An-Najah National University

Faculty of Graduate Studies

Urban Sustainability as a tool of assessment and development of public spaces in Palestine
Case Study: Martyr's Square in Nablus City

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This Thesis is Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Architectural Engineering, Faculty of Graduate Studies, An-Najah National University, Nablus – Palestine

2018

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Dedication

To all whom I love.

Acknowledgment

I extend my gratitude and appreciation to all those who contributed to this research, starting with the supervisors; Dr. Kahled Qamhiya and Dr. Haithem Al-Ratrout, and all the professors and colleagues who have provided help and support, particularly, Dean of the Faculty of Engineering, Dr. Khaled Al-Sahili for his assistance and advice, Dr. Ali Abdelhamid, Dr. Tamer Al-Khatib, and Dr. Soheil Salha.

Special and sincere thanks are also extended to the Head of the Building Engineering Department, Dr. Muhannad Haj Hussein for his time and effort that helped complete this research to its' present form.

For all official bodies that showed cooperation, for my family, and especially Eng. Mahmoud Wasfi, Eng. Ahmad Wasfi and Mr. Hussam Neirat's family, thank you all.

الإقرار

أنا الموقع أدناه مقدم الرسالة التي تحمل العنوان

Urban Sustainability as a tool of assessment and development of public spaces in Palestine
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أقر بأن ما شملت عليه الرسالة هو نتاج جهدي الخاص، باستثناء ما تمت الإشارة إليه حيثما ورد، وأن هذه الرسالة ككل أو أي جزء منها لم يقدم من قبل لنيل أي درجة أو لقب علمي أو بحثي لدى أي مؤسسة علمية أو بحثية

Declaration

The work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degrees or qualifications.

Student's Name: **اسم الطالبة:**

Signature **التوقيع:**

Date **التاريخ:**

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Abstract

In Palestinian cities, there is a clear shortage of green areas, squares, sidewalks and street furniture, especially in city centers which are congested with vehicles that are associated with accidents, noise and air pollution. Besides the critical situation the Palestinian cities experience under the Israeli occupation, these reasons call for adopting a sustainable approach to guide the quality measurement of public spaces towards development that enhances their positive impacts and overcomes their weaknesses with a view to improve their users' experience.

The Martyrs' Square, the main public space in Nablus city was chosen to be evaluated in this research as a case study with reference to sustainability criteria in public spaces. By means of the DELPHI method, (HPPS by Barth) criteria were refined, and revealed the significant social role the Palestinian public space should deliver, followed by the economic and the environmental roles respectively.

The implementation of the refined criteria had combined the subjective approach through a questionnaire that targeted the Martyrs' Square users and the employees of Nablus municipality, with the objective approach for comparison. The results of this research showed that the Martyr's Square was more economically achievable in comparison with the social and the environmental levels, and

manifested the main causes of its' social and environmental decline with prioritizing them as; major causes including: traffic congestion, low level of cleanliness, lack of basic services and unavailability of designated spaces for holding events and practicing activities. In addition to sub-causes including: the high dB levels, polluted air, poor maintenance and Lack of environmental awareness promoting aspects. On the other hand, the study revealed some opportunities that can be invested and promoted, such as: the clear users' tendency towards the environmental friendly notions and the municipality staff resemblance of users' trends that can be beneficial in terms of representing users' needs. Recommendations and proposals were accordingly presented to address the concluded issues.

Chapter One

Research Introduction

1.1. Prolegomena

Architecture has always aimed at fulfilling the needs of the human being; physically, psychologically and spiritually, not only within the built spaces, but also within the spaces it creates outwards; these spaces which create together our neighborhoods, cities and the world around us. In a city, public spaces are very important components in the urban context. Such importance is obvious in the description by Asdrubali as "the place where people speak, exchange ideas and goods, meet and manifest, where shows and events are staged; it is the crossroads of paths along which the story is remembered, the culture of the area is layered, the citizenship is built."[1]

Public spaces are even more important when it comes to densely populated cities where these spaces are rare and limited, and Palestinian cities are no exception;[2] where there is a clear insufficiency of green areas, public parks and squares as well as sidewalks and street furniture,[3] [4] [5] especially in city centers, as the large increase in number of vehicles has disrupted the relationship between man and public spaces and transformed these spaces from areas of human communication, entertainment and exchange of experiences to congested areas of vehicles with associated accidents, noise and air pollution.[6] In addition, the impact of the Israeli occupation measures and restraints on the Palestinian community and the absence of legislation and their proper application that ensures the sustainable and balanced

[1] (Francesco Asdrubali, Francesco D'Alessandro, Giorgio Baldinelli, Brigitte Schulte-Fortkamp, 2014)
[2] (Thawaba, 2014)
[3] (Al-Kum, 2009)
[4] (Hirzallah, 2014)
[5] (Dweikat, 2009)
[6] (Dweikat, 2009)

distribution of spaces in the cities[1], which all lead to the visual contamination[2] [3] and the non-clarity of the public space concept and its specifications, that nearly applies to all Palestinian cities, including the city of Nablus.

Taking into consideration the increasing calls towards sustainability at all living aspects besides the aforementioned challenges faced by the Palestinian public spaces in general, it is of high significance to study the Palestinian public spaces and understand the key roles they play in producing sustainability in their cities and communities, so as to maintain the balance between the related aspects, enhance their positive impacts and overcome their weaknesses. Since the quality of public spaces plays a major role in the economic, social and environmental sustainability of our cities[4], a first step to start from, is measuring the quality of these public spaces according to sustainability framework being considered as a tool as well as a guide to develop and improve our public spaces in a way that ensures the prosperity and the well being of their users and the coming generations.

In brief, this research will investigate the principal public space in the city of Nablus (the Martyrs' Square) as a case study in light of the urban sustainability principles and criteria; as a means of understanding the current space situation, strengths and weaknesses, with enfolding the interest of the development process of the space towards more sustainable life for its users and the city of Nablus in general.

[1] (Idreikh, 2005)
[2] (Khalid, 2009)
[3] (Farran, 2004)
[4] (Reny Syafriny, T. Sangkertadi, 2010)

1.2. Literature review

Public space investigation and evaluation has been considered in several studies and in different ways; some have addressed the public space in multifaceted way, while others have kept the focus on a specific aspect to be evaluated. Various tools and criteria were developed and different approaches were followed depending on the different targeted public spaces and the objectives of the evaluation process. The following is a brief overview of some of these studies:

- International case studies:

  One of these studies was held in June 2014 when Reset Urban Design were commissioned by Auckland Council to perform an independent evaluation of the current and future public space provision in the downtown area of Auckland City Center, as a consequence of a decision to dispose of Queen Elizabeth square, so that better overall public space could be achieved.

  In Auckland council's study, the investigation of Queen Elizabeth square had comprised several stages; firstly, the needs for a public space in the down town area were identified including: the need for more open space and playgrounds, additional facilities, safer access, places to gather and enjoy events as well as a stronger connection to water. Secondly, the historical development of the area was understood besides the spatial attributes, pedestrians movement and access, climatic and environmental attributes, shades and activities whilst a set of assessment criteria was developed for civic (public squares and plazas) and informal recreation (flexible spaces as beaches, flat grassy picnic areas) open space types. See Figure 1.

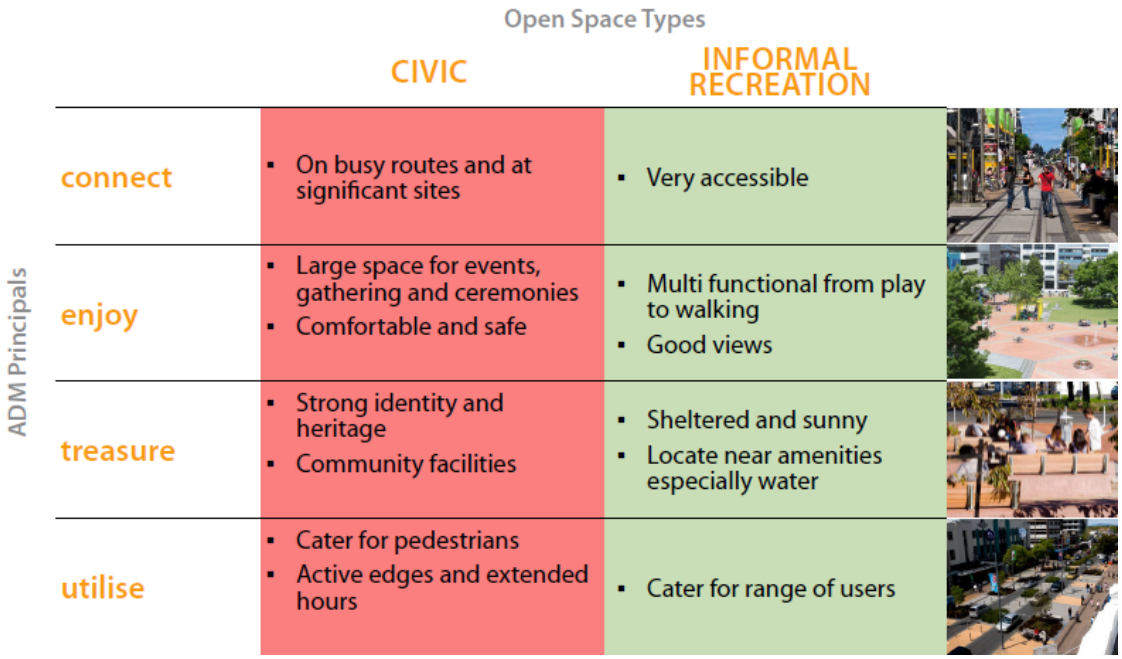

Figure 1: evaluation criteria based on Auckland Design Manual (ADM) open space guidance

Source: (Garth Falconer - Reset Urban Design, 2014)

And finally, the qualities of both the existing and the enhanced - two suggested proposals - Queen Elizabeth Square were assessed, while alternative spaces that could be invested in were also identified. That work was formed by means of desktop study, on-site observation, stakeholder consultation feedback and the application of public realm evaluation criteria. Based on the study few recommendations were developed to improve the area and to ensure the required qualities.[1]

Another example of public space investigation and assessment process is the evaluation of the Retain and Monitor area and King George's Square in Redcar and Cleveland, UK. Under the auspices and supervision of the Living Streets organization, this assessment was carried out by means of the Spaceshaper; which

[1] (Garth Falconer - Reset Urban Design, 2014)

is a workshop - based toolkit developed by the Commission for Architecture and the Built E²nvironment (CABE). The process started with a walk site visit undertaken by participants - including 8 residents and 8 officers – and ended by completing the Spaceshaper questionnaire forms about the visited area which were processed by the Spaceshaper software for final results.

The Spacesshaper questionnaire was designed to capture the participants' perception of the targeted space against 41 characteristics grouped into eight sections; including: access, use, other people, maintenance, environment, design and appearance, community and you, as well as their visions of the spaces after 10 years to come. The key results were presented and discussed in a workshop, and a comparison was made between the perspectives of residents who use the space and officers whose job is to care for the space; which made it possible to identify the strengths and the weaknesses of the area, to set priorities and what mostly mattered to users, besides suggesting new ideas for the space improvements.[1]

One more research was held by Syafriny and Sangkertadi in three types of public spaces in Manado: urban plaza, waterfront, and neighborhood open space. Based on the Post Occupancy Evaluation (POE) method – a process of evaluation concerning the effectiveness of spatial design creation and its fixtures after the construction and operational function – the research focused on three elements of space performance which are: technical, functional and behavioral aspects. The method adopted in this study included: observation of the space, behavioral and preference mapping, questionnaires and interviews in addition to photographic analysis.

