the McAuley (1998) idea that the older people show to be more place attached, due to social-historical elements of the city. Older people are not happy with the new look of the city and therefore they evaluate the public space of Skopje from every aspect with lower score than younger population. On the other side, young people are less attached to the historical elements of the city, but more likely to prefer to live in more dynamic, modern, and accessible places.

CONCLUSION

The academic literature contains an extensive discussion on the topic of urban streets and public spaces, yet there is a lack of research with regard to the perception and feelings of people on the same. At the same time, the provided discussion in this paper provides an overview of some of the strengths and the limitations of the available literature.

Having completed this broad analysis, the conclusion is that urban streets, like most of the urban phenomena, and the city itself, are difficult to be defined and described with conventional methods and instruments. It is difficult to offer a definition or thesis in a single sentence, without neglecting or overlooking essential characteristics of urban streets. Instead, this paper offers a descriptive definition of the phenomenon of urban

streets, measuring their characteristics within numerical intervals and describing the potentials and qualities that urban streets have offered to the city, both in the past and the present.

History reveals that urban streets have been primarily designed two-dimensionally, meeting the current needs and following the trends. As late as the advent of the industrial or post-industrial city, the buildings lined along urban streets acquired their specific role in the urban image. This was the time when the new bourgeoisie took centre-stage and Paris with its boulevards became the paradigm for a modern metropolis.

Urban streets are the core threads that connect the city. The expansion of the city can be organized through multiplication of urban streets following the principle of grids or tree networks. These two principles are the basic patterns to which all mutual relations of urban streets can be reduced. The interaction frequency and the length of the streets themselves depend on their genesis, the period in which they were generated, and the meaning they have for the immediate surroundings and the city as a whole. The dimensions of the cross-section, as well as the correlation between the width of the cross-section and the height of the buildings, are different. Through analyses and measuring, as presented in the graph, it is possible to locate various densities and values. From there, we can infer that the greatest number of examples of beautiful urban streets have similar dimensions and proportions of their cross-section.

Moreover, this paper supports the theory, known as E-B research, which shows that there is a connection between people and urban streets. The research findings suggest that there is no significant differences in perception and feelings of people from different gender, yet significant difference in perception among age groups.

The interactions within the limits of the urban street occur in favour of all participants and contribute toward a positive human development in every sense. Urban streets are an unavoidable and essential part of the urban weaving, and we can count them into the catalogue of universal civilizational gains. Furthermore, for building a sustainable city (from city focused on green energy to intelligent city infrastructure) one can take into consideration mainly the people who live there, because

sustainability is not only using new technology and systems, but rather it refers to changing behavior. For instance, the installation of public transportation does not guarantee that people will use them, therefore drive less. For this reason, people have to be aware of the factors that contributes to the cities being sustainable or unsustainable, which have to be addressed in the planning process as well.

Consequently, the discussion that is provided also reveals the benefits that for the architects and experts. They have to be sensitive to the way in which they conceptualize propose an intervention, extensions and developments in a city such that they are aligned with the physical, socio-economic and environmental context, in behalf of maintaining the identity and image. All unsuccessful attempts in the past are prescribed to the lack of awareness of the space/street users. So, unless they have feeling like they are involved in the process of humanizing, they will not collaborate. Therefore, not only the street values, but peoples' reflection may be used as a check when planning and designing new city streets, sustainable city streets or reconstructing existing ones.

Research Limitations

The study's limitations are acknowledged. This work is a beginning of a different view on the class of phenomena called urban streets. It could be expanded and made more detailed in the part dedicated to the systematization and taxonomy of actual areas. The potential of this work is its possible application in the future studies of the treatment and trends in the allocation of traffic surfaces in the city. Within the existing legislation, there are possibilities for changes and corrections in favour of protecting the most important traffic participants – humans. They will lay the foundations for a further cultural, economic, and overall civilizational development in the cities.

Moreover, in terms of people's perception, one of the most significant drawbacks is that the sample may not be representative of the general population. Despite the fact that the respondents are anonymous, the level of honesty should not be assumed. The demographic location of the responders is the final limitation. The findings are based solely on research conducted in Skopje, Republic of North Macedonia, therefore

additional research should provide a more comprehensive examination of such variables.

However, all of these limitations can face a comprehensive extension in a future research. Future studies can utilize larger samples and possibly even representative samples to further enhance the knowledge about perception and feelings of the people in the country and their linkage demographic variables.

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