[1] (Living Streets, January 2009)

This research revealed that, technically, design performance of space could successfully bring pleasant experience for the visitor. The study results also showed that the limitation of activities caused by the special conditions couldn't represent the real need of users in the city; as some activities were taken in wrong places, some elements of public open spaces were unused and inattentive while others were over capacitated, besides the poor quality of environment because of the thermal comfort and the cleanliness problems. Consequently, recommendations were suggested to improve the studied spaces and minimize their downsides while serving in the improvement of urban design decision for making renovation of some public space design to contribute the urban greenery system planning in Manado City.[1]

These research examples which were held in different western cities around the world, and varied in methodology will, in no doubt, help to investigate our urban public spaces, especially the main square in Nablus city Martyrs' Square and improve its quality to meet the needs of its users and achieve a more sustainable space. However, none of these assessment processes had adopted sustainability as key criteria in evaluating public spaces, despite the fact that the developed criteria in each case had addressed the space in multiple aspects and some had intersected with sustainability at some points.

- Palestinian case studies:

  Very few studies had investigated the Palestinian public spaces from a multi–disciplinary perspective. However, a related research was carried out by Thawaba in the city of Ramallah, 2014, in which a needs–based approach was

[1] (Reny Syafriny, T. Sangkertadi, 2010)

implemented to evaluate the public spaces in the city. Interviews were conducted with city planners, academics and professionals to identify the needed sizes for the public spaces, upon which calculations were made to find out if the existing parks sizes satisfied the city dwellers, besides incorporating residents' perception regarding park size, service and facilities, availability and accessibility. The city was divided into 13 zones, and the attribute data was linked to the spatial data using GIS to show each zone residents perception.

The study mapped the residents' perception of each zone for their needs and their criticism regarding urban parks within their context. For example, some zones park areas needed to be increased in size, while others services needed to be improved in terms of accessibility and facilities (e.g. playgrounds, toilets, water features). The research also revealed the significance of the needs–based assessment approach in preparing development plans, as well as achieving fair distribution of parks, providing facilities and enhancing accessibility, which might provide the planners in Ramallah Municipality with guidelines for better park allocation, location, and design within their city.[1]

Another research was carried out to investigate the public spaces in Gaza city, 2014, by Hirzallah. The study included an assessment of the current reality of Gaza city public spaces and the development of appropriate proposals to create an integrated composition in terms of spaces and green areas and street furniture and architectural style.

The most important findings of this study were that the majority of the public spaces in Gaza City suffered from dysfunction due to the deformation in their

[1] (Thawaba, 2014)

physical and visual structure, lack of necessary elements and components, neglect of climatic factors and lack of enrichment of plant and water elements. Accordingly, a number of recommendations were presented to emphasize the need to re-design the public spaces in Gaza city to harmonize all physical and humanitarian requirements, with the need to separate the movement of vehicles from the movement of pedestrians by appropriate means.[1] However, it was noticed that no clear and specific criteria were adopted in the evaluation process, but only the pros and cons of each public space were enumerated.

In Nablus city, few studies concerning public spaces were mostly focusing on the old historic town, yet, they are lacking to the comprehensive multi-aspect outlook in addressing the public space as a core of the study. The Martyrs' Square area in particular, was studied in 2004 by Farran regarding the visual and the aesthetic aspects and elements in that area including: the urban spaces, street furniture, the architectural styles, the landscape and few others. Based on field observation and questionnaires, with applying Lynch rules, the study found that the Martyrs' Square included many aesthetic elements, and that the essential street furniture was available but not distributed properly. It also found that stone and concrete were the mutual building materials where these buildings lacked to the visual connection though. Generally, the area respected the human scale except the mall building which was considered huge compared to its surroundings. The studied area was also found to be compact and crowded with few urban spaces, in addition to the randomly used banners and advertizing boards. Based on the research results some

[1] (Hirzallah, 2014)

recommendations were proposed to Nablus municipality, public associations and citizens, to help improve the Martyrs' Square visually and aesthetically.[1]

It is noted that Farran's study was limited to the visual and aesthetic aspects of the Martyrs' Square, while this square - which is considered as the main public space in Nablus city – needs to be studied via a multi-disciplinary approach, and to be investigated thoroughly to help identifying the downsides of the space and suggest suitable solutions, as well as the positive qualities that need to be maintained and enhanced. This multi-disciplinary approach is of high significance in considering an urban public space, since such spaces are related to various disciplines, and that any suggested solution based on one aspect will affect the other aspects as well. Hence, it's important to take multiple aspects into consideration in the investigation process to extract better convenient solutions. Especially that Farran's study was carried out 13 years ago and with no doubt, some problems aggravated during these years while new ones emerged.

The Martyrs' Square, was also briefly investigated in 2009 as a part of a research which was carried out by Dweikat to study the urban public spaces in Nablus city. The study roughly covered five public spaces including the Martyrs' Square, and revealed that the urban public spaces are randomly distributed in the city in different shapes and sizes depending on their location, with identifying a few pros and cons of each public space. As for the Martyrs' Square, it was found to be the most common public space that met the need for people communication and entertainment. However, it lacked a range of basic services and facilities, such as: water taps, display screens, public WCs, shading, as well as the low sense of

[1] (Farran, 2004)

comfort and security, noise and unpleasant odors.[1] Once again, the criteria by which the public spaces were evaluated weren't clear or specified enough and didn't cover the various aspects of each space.

Another study which was conducted by Abbas did partially include the Martyrs' Square, 2008, through which urban security in public spaces was investigated from women's point of view. The public spaces evaluation was guided by Kevin Lynch's five basic criteria: vitality, sense, fit, access, and control, by which the research questionnaire was inspired. With regard to the Martyrs' Square, 95.5 % of participant women denied the existence of any allocated area in the Martyrs' Square to practice their social activities, in addition to experiencing vehicle and pedestrian congestion due to the activities organized by local authorities, besides the lack of the public WCs.[2] This research also had the focus on a specific subject that is related to public spaces, because of which the Martyrs' Square was not fully covered and studied, as well as the evaluation reliance on a specific category of users points of view for the purpose of the research.

To conclude, internationally, many case studies were concerned with the multi–faceted investigation of public spaces, and various methodologies and criteria were developed to evaluate these public spaces, which will be beneficial in accomplishing this research. However, no direct adoption of sustainability norms seemed evident. Whereas locally, very few studies had investigated the Palestinian public spaces in general from a multi–disciplinary perspective; where in most cases the methodologies and the criteria by which the public spaces were evaluated

[1] (Dweikat, 2009)
[2] (Abbas, 2008)

weren't clear or specified enough and didn't cover the various aspects of the targeted public spaces apart from their non-reference to sustainability criteria. Not to mention, the Martyrs' Square which has neither been studied multi–dimensionally in general nor according to sustainability criteria in particular.

1.3. Problem statement

Urban public spaces play a key role in urban quality, individual wellbeing, equity and prosperity.[1] And when it comes to densely populated cities they are even more important. Accordingly, more attention shall be paid towards developing and enhancing these spaces to improve the experience of users, and help achieve more sustainable cities, and the first step must be the recognition of the existing reality, through evaluation and investigation process, which leads to prompt improvements of the public space.

In Nablus city, the Martyrs' Square - which is considered the main public space – used to be associated with some problematic issues that make this public space a crucial and urgent case of investigation, in order to come up with solutions and improvements that boost forward its quality as a public space, especially that the Martyrs' Square hasn't been studied multi–dimensionally in general or according to sustainability criteria in particular which makes any attempts to develop it fragmentary, one-sided and may even cause other new problems.

[1] (UN - HABITAT, 2015)

1.4. Research question

This research suggests that the Martyrs' Square is a significant part of Nablus city that plays a key role in achieving sustainability, especially on the economic level, and that the underlying causes behind its problems are due to the weakness of some of the aspects on which a successful sustainable public space would depend, that any attempt to solve these problems needs to deal with these aspects in the first place. The research also suggests that some of the main problematic issues the Martyrs' Square users suffer from are: traffic congestion, lack of cleanliness, the high dB levels and lack of resting areas, shading and vegetation.

Based on the above, the following questions can be rehearsed: how far does the Martyrs' Square contribute in achieving urban sustainability? And what are the positive and the negative qualities of this area?

1.5. Aims and objectives

This study aims to investigate and evaluate the Martyrs' Square, the main public urban space in the modern city of Nablus, at different levels according to sustainability norms, and to find out what role it plays in the urban sustainability of the city. It is also intended to find out solutions to deal with the urban problems that came through the investigation process.

1.6. Research significance

- This work is an actual investigation of the current quality of the Martyrs' Square, in a multi-disciplinary way based on sustainability that will highlight the role it plays in the city.

- It will help identify the strengths and weaknesses of the Martyrs' Square and prioritize the major problems to be solved without being isolated from other issues related to the square.
- This research will highlight the influence of the Martyrs' Square on its users' lives and measure how well it meets their needs.
- It can also be considered as a reference base to measure out the influence of any changes or development procedures that may take place in the future within the Martyrs' Square.
- It attempts to present architects, urban designers and the decision makers the needed information to improve the Martyrs' Square area, which leads to improve the experience of users, and help achieving more urban sustainability in Nablus city.
- It will help those who are concerned with developing other Palestinian public spaces.

1.7. Methodology and plan

This research generally falls under the post occupancy evaluation - which concerns the effectiveness of spatial design creation after the construction and operational function[1] - and was carried out according to the following methodology.

The research started with a theoretical framework where the concept of sustainability and its relationship to public spaces were reviewed in addition to a group of criteria that were found to be mostly consistent with the principles of

[1] (Reny Syafriny, T. Sangkertadi, 2010)

sustainability in public spaces from which the assessment criteria of this research were selected.

The second step was refining the selected criteria to fit with the reality of the existing Palestinian public spaces including the Martyrs' Square, by adopting and implementing the DELPHI method which will be reviewed as follows:

The DELPHI method is a widely used and accepted method for gathering data from respondents within their domain of expertise. It was originally developed in the 50s by Dalkey and Helmer (the RAND Corporation in Santa Monica, California)[1] [2] and has been used more often over the past few years in scientific research with improvements and modifications taking place constantly since its applications are diverse. The DELPHI method has proven a popular tool in information systems research for identifying and prioritizing issues for managerial decision-making. This method is based on structural surveys conducted in two or more rounds and makes use of the intuitive available information of the participants, who are mainly experts.[3] [4] "The method entails a group of experts who anonymously reply to questionnaires and subsequently receive feedback in the form of a statistical representation of the "group response," after which the process repeats itself."[5] The objective of this method is to obtain the most reliable consensus of opinion of a group of experts especially when there is incomplete

[1] (Chia-Chien Hsu, Brian A. Sandford, August 2007)
[2] (Cuhls)
[3] (Arash Habibi, Azam Sarafrazi, Sedigheh Izadyar, 2014)
[4] (Chitu Okoli, Suzanne D. Pawlowski, December 2004)
[5] (RAND Corporation, 2017)

knowledge about a problem or phenomenon and their knowledge or experience is considered as the main source of information available.[1] [2]

The adopted assessment criteria in this research were developed by David Barth using two rounds of the DELPHI method, and to customize these indicators so that they become more compatible with the reality of the existing Palestinian public spaces, a third round of DELPHI method was conducted with the help of a group of experts in various related disciplines.

The actual implementation of the refined criteria came next, and this combined both the objective and the subjective approaches in the assessment process in order to make a comparison between the two. The main tool of data collection was the questionnaire which represented the subjective side of the evaluation, whereas, the objective side included: former statistics of the space, observation, mapping, photographing, in-situ measurements and personal interviews with officials and specialists.

Another level of comparison was also made within the subjective side of assessment by targeting two different categories of the Martyrs' Square users to fill the questionnaire: the ordinary users vs. the employees of Nablus municipality which is in charge of the Martyrs' Square, so that any variances of perception and trend between these two groups of users could be spotted.

Finally, the resulted issues with regard to the Martyrs' Square were also analyzed and prioritized according to the cause - outcome relationship based on the subjective and the objective data collected on each topic during the study that made

[1] (Norman Dalkey, Olaf Helmer, April 1936)

[2] (Gregory J. Skulmoski, Francis T. Hartman, Jennifer Krahn, 2007)

it possible to identify the major causative problematic issues from the secondary resulted ones.

To summarize, the methodology and the plan of this research are simply represented in Figure 2.

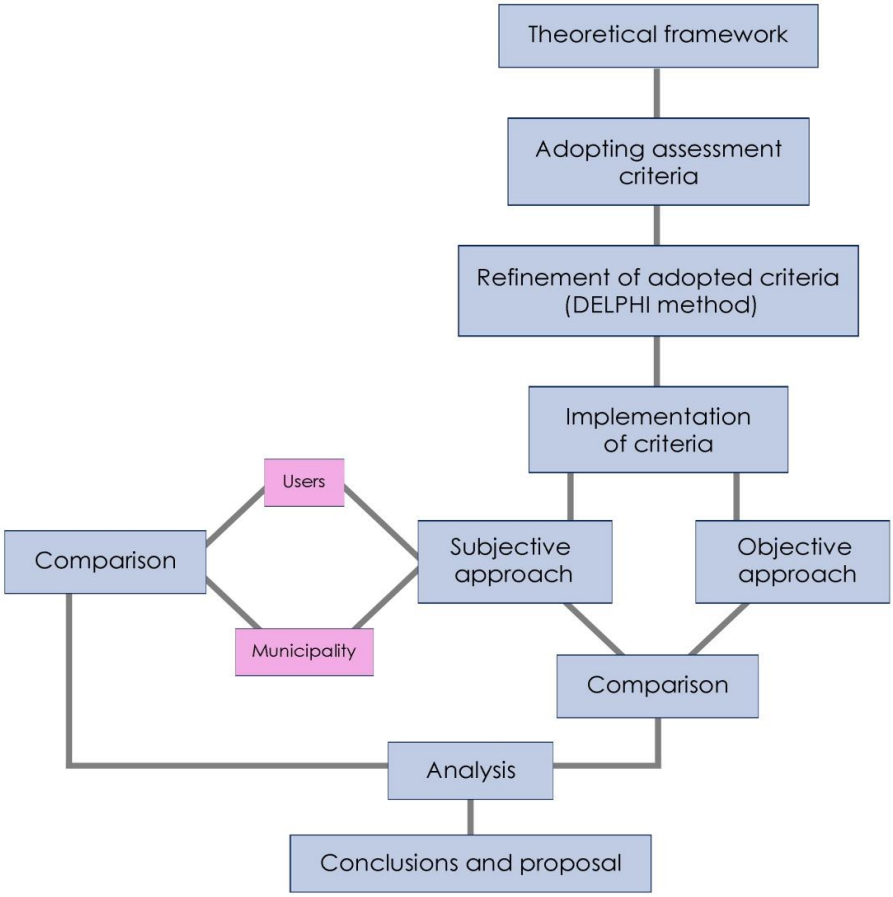

Figure 2: research methodology and plan

Source: the researcher

1.8. Research limits

Throughout carrying out this research few difficulties had come across and influenced its path including:

- The lack of relevant information regarding the Martyrs' Square, since the square hasn't been investigated thoroughly yet except for very few studies concerning some aesthetic and social aspects; which made the objective data collection quite challenging especially for the environmental characteristics of the square.
- Other technical difficulties.

1.9. Data resources

The study relied on the following resources:

- Library resources, including books and magazines that are related to the subject of the study.
- Electronic resources, including the latest scientific articles and papers.
- Field work which included observation, photographing, sound measurements and questionnaires/ interviews.

1.10. Structure of research

The research is subdivided into the following four parts in addition to the introduction:

1. **Introduction:**
   - Prolegomena, literature review, problem statement, hypothesis and research questions, research aims and objectives, significance of the study, research methodology, limits of study and the structure of the thesis were clarified.
2. **Theoretical framework:**
   - Public spaces and sustainability; public space roles in urban sustainability, sustainable public space criteria.

- Identifying evaluation indicators; through literature review and the case study analysis.

3. **Nablus main public space: the Martyrs' Square**
    - An overview of the Martyrs' Square area, history, architecture and usage.
4. **Methodology, analysis and assessment of the current situation of the Martyrs' Square area:**
    - Refinement of assessment criteria.
    - Field survey and data collection:
        I. Subjective approach (questionnaire/ interviews): questionnaire construction, testing, distribution.
        II. Objective approach (statistics, observation, mapping, photographing and interviews).
    - Data analysis and discussion.
5. **Conclusions and recommendations:**
    - Discussion and conclusion.
    - Recommendations and proposal.

Chapter Two

Public spaces and sustainability

2.1. Public spaces overview

The term "public space" generally means: the space that is not private and belongs to everyone.[1] There is a variety of definitions produced by professionals and researchers for the term "public space", which were mostly distinguished by issues of ownership, control, access and use; some of these definitions were broad to include all urban places that are capable of attracting urban residents, where others refused such universal definition considering that the concept of a public space varies according to different historic and cultural circumstances.[2]

One of the definitions of public space is: "publicly accessible places where people go for group or individual activities";[3] [4] this includes: gardens and small parks, green spaces, spaces in housing estates, small squares, areas around public buildings.[5] Public spaces were even described in more depth stressing their value and meaningfulness: as the places "where people speak, exchange ideas and goods, meet and manifest, where shows and events are staged, it's the crossroads of paths along which the story is remembered, the culture of the area is layered and the citizenship is built".[6] The same notion was presented by M. Francis when he considered the public spaces as a reflection of ourselves, our private beliefs and public values, and that they are the common ground where public culture is expressed and community life is developed.[7]

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[1] (Šimuneková, 2014)
[2] (UN - HABITAT, 2015)
[3] (M. Zawidzki, T. Nagakura, B. Tunçer, 2014)
[4] (Šimuneková, 2014)
[5] (Šimuneková, 2014)
[6] (Francesco Asdrubali, Francesco D'Alessandro, Giorgio Baldinelli, Brigitte Schulte-Fortkamp, 2014)
[7] (Francis, 1988)

According to Worpole and Greenhalgh, the very best public spaces have rhythms and patterns of use of their own, being occupied at different times by quite different groups, occasionally by almost everybody. And that their attractiveness, flexibility, and pluralist sense of ownership derived from their popularity, makes them immensely valuable to the life of the city.[1]

A related term to public spaces is the public realm; it is a more general concept which has been used by many authors to go beyond the sole physical aspects of the public space, and allows a proper division between public and private spaces.[2] Public realm includes all exterior places, linkages and built form elements that are physically and/ or visually accessible regardless of ownership.[3] According to Barth, public realm generally refers to "a community's system of streets and sidewalks, parks and civic paces, historic and cultural areas, and natural areas and trails. It also includes public infrastructure such as drainage swales, storm water treatment ponds, utility corridors and/or other land owned and managed by city, country, regional, state and federal agencies."[4] In other words, the public space is only a part of the public realm.

However, one of the most recent international definitions of the public space, and the one that is adopted by UN-HABITAT and considered to capture the spirit and the essence of the public space was offered by The Charter of Public Space, which is: "public spaces are all places publicly owned or of public use, accessible and enjoyable by all for free and without a profit motive".[5]

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[1] (Ken Worpole, Liz Greenhalgh, 1996)
[2] (Miguel Lopes, Sara Cruz, Paulo Pinho, 2012)
[3] (Abu Dhabi Urban Planing council, 2007)
[4] (David Barth, Margaret Carr, 2014)
[5] (UN - HABITAT, 2015)

Keeping in mind that public space characteristics may vary according to different regions and cultures, and that each public space has its own spatial, historic, environmental, social and economic features,[1] it's assumed that the types of public spaces that are most related to this research may fall under the following categories:

- Streets as public spaces: because of their versatility; these are often used most intensely in our daily life, such as: streets and avenues, squares and plazas, pavements, passages and galleries.
- Public open spaces; such as: parks and gardens, playgrounds, public beaches, river banks and water fronts.[2]

2.2. Public spaces and urban sustainability

The Brundtland Commission's briefly defined the "Sustainable Development" as: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs".[3][4] The concept of sustainable development is most often composed of three main domains: environment, economy, and society. It means resolving the conflict between these various competing goals, and involves the simultaneous pursuit of economic efficiency, environmental responsibility, and social cohesion.[5] This concept was applied to cities and various urban scales to face the new phenomena and problems of urban areas, and since cities contribute to a large extent to global environmental problems

[1] (Charter of Public Space, 2013)
[2] (UN - HABITAT, 2015)
[3] (World Commission on Environment and Development (WCED), 1987)
[4] (Robert W. Kates, Thomas M. Parris, Anthony A. Leiserowitz, 2005)
[5] (Cafuta, 2015)

and at the same time people living in cities are confronted with environmental damage, pollution, health risks and social and economic problems[1], this concept became an important urban planning and policy approach especially in the 20th century, revealing the term of "Urban Sustainable Development".

Urban Sustainable Development is an integral component of the universal aim of sustainable development. In other words, it also has mutually interacting social, economic, and environmental aims.[2] This multi- dimensional concept doesn't mean the sustainable development of any single economic, social, or environmental subsystems, but attempts to make a balance between these three domains.[3] In the President's Council on Sustainable Development (PCSD) report it's indicated that sustainable communities were defined as: "communities that flourish because they build a mutually supportive, dynamic balance between social wellbeing, economic opportunity, and environmental quality."[4] According to David Barth "sustainable communities are the desired outcome of the planning and design process. The public realm is a subsystem of sustainable communities".[5] Since the public spaces are significant parts of the public realm they have a great impact in achieving these communities.

In a city, public spaces are very important components in the urban context; as they fulfill many functions that benefit people's quality of life. Such importance is obvious in the description of the square by Asdrubali: "the place where people speak, exchange ideas and goods, meet and manifest, where shows and events are

[1] (Klaus Spiekermann, Michael Wegener, 2004)
[2] (Li-Yin Shen, J. Jorge Ochoa, Mona N. Shah, Xiaoling Zhang, 2011)
[3] (Cafuta, 2015)
[4] (President's Council on Sustainable Development, 1997)
[5] (Barth, 2015)

staged; it is the crossroads of paths along which the story is remembered, the culture of the area is layered, the citizenship is built."[1] In this description, one can see the profound and versatile aspects of the public space significance in the city, combining the social activities, the economical benefits besides the cultural value and the symbolic meaning.

Public spaces are even more important in the developing countries, especially when it comes to densely populated cities where these spaces are limited, as in many cities, low-income communities often have relatively poor access to safe and well-maintained parks and other types of open space.[2] Simultaneously, the steadily growing traffic and urban heat is not only damaging the environment, but also incur some social and economic costs.[3] This nearly applies to all Palestinian cities, including the city of Nablus. Nablus governorate with a population of 389,328 and 214,903 of them living in the city[4] is considered the center of the northern part of the West Bank. Accordingly, the city streets are witnessing considerable traffic, which contributes to the problem of air pollution, besides the increasing industrial activities. Nablus as many other Palestinian cities, with the high population and the heavy traffic is also suffering from air pollution[5], unaccepted noise levels[6], in addition to the random distribution and lack of public services including public parks and green areas.[7] [8] These reasons and many others make the city of Nablus

[1] (Francesco Asdrubali, Francesco D'Alessandro, Giorgio Baldinelli, Brigitte Schulte-Fortkamp, 2014)
[2] (Jennifer R. Wolch, Jason Byrne, Joshua P. Newell, 2014)
[3] (Haq, 2011)
[4] (Palestinian Central Bureau of Statistics, 2016)
[5] (Abdelhaleem Khader, A Rasem Hasan, 2015)
[6] (Abdel-Raziq, 2000)
[7] (Awadeh, 2007)
[8] (Qadoumi, 2001)

an example of the Palestinian cities that deserve attention and need severe development and modification plans. One opportunity to improve the community's sustainability is through its open spaces system.[1] [2]

The important role of public spaces in the city life owing to the environmental and socio-economic benefits they serve in addition to the symbolic value for the community makes them significant contributors to urban sustainability and key component in the process of city nourishment. Therefore, it is suggested that more parameters regarding public spaces should be included in any sustainable indicators of urban development[3]. Accordingly, studying and investigating the public spaces in the Palestinian cities are highly significant steps towards improving our cities and responding to citizens' needs in accordance with the increasing calls of sustainability at all levels, not to mention, that the notion of sustainability in Palestine is still in its initial phases.

2.3. Public space roles in urban sustainability

Public spaces fulfill many functions in the urban context that serve people and improve their quality of life. According to Cowley, the claim that public open spaces lies at the normative heart of urban sustainability is rather an exaggeration. However, he admits that the collective open spaces are regularly seen as having multiple benefits for sustainability.[4] These versatile benefits make public spaces

[1] (David Barth, Margaret Carr, 2014)
[2] (CLES Bulletin No. 23, June 2004)
[3] (Chiesura, 2004)
[4] (Cowley, 2015)

significant contributors to urban sustainability; as they relate variously to the environmental, social, and economic goals of sustainability in general[1] [2].

Environmentally, parks and green public spaces have been credited for providing many notable benefits; such as purifying the air and improving its quality by reduction of pollutant gases[3], managing storm water, preserving the natural scenery and supporting biodiversity[4] with providing a wild life habitat and supporting a range of species; with reason that urban habitat quality and quantity are defined in terms of vegetation.[5] Green public spaces also help in reduction of the energy of cooling buildings[6], and due to the effects of the mass green, they largely improve the thermal radiation environment of the space;[7] by transpiring water and by blocking solar radiation via tree shade.[8] Vegetation in public spaces has some considerable prominence for the numerous benefits it offers; not only has an impact on the thermal environment, but also helps in reducing the noise and enhancing the soundscape where more natural sounds can be heard.[9] [10] This greenery was also found to affect the frequency with which people use the space, as it was more positively perceived by them.[11]

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[1] (Ibes, 2014)
[2] (Achmad Delianur Nasution, Abdul Ghani Shalleh, Julaihi Wahid , 2014)
[3] (David J. Nowak, Daniel E. Crane, Jack C. Stevens, 2006)
[4] (Cowley, 2015)
[5] (Stanley H. Faeth, Christofer Bang, Susanna Saari, 2011)
[6] (Haq, 2011)
[7] (Maiko Ishikawa, Akira Hoyano, Kazuaki Nakaohkubo, Eiko Kumakura, 2009)
[8] (David J. Nowak , Patrick J. McHale, Myriam Ibarra, Daniel Crane, Jack C.Stevens, Chris J.Luley, 1998)
[9] (Francesco Asdrubali, Francesco D'Alessandro, Giorgio Baldinelli, Brigitte Schulte-Fortkamp, 2014)
[10] (Katherine N. Irvine, Patrick Devine-Wright, Sarah R. Payne, Richard A. Fuller, Birgit Painter, Kevin J. Gaston, 2009)
[11] (Katherine N. Irvine, Patrick Devine-Wright, Sarah R. Payne, Richard A. Fuller, Birgit Painter, Kevin J. Gaston, 2009)

Economy wise, public spaces help in creating order and controlling land use[1], as well as creating attractive environments for potential residents or investors[2] which may increase property value[3] and accordingly, nourish the economic situation in the city.

Besides the environmental and economical services, public spaces provide important social and psychological benefits that improve the quality of users' lives, and maybe these are the most sought and tangible of public spaces' as they enrich human lives with meaning and emotion. According to Chiesura it was found that experiencing nature in the urban spaces was a source of positive feelings which fulfill important immaterial human needs;[4] such as stress reduction, reducing mental fatigue and improving mood.[5] Urban green spaces especially public parks and gardens, as being sources for relaxation and recreation, are even beneficial in therapeutic emotional healing. [6] [7] Moreover, it was suggested that people place value on the existence of parks even when they do not use them.[8]

Not to mention, public spaces provide places for people to meet, exchange information and attend events.[9] Studies in poor urban areas suggest that park-like natural elements increased opportunities for social interactions [10] promoting

[1] (David Barth, Margaret Carr, 2014)
[2] (Cowley, 2015)
[3] (Haq, 2011)
[4] (Chiesura, 2004)
[5] (Katherine N. Irvine, Patrick Devine-Wright, Sarah R. Payne, Richard A. Fuller, Birgit Painter, Kevin J. Gaston, 2009)
[6] (CLES Bulletin No. 23, June 2004)
[7] (Haq, 2011)
[8] (Ariane L. Bedimo-Rung, Andrew J. Mowen, Deborah A. Cohen, 2005)
[9] (Francesco Asdrubali, Francesco D'Alessandro, Giorgio Baldinelli, Brigitte Schulte-Fortkamp, 2014)
[10] (Ariane L. Bedimo-Rung, Andrew J. Mowen, Deborah A. Cohen, 2005)

inclusivity as well as building social capital[1] [2] besides more convivial forms of citizenship to develop.[3] Having access to public spaces is not only considered as a first step towards civic empowerment, but also a greater access to institutional and political spaces.[4] This indicates the democratizing function served by public spaces[5] [6]; since being in public provides opportunities for all to be seen by others, and display their culture and identities.[7] However, research showed that just because different social groups co-exist in the same space does not necessarily mean that social cohesion has been achieved, but at least, being able to see and to be seen in public may go some way to enabling everyone to observe differences, and promote tolerance for social diversity.[8]

Add to the above, public spaces help in promoting walkability, public safety[9] [10] and reducing crime[11] [12] [13], in addition to their significant role of improving health and promoting physical activity[14]; as research showed that both parks and recreational programs were important to reducing obesity.[15] On the other hand, while green spaces produce environmentally better air quality, they uptake of

[1] (Cowley, 2015)
[2] (Nicholas Dines, Vicky Cattell, Wil Gesler, Sarah Curtis, 2006)
[3] (Ken Worpole, Liz Greenhalgh, 1996)
[4] (UN - HABITAT, 2015)
[5] (CLES Bulletin No. 23, June 2004)
[6] (Setha M. Low, Dana Taplin, Suzanne Scheld, 2005)
[7] (Ken Worpole,Katharine Knox)
[8] (Caroline Holland, Andrew Clark, Jeanne Katz and Sheila Peace, 2007)
[9] (Cowley, 2015)
[10] (Cafuta, 2015)
[11] (David Barth, Margaret Carr, 2014)
[12] (CLES Bulletin No. 23, June 2004)
[13] (Katherine N. Irvine, Patrick Devine-Wright, Sarah R. Payne, Richard A. Fuller, Birgit Painter, Kevin J. Gaston, 2009)
[14] (Ariane L. Bedimo-Rung, Andrew J. Mowen, Deborah A. Cohen, 2005)
[15] (Jennifer R. Wolch, Jason Byrne, Joshua P. Newell, 2014)

pollutant gases and particulates that cause respiratory infections,[1] cardiovascular, and cancer-related deaths, as well as pneumonia, lung function loss, hospital admissions, and asthma.[2]

John L. Crompton, a researcher in Texas A&M University, has summarized the potential economic, environmental and social benefits which a community could possibly gain from the public realm as listed below:[3]

"Economic Prosperity:

- Attracting tourists.
- Attracting businesses.
- Attracting retirees.
- Enhancing real estate values.
- Reducing taxes.
- Stimulation of equipment sales.

Environmental Sustainability:

- Protecting drinking water.
- Controlling flooding.
- Cleaning air.
- Reducing traffic congestion.
- Reducing energy costs.
- Preserving biological diversity.

Alleviating Social Problems:

- Reducing environmental stress.

[1] (Haq, 2011)
[2] (Abdelhaleem Khader, A Rasem Hasan, 2015)
[3] (Crompton, 2007)

- Community regeneration.
- Cultural and historic preservation.
- Facilitating healthy lifestyles.
- Alleviating deviant youth behavior.
- Raising levels of education attainment.
- Alleviating unemployment distress."

While reviewing the vast and versatile benefits and roles of public spaces, it stands clear that green public spaces have the larger share, especially for their environmental functions associated with greenery and water, however, research showed that hard spaces such as shopping streets, markets, street corners and forecourts were equally important in their social lives as local parks, if not more so, especially that streets make up about 80 per cent of urban public spaces and it's critical to be designed right.[1] For this reason Dines and Cattell stressed that the multiple uses and benefits of hard spaces such as streets or markets need to be more widely recognized and investigated.[2]

Nevertheless, it is important to address that degraded, inequitable, and undesirable urban parks can contradict sustainability efforts and can be places of fear and danger,[3] [4] [5] and this provides clear evidence at how vital and critical public spaces are in achieving successful sustainable cities[6] as their importance dovetails with the multiple and holistic goals of sustainability.[7] For this reason, there is a need for

[1] (Commission for Architecture and the Built Environment (CABE), 2011)
[2] (Nicholas Dines, Vicky Cattell, Wil Gesler, Sarah Curtis, 2006)
[3] (Ibes, 2014)
[4] (Christopher G. Boone, Geoffrey L. Buckley, J. Morgan Grove, Chona Sister, 2009)
[5] (Project for Public Spaces, 2012)
[6] (Ken Worpole,Katharine Knox)
[7] (Cowley, 2015)

a reliable system of assessing the city sustainability[1] and particularly its public spaces to provide relevant information that facilitate policy making in the context of the sustainable urban development.

2.4. Sustainable public spaces indicators

Despite the broad consensus about public space valuable role in 21st century[2] [3], this potential role in advancing urban sustainability goals is undermined due to the lack of multi-dimensional research of these spaces, whereas, a multi-disciplinary approach may help attain a balance between the multiple goals of sustainability[4] and a better understanding of the real needs of users which leads to better focused solutions and development decisions.

Several studies have been conducted on public spaces, adopting different approaches for the sake of making improvements in these spaces and in cities as a whole. However, in order to achieve the goals; one first needs to know the present situation and to identify the reality of the targeted public space to start from. To implement this objective, the quality of the public space needs to be determined. This process is proposed on the head of the policy tools which are adopted by the UN-HABITAT to help address the constraints and enable the achievement of more and better public spaces in an effective way.[5] "Measuring quality" was defined by the Commission for Architecture and the Built Environment (CABE) as involving a variety of interested people to define how well a space works. This process

[1] (Cafuta, 2015)
[2] (Haq, 2011)
[3] (Caroline Holland, Andrew Clark, Jeanne Katz and Sheila Peace, 2007)
[4] (Ibes, 2014)
[5] (UN - HABITAT, 2015)

benefits the public space development process in many aspects, such as; understanding the needs and requirements of different groups of people, identifying both good and bad characteristics and stimulating new solutions, developing good relations between the users and decision makers which will help prioritize improvement. Budget wise; it can provide evidence to demonstrate how any money spent on it would make a difference, tracking the changes before and after improvements becomes easier,[1] as well as identifying performance targets for the future.[2]

Because of the great importance and the multiple benefits of the "measuring quality" process, institutions and researchers have worked hard developing various criteria to be able to measure the quality of the targeted public spaces. The proposed criteria varied according to the different spaces types and characteristics as well as the desired objectives of each research; some researchers focused on specific aspects of the space rather than others, such as Syafriny and Sangkertadi who studied some public spaces in Manado focusing on three elements of space performance: technical, functional and behavioral aspects.[3] Another example is the Auckland council's study which followed criteria based on: spatial attributes, pedestrians' movement and access, climatic attributes, and activities.[4] Also for Natland who evaluated the public spaces in New Westminster with criteria grouped under seven broad principles of urban design: good form, legibility, vitality, meaning, comfort, accessibility and security.[5] Some others concentrated

[1] (CABE space, 2007)
[2] (UN - HABITAT, 2015)
[3] (Reny Syafriny, T. Sangkertadi, 2010)
[4] (Garth Falconer - Reset Urban Design, 2014)
[5] (Natland, 2007)

their assessment on only one issue regarding the space as the thermal quality[1] or even the soundscape.[2]

However, for the purpose of this research, we'll highlight the more multilateral criteria which chime with the basic goals of sustainability as well as the research objectives and combine the socio-economic with the environmental issues in different ways. The first example is the Project for Public Spaces (PPS), which is a nonprofit organization dedicated to creating and sustaining public spaces that build communities. In evaluating thousands of public spaces around the world, (PPS) found that the "successful" ones have four key qualities: "accessible", users are engaged in "activities", "comfortable" with a good image, and "sociable".[3] [4]

These four key qualities are checked by applying several more specific sub-points, for instance: under the "access" section these issues are questioned: if pedestrians can easily and safely walk through the space, if taking transit and bicycling are easy, if there is adequate maps and directional signage, and if automobiles don't detract from pedestrian experience and can use the space safely. For the "comfort" section; the road is checked if being attractive and fits the surroundings, if it feels safe and cared for, if amenities are operable and well located, and if the road respects important natural features and community feature such as historical places and skylines. Regarding the "activities" section; it is checked whether the place can be used for active recreational experiences, and if uses are visible and inviting for drivers and pedestrians, if the road enhances the local businesses and cultural

[1] (Maiko Ishikawa, Akira Hoyano, Kazuaki Nakaohkubo, Eiko Kumakura, 2009)
[2] (Katherine N. Irvine, Patrick Devine-Wright, Sarah R. Payne, Richard A. Fuller, Birgit Painter, Kevin J. Gaston, 2009)
[3] (Project for Public Spaces (PPS), 2006)
[4] (Project for Public Spaces, 2017)

institutions, and whether the continuity of uses makes for a pleasant walking experience. Last but not least, the "sociability" of the place is checked by examining if people use the space regularly by choice and if there are places for them to gather, if strangers make eye contact and there is a mix of ages, sexes and ethnic groups, and finally, if people bring their friends to see the place and chance encounters happen frequently. [1] [2]

The four criteria are shown in Figure 3: where the center circle on the diagram is a specific public place and the place evaluation according to four criteria in the red ring. In the ring outside are a number of qualitative aspects by which to judge a place; the next outer ring shows the quantitative aspects that can be measured by statistics or research. [3]

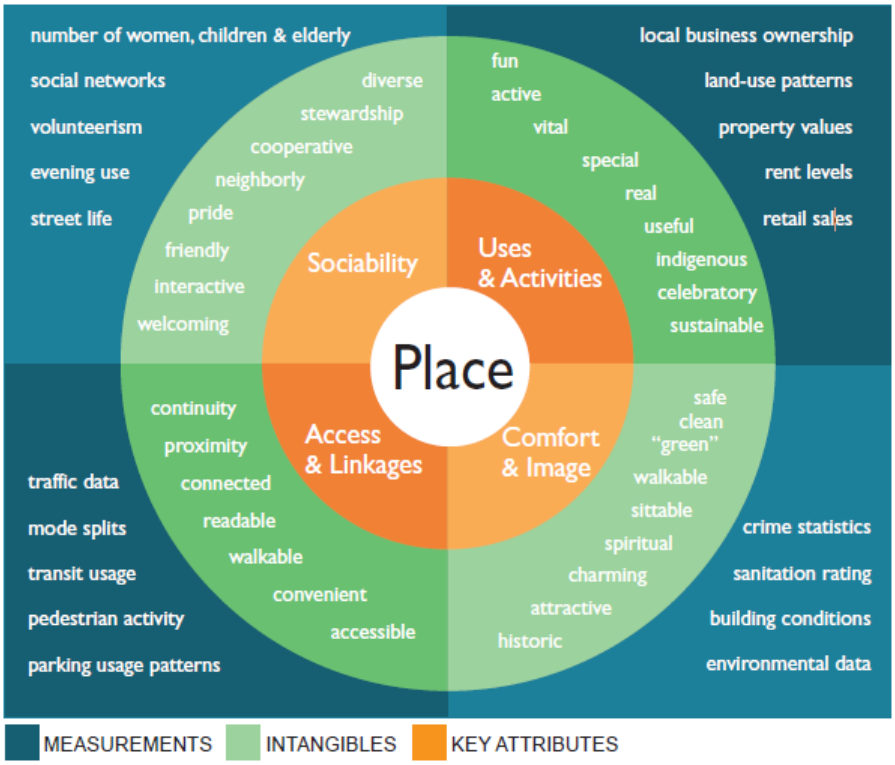

Figure 3: PPS key qualities of successful public space

[1] (Project for Public Spaces (PPS), 2006)
[2] (Project for Public Spaces, 2017)
[3] (Project for Public Spaces (PPS), 2006)

Source: (Project for Public Spaces (PPS), 2006)

Birgitte Svarre with Gehl Architects have also developed criteria for assessing public space qualities in cities by evaluating many public spaces over years. Their criteria of what makes a public space a pleasant place have been narrowed down to 12 item checklist grouped into three main categories: protection, possibilities, and design. Here are the main categories including detailed features and examples: [1] [2]

- Protection against traffic accidents; by protecting pedestrians and eliminating fear of traffic.
- Protection against crime and violence; by lively public realm, eyes on the street, overlapping functions day and night, and good lighting.
- Protection against unpleasant sense experiences; such as: wind, rain/snow, cold/heat, pollution, dust, noise and glare.
- Possibilities for walking; by having room for walking, interesting facades, no obstacles, good surfaces and accessibility for everyone.
- Possibilities for standing; for instance: edge effect/attractive zones for standing/staying, supports and facades with good details that invite staying.
- Possibilities for sitting; such as offering zones for sitting, utilizing advantages like: view, sun and people, in addition to having good places to set and benches for resting.
- Possibilities to see; by reasonable viewing distances, interesting and unhindered views as well as lighting when dark.

[1] (UN - HABITAT, 2015)
[2] (Svarre, 2015)

- Possibilities for hearing/talking; by maintaining low noise levels and including street furniture that provides “talkspaces”.
- Possibilities for playing/unwinding; such as physical activities, exercise, play and street entertainment day and night / summer and winter.
- Small-scale services; so that buildings and spaces are designed to human scale.
- Designing for enjoying positive climate elements; like: sun/shade, heat/coolness and shelter from wind/breeze.
- Designing for positive sense experiences; by good design and detailing, good materials, good views and including trees, plants and water.

Another quality measure for public spaces is proposed by the Commission for Architecture and the Built Environment (CABE) Space Shapers guide; with this measure both users and professionals are invited, and the public space is being rated against 41 characteristics, grouped into eight categories[1] [2]:

- Access: finding your way and getting about; for example: if user can get there easily and the space is easy to find and to get around, and if the space is always open.
- Use: what activities and opportunities the space has to offer; for example: if users can do what they like to do there and the space has all things they

[1] (CABE space, 2007)
[2] (Space Shaper, January 2009)

need, if users can enjoy nature and learn new things and if the space help its users to be healthy.

- Other people: how the space caters for different needs; that there are lots of activities in the space and the space is popular with different people with no conflict between the different users.
- Maintenance: how clean and cared for the space is and if people who look after this space are around.
- Environment: how safe and comfortable the space is; if there is shelter from weather, good lighting, clean air, acceptable noise level, and the space is the right size and worth visiting any time of the year.
- Design and appearance: what the space looks like and what it's made from; if the space is beautiful, inspiring, well made, improves the look of the local area and includes a mixture of plants and animals.
- Community: how important the space is to local people; for example: people mix well and feel welcome in the space, people feel proud of the space and are involved in running it, and also the space is in a good spot and improves local businesses.
- You: how the space makes you feel; that the space makes users feel good, relax and have fun, and users may visit the space to escape and do a lot of thinking.

By reviewing the aforementioned criteria, it's clear that these criteria are multilateral and indirectly chime with the basic goals of sustainability as well as the research objectives and combine the socio-economic with the environmental

issues in different ways. Despite the differences and variations between the mentioned three groups of criteria, they share some common features; for example: These criteria were not developed in the first place on the basis of sustainability, although one can read out the environmental, the economic and the social dimensions in them, these dimensions are nothing but a part of a whole that is based on the titles of pleasantness, high quality, and the successfulness of a public space. Not to mention, the lack of balance between these dimensions; since the focus is relatively directed towards the social issues and interactions compared to the economic and the environmental aspects.

Furthermore, in the case of Svarre with Gehl Architects criteria which can be applied as subjective/objective as they are associated with the public space and its urban design as well as its users' perception, Shahidipour related these criteria besides the (PPS)'s to the notion of "civic vitality" and referred to them as elements of vitality in urban environment; the notion that indicates "how much a place is busy at different locations and times". [1]

Similarly, the (PPS) and (CABE) criteria which are relatively targeting the users' perception of the public space and are practically applied by means of in-situ interviews and questionnaires - besides being related to civic vitality – they are even more related to the "liveability" concept; which is based on five primary dimensions: comfort, access, function, maintenance, and sociability. The notion of livability stands for the degree to which the provisions and requirements of a specific environment fit with the human needs and capacities, and refers to the

[1] (Shahidipour, 2015)

perception and evaluation of a daily living environment by its inhabitants. [1] According to Duijvestein's model (Figure 4) which differentiates between the longer-term and global perspective of sustainability and the more localized and immediate concerns of liveability, liveability is assumed to be a sub-set of sustainability and that no aspect of liveability is contrary to sustainability outcomes.[2]

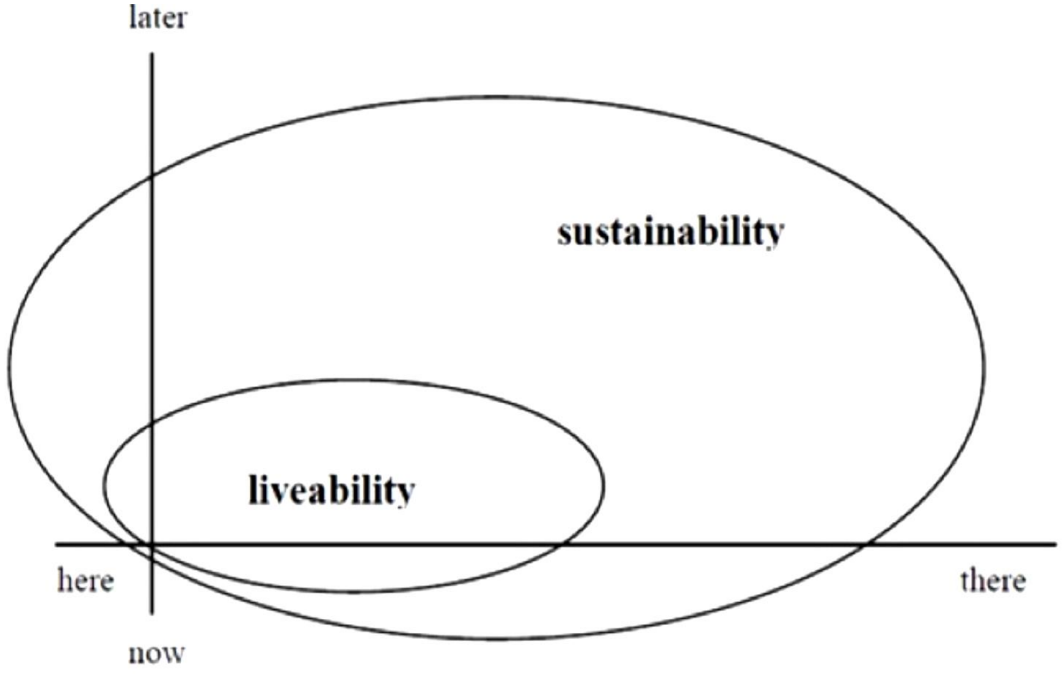

Figure 4: Liveability as a subset of sustainability

Source: (Melanie Lowe, Carolyn Whitzman, Hannah Badland, Melanie Davern, Dominique Hes, Lu Aye, Iain Butterworth, Billie Giles-Corti, 2013)

Getting closer to sustainability criteria in public spaces one may pass by the principles which guided the development of the "High Performance Landscape Guidelines of 21st Century Parks for NYC" manual; which is the first of its kind in

[1] (Paasch, 2015)

[2] (Melanie Lowe, Carolyn Whitzman, Hannah Badland, Melanie Davern, Dominique Hes, Lu Aye, Iain Butterworth, Billie Giles-Corti, 2013)

the United States. These principles are compatible with the "Sustainable Sites Initiative",[1] [2] [3] and correspond with the main aspects of sustainability from the design process to construction up to operation and maintenance as shown in the following four sections: design, ecology, economy and society:[4]

Design:

Engage all users

- Create delight, in any of its forms — seasonal beauty, discovery, aesthetic beauty, and even whimsy.
- Determine and address the cultural and age preferences of neighborhood users.
- Strive to integrate uses so that they benefit each other, rather than causing conflict.
- Pay particular attention to adjacent sources of users.
- Exceed requirements for accessibility to ensure delight in forms that can be perceived by people of differing abilities.

Engage nature

- Create parks that reveal a range of landscape types.
- Offer a diversity of ways to engage with natural environments, beyond strolling and viewing.
- Do not harm the ecology of the place.

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[1] **The Sustainable Sites Initiative:** "is an interdisciplinary partnership, led by the American Society of Landscape Architects, the Lady Bird Johnson Wildflower Center, and the United States Botanic Garden, working to foster a transformation in land development and management practices. Through the creation and implementation of clear and rigorous design, construction, operations, and maintenance criteria, the Initiative aims to supplement existing green building and landscape guidelines as well as to become a stand-alone tool for site sustainability."

[2] (The Sustainable Sites Initiative, 2017)

[3] (American Society of Landscape Architects, Lady Bird Johnson Wildflower Center, University of Texas at Austin, United States Botanic Garden, 2008)

[4] (Design Trust for Public Space, New York City Department of Parks & Recreation, 2010)

Respond to site context

- Understand the historic design intent of the site and respect it.
- Understand the natural and historic importance of the site and interpret it.
- Understand existing microclimates.
- Create new microclimates to accommodate site uses, extend their season, and mediate climate change.

Ecology:

Support ecological function

- Maximize the benefits of ecosystem services by preserving existing environmental features.
- Restore and regenerate lost or damaged ecosystem services. Increase Diversity and Interconnectivity
- Understand and preserve the complex relationships between soil, water, vegetation and fauna in each ecosystem.
- Strengthen the city's ecological functioning by increasing the diversity of park vegetation and habitat.
- Create linkages between individual parks and natural areas that enhance larger-scale ecological functioning.

Economy:

Resiliency

- Work to maximize the economic efficiency and productivity of all design, construction and maintenance.

- Include maintenance considerations in all designs to assure that projects will thrive without extensive repair and modifications.

Performance

- Consider the long-term impact of material selection, including source and production methods, whether a material is recycled or recyclable, how the material can be maintained, its carbon footprint and embedded energy, and how long it will last.
- Work with maintenance staff to learn from past problems and increase serviceability.

Society:

Collaboration and participation

- Encourage direct and open communication and collaboration throughout the Parks Department and with other City agencies.
- Engage the public in a consultative process so that their knowledge of the site and recreational preferences are incorporated into the design.
- Assist in the development of community stewardship. Public Health
- Design parks that encourage active recreation and improve the health and well-being of city residents.

Education

- Design to inform the public about the critical ecological benefits of parks.
- Teach future generations about the importance of parks for the city's well-being.
- Effect a transformation of social priorities about ecological and economic objectives.

Long-term thinking

- Provide future generations with a sustainable environment supported by regenerative systems.
- Avoid consumption of resources that contribute to habitat destruction and global warming.

Although they do chime with the main aspects of sustainability, these principles were formulated as guidelines for the public spaces which are yet to be established –in New York- so that they correspond to sustainability standards from the earliest stages onwards, rather than performing as assessment criteria for the existed public spaces. Still, these principles are beneficial and can be taken into consideration in developing and formulating assessment criteria for existing public spaces.

Seen from the above, various notions can be related to each other and may comprise several aspects in common, and that the dimensions of civic vitality, livability, and measuring quality indirectly/partially chime with the goals of sustainability, however, with regard to sustainability -as a basis of assessment- despite the numerous sources of sustainability indicators concerning the built environment, there are no nationally or internationally agreed-upon sustainable indicators to help measure and monitor sustainability, not to mention, in public spaces. That reason led David Barth to carry out a scientific research which included refining criteria for what he has termed as a high performance public space (HPPS) which refers to a publicly accessible space that generates economic, environmental, and social sustainability benefits for its local community. [1] [2]

[1] (David Barth, Margaret Carr, 2014)
[2] (Barth, 2015)

This process eventually led to a final list of 25 indicators grouped into the main criteria sections: economic, environmental and social as follows: [1] [2]

“Economic Criteria:

- The space creates and facilitates revenue - generating opportunities for the public/ private sectors.
- The space creates meaningful and desirable employment.
- The space indirectly creates or sustains good, living wage jobs.
- The space sustains or increases property values.
- The space catalyzes infill development and/or the re-use of obsolete or under-used buildings or spaces.
- The space attracts new residents.
- The space attracts new businesses.
- The space generates increased business and tax revenues.
- The space optimizes operations and maintenance costs (compared to other similar spaces).

Environmental Criteria:

- The space uses energy, water, and material resources efficiently.
- The space improves water quality of both surface and ground water.
- The space serves as a net carbon sink.

[1] (David Barth, Margaret Carr, 2014)
[2] (Barth, 2015)

- The space enhances, preserves, promotes, or contributes to biological diversity.
- Hardscape materials are selected based on longevity of service, social/ cultural/ historical sustainability, regional availability, low carbon footprint and/or other related criteria.
- The space provides opportunities to enhance environmental awareness and knowledge.
- The space serves as an interconnected node within larger scale ecological corridors and natural habitat.

Social Criteria:

- The space improves the neighborhood.
- The space improves social and physical mobility through multi-modal connectivity – auto, transit, bike, and pedestrian.
- The space encourages the health and fitness of residents and visitors.
- The space provides relief from urban congestion and stressors such as social confrontation, noise pollution, and air pollution.
- The space provides places for formal and informal social gathering, art, performances, and community or civic events.
- The space provides opportunities for individual, group, passive and active recreation.
- The space facilitates shared experiences among different groups of people.
- The space attracts diverse populations.
- The space promotes creative and constructive social interaction."

To conclude, this research is based on the concept of sustainability as the tool of assessment and investigation of the Palestinian public spaces, whose important sustainable role has been reviewed besides a few criteria which were found to be related to that concept, and since the indicators which were developed by David Barth were the only criteria that were mainly based on sustainability principles, they were adopted in this research and utilized to investigate sustainability in the Martyrs' Square in the city of Nablus as a case study. These indicators will be refined and customized to comply with the reality and specificity of the local public spaces, particularly, the "street type" ones in the subsequent chapters while indirectly benefiting from the other criteria indicators and principles as well.

Chapter Three

Nablus main public space: the Martyrs' Square

3.1. An overview of Nablus City

3.1.1. Location

The city of Nablus has an important geographical location, as it generally mediates the mountainous region in Palestine, and due to the main roads that pass through it, it's considered as a link connecting other cities.[1] [2] It is 69 km north of Jerusalem and 42 km from The Mediterranean Sea, bordering Jenin city to the north with Tulkarm and Qalqilya cities in the west[3]. See Figure 5.

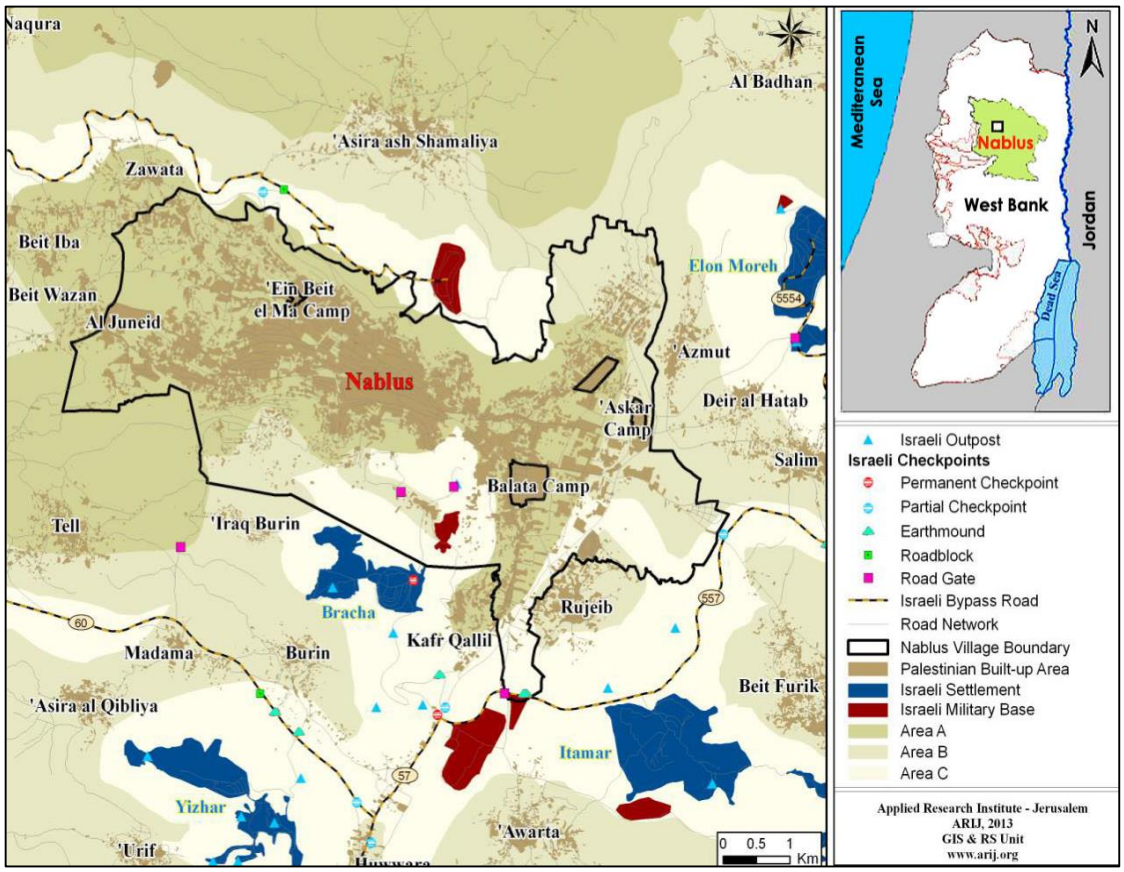

Figure 5: Nablus city location and borders

Source: after (The Applied Research Institute – Jerusalem (ARIJ), 2014)

[1] (الحلو, 2000)
[2] (الدباغ, 1988)
[3] (الحلو, 2000)

3.1.2. History and evolution

This deep-rooted city, named as “Shakim” (Figure 6), was founded by the Canaanites and successively settled and occupied by several folks and nations; including: Egyptian occupation, Samaritans, Romans, Islamic conquest, Crusaders 1100 AD, Ottomans 1517 AD, British Mandate 1918 AD, and the Israeli occupation 1948 AD, all the way to the present time where it is run – as the other Palestinian cities in the West Bank – by the Palestinian National Authority since 1994.[1] [2] [3]

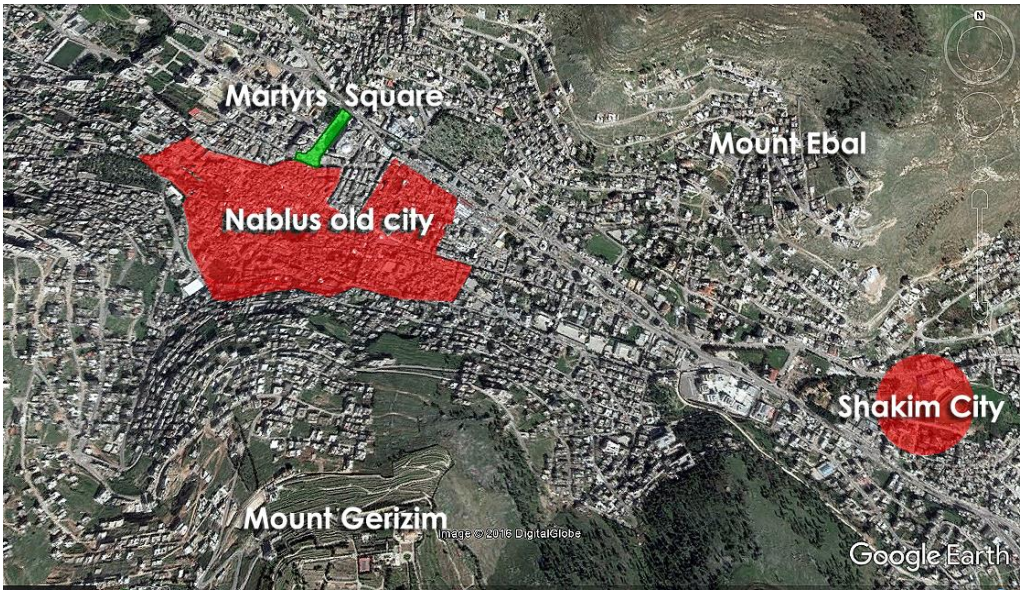

Figure 6: Aerial view of Nablus

Source: after (Google Earth, 2016)

The old historical city of Nablus was established between Mount Ebal and Mount Gerizim (Figure 6), making it a passage for migrations, trade caravans and military invasions over centuries,[4] nevertheless, it should be noted that until 1918 the

[1] (هيئة الموسوعة الفلسطينية, 1984)
[2] (النمر, 1938)
[3] (الحلو, 2000)
[4] (هيئة الموسوعة الفلسطينية, 1984)

building development of the city of Nablus was rather limited; since the old historical part was the main structure of the city (Figure 7); styled with clustered courtyard buildings permeated by alleys. However, few changes had taken place due to major events occurred at that period: the British Mandate 1918 which led to different building pattern, and the 1927 earthquake which demolished some parts of the old city and consequently drove residents out of its' borders and led to noticeable growth of the building construction both in the old city and outside along the east-west and north-south axes.[1] [2] [3]

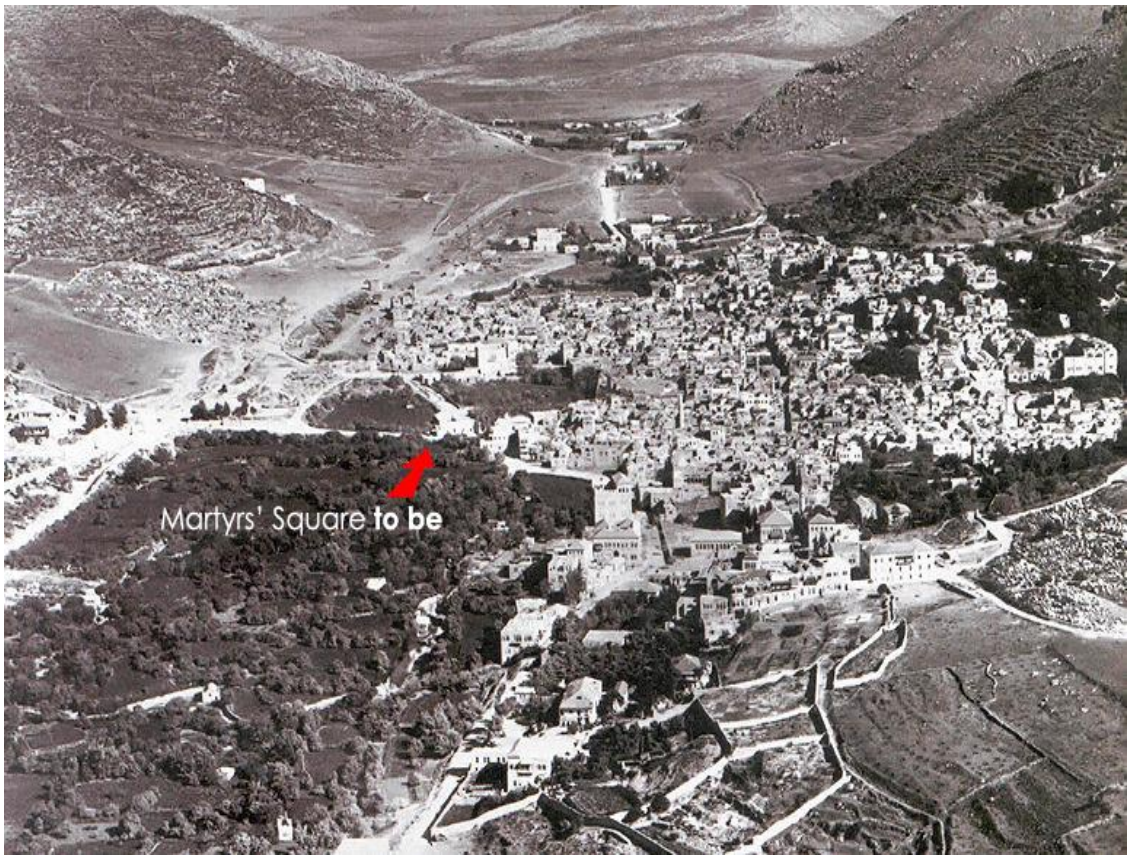

Figure 7: Nablus City 1918 (old city)

Source: after (Wikipedia, 2016)

[1] (Idreikh, 2005)
[2] (Mustafa O. A.-A., 2010)
[3] (Qadoumi, 2001)

The period of the Israeli occupation in 1948 comprised establishing a new commercial center and building expansion along Qalqilya and Jerusalem axes, in addition to the emerged refugee camps.[1] [2] The growth of Nablus city continued during successive periods of time (Figure 9) right up to the present Nablus, with an approximated area of 29 km² for the city and 605 km² for the governorate.[3]

3.1.3. Challenges

Since 1869 Nablus City has been governed by a Municipal Council which is responsible for providing a number of services to the residents of Nablus City; including waste collection, street cleaning and public services in addition to road rehabilitation and construction, protection of historical sites, as well as the provision of public market, transportation and the management of public parks, etc. [4] However, Nablus governorate with a population of 389,328 and 214,903 of them living in the city[5] is considered the center of the northern part of the West Bank. Accordingly, besides the fact that Nablus city is linear and confined between two mountains, the city streets are witnessing considerable traffic, which contributes to the problem of air pollution, besides the increasing industrial activities. Nablus as many other Palestinian cities, with the high population and the heavy traffic is also suffering from air pollution[6], unaccepted noise levels[7],

[1] (Idreikh, 2005)
[2] (Qadoumi, 2001)
[3] (Nablus Municipality, 2016)
[4] (The Applied Research Institute – Jerusalem (ARIJ), 2014)
[5] (Palestinian Central Bureau of Statistics, 2016)
[6] (Abdelhaleem Khader, A Rasem Hasan, 2015)
[7] (Abdel-Raziq, 2000)

water shortage and loss[1] in addition to the random distribution and lack of public services including public parks and green areas. See (Figure 8).[2 3 4 5]

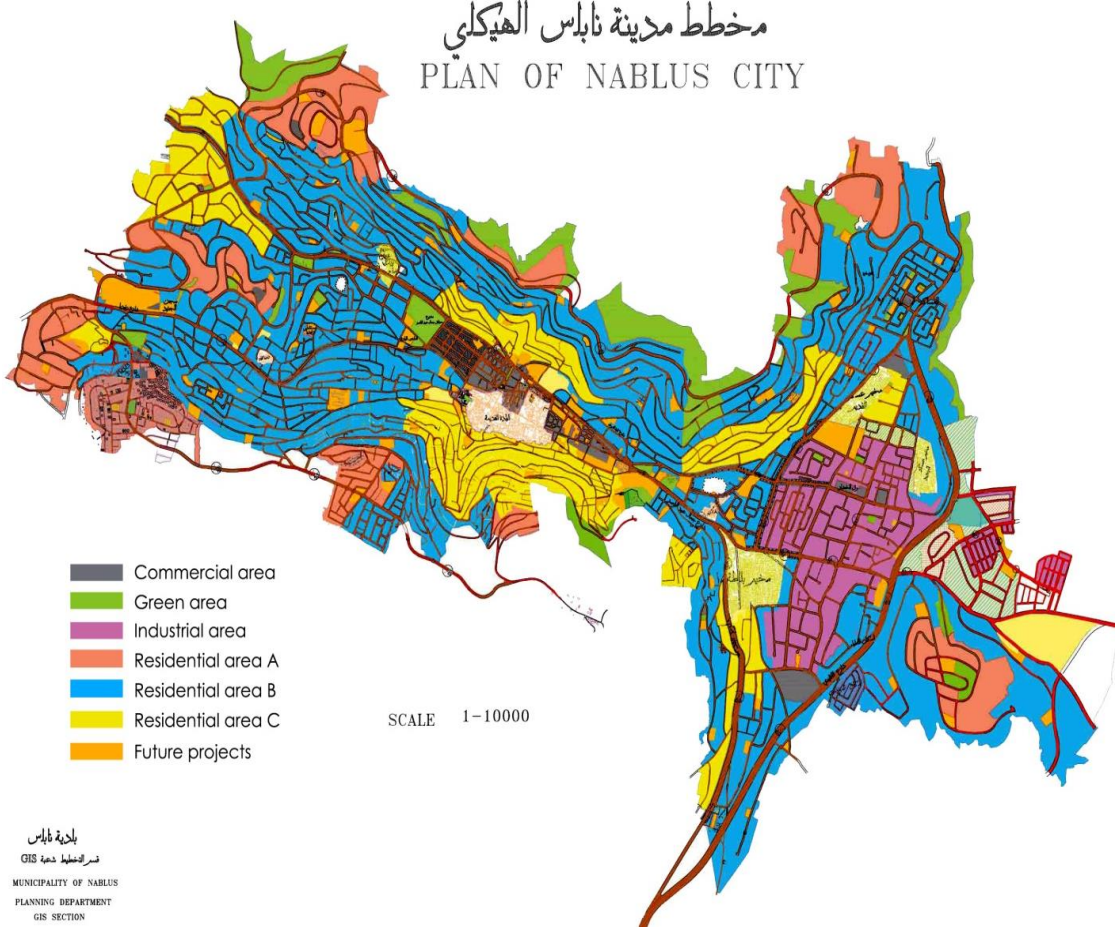

Figure 8: Master plan of Nablus 2008

Source: after (Planning department - Nablus Municipality, 2016)

In 2009, a research was carried out to study the urban public spaces in Nablus city; the study roughly covered five public spaces including the Martyrs' Square, and revealed that the urban public spaces are randomly distributed in the city in different shapes and sizes depending on their location. Some of the results showed that 50% of respondents spent their free time during the day in public spaces while

[1] (The Applied Research Institute – Jerusalem (ARIJ), 2014)
[2] (Awadeh, 2007)
[3] (Qadoumi, 2001)
[4] (Dweikat, 2009)
[5] (Idreikh, 2005)

this percentage drops during the night time due to the lack of public spaces and neglecting the available ones. Moreover, 75% of respondents believed that living in Nablus city is boring as the city has turned out into compact residential buildings with noisy and congested streets. Whereas 63% thought that public spaces can help in increasing the social network and reducing the feeling of boredom and isolation.[1]

For these reasons which make Nablus as an example of the Palestinian cities that deserve attention and need severe development and modification plans, and since one opportunity to improve the community's sustainability is through its open spaces system,[2] this research will focus on the Martyrs' Square as being the main public space in Nablus city, for the sake of promoting its' sustainability and thus, improving users' experience.

3.2. The Martyrs' Square overview

The Martyrs' Square is the main and central public space in Nablus city, it was formerly called as Al-Hussein Square after the name of Jordanian king Hussein when the West Bank underwent the rule of Jordan, and was later renamed after the martyrs who were killed in the second uprising (al-Aqsa intifada) since all their funeral ceremonies and the protests' demonstrations were held in this square.[3]

[1] (Dweikat, 2009)
[2] (David Barth, Margaret Carr, 2014)
[3] (Public Relations Department - Nablus municipality, 2014)

3.1.4. Evolution

The Martyrs' Square area was created as a new commercial center to the north of the old one in the historical city of Nablus (Figure 7 and Figure 10) in the early fifties of the last century (Figure 9) due to the Israeli occupation 1948; as Nablus city was disconnected from the sea coast and started to sprawl towards the east becoming more related to Amman as a new ruling center. This new commercial center continued to expand according to the topography of the valley; which is characterized with a convenient slope of 10% maximum in the east and 20% towards the west compared to the steep slope that exceeds 40% at some areas of the feet of Ebal and Gerizim Mounts. [1] [2] See Figure 11.

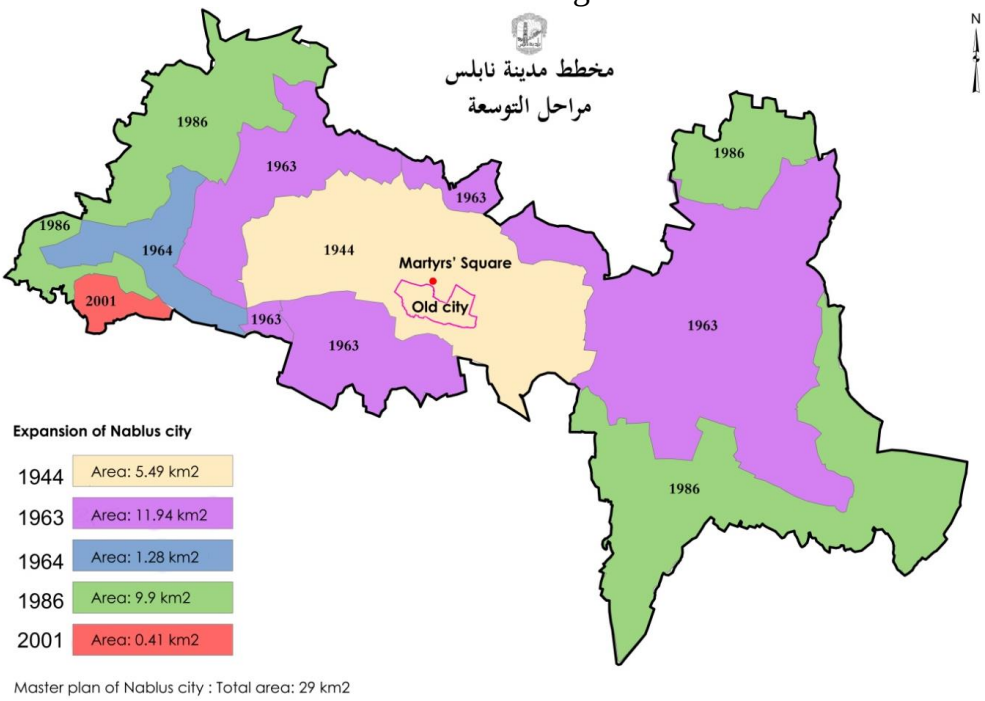

Figure 9: Phases of Nablus city expansion

Source: after (Planning Department - Nablus municipality, 2016)

[1] (Idreikh, 2005)
[2] (Qadoumi, 2001)

Figure 10: The Martyrs' Square – aerial view

Source: after (Google Earth, 2016)

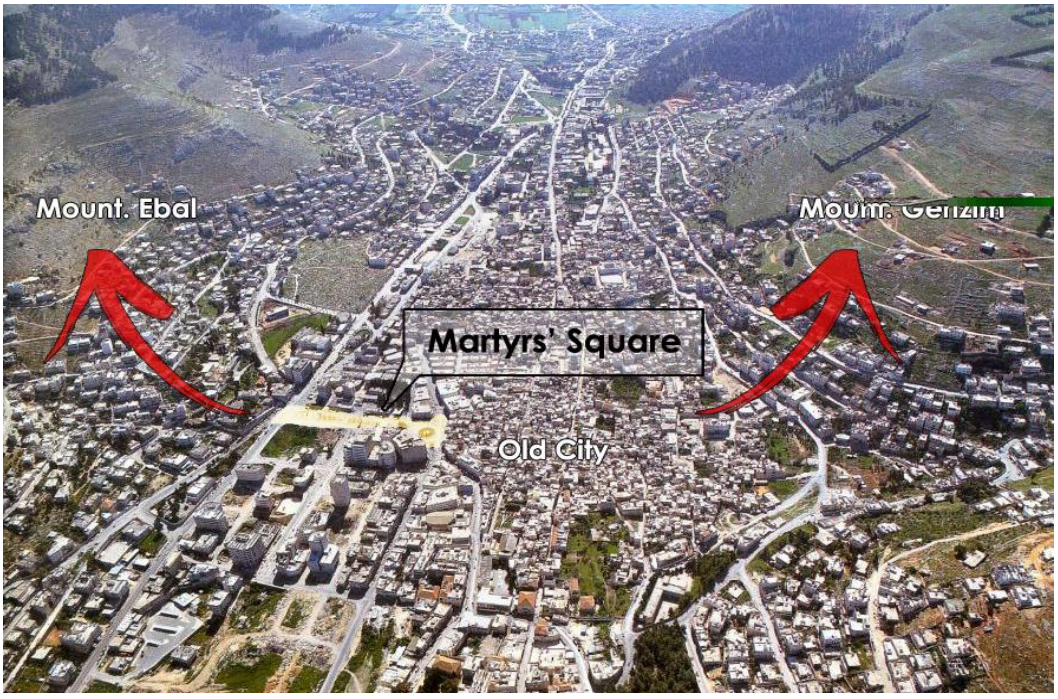

Figure 11: Nablus city 1994 - the Martyrs' Square area with reference to the city and to Ebal and Gerizim Mounts.

Source: after (Wikipedia, 2016)

3.1.5. Climate

Located at the confluence of latitude 32.13 north and longitude 35.16 east with an average height of 550 meters above sea level[1] [2], the city of Nablus falls within the Mediterranean climatic region [3] and enjoys a moderate climate with average maximum temperature of 13.1 C° during the coldest month (January), and 6.2 C° minimum. For the month of August, the average maximum temperature reaches 29.4 C°, while the minimum drops to 19.5 C° (Figure 12). Regarding the prevailing wind, North West is the dominant wind direction with average speed of 10 km/hr, while humidity average reaches 61%.[4]

These climatic conditions affect the city of Nablus in general including the Martyrs' Square area. Figure 13 displays the solar path in the square area and shows that most of the square enjoys a good amount of winter sunlight from the south despite that the morning and the afternoon light is partially blocked by the high buildings in the east and the west sides of the square.

[1] (الحلو, 2000)
[2] (الدباغ, 1988)
[3] (الحلو, 2000)
[4] (Nablus Municipality, 2016)

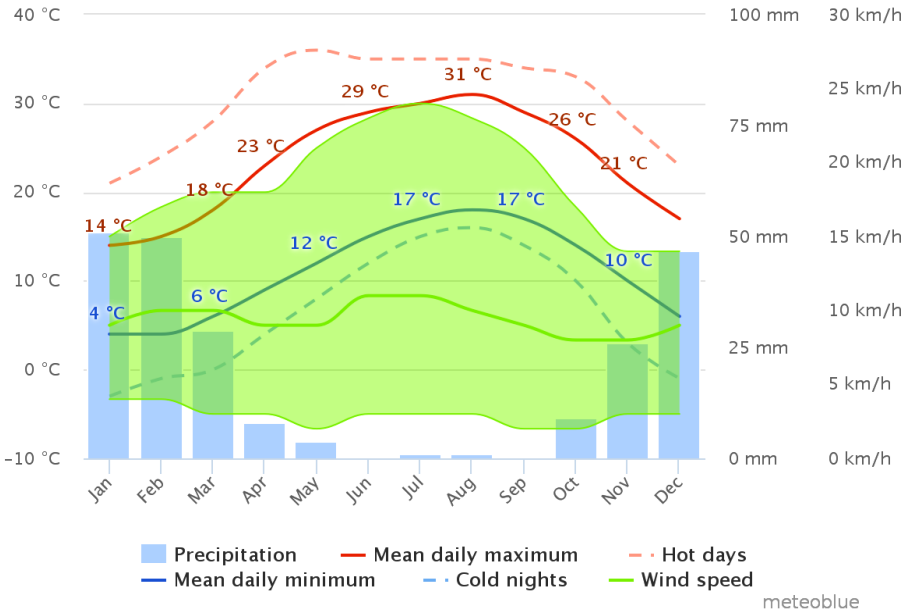

Figure 12: Nablus weather data

Source: (Meteoblue, 2016)

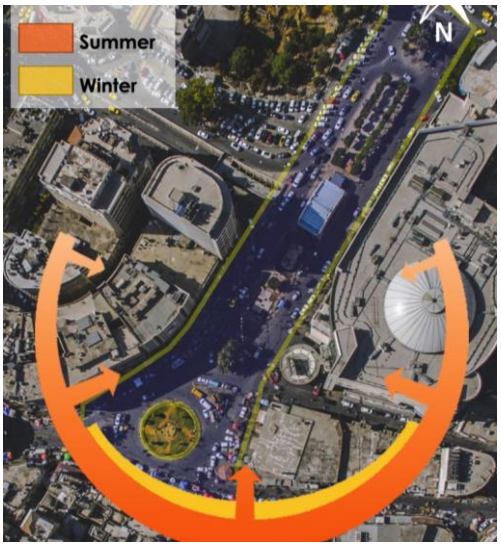

Figure 13: sun path in the Martyrs' Square area

Source: the researcher – original photo: by Omar Abdul-Hadi

3.1.6. Historical significance

It is also noteworthy to acknowledge the cultural and historical dimension of the Martyrs' Square due to its special location that is adjacent to some of the significant historical sites in Nablus: the old city in the south which dates back to the Roman era: 72 AD, with the remaining buildings that mostly belong to the early Islamic eras until the Ottoman period,[1] and the roman hippodrome[2] in the north west side by side with the circular amphitheater.[3] See Figure 14.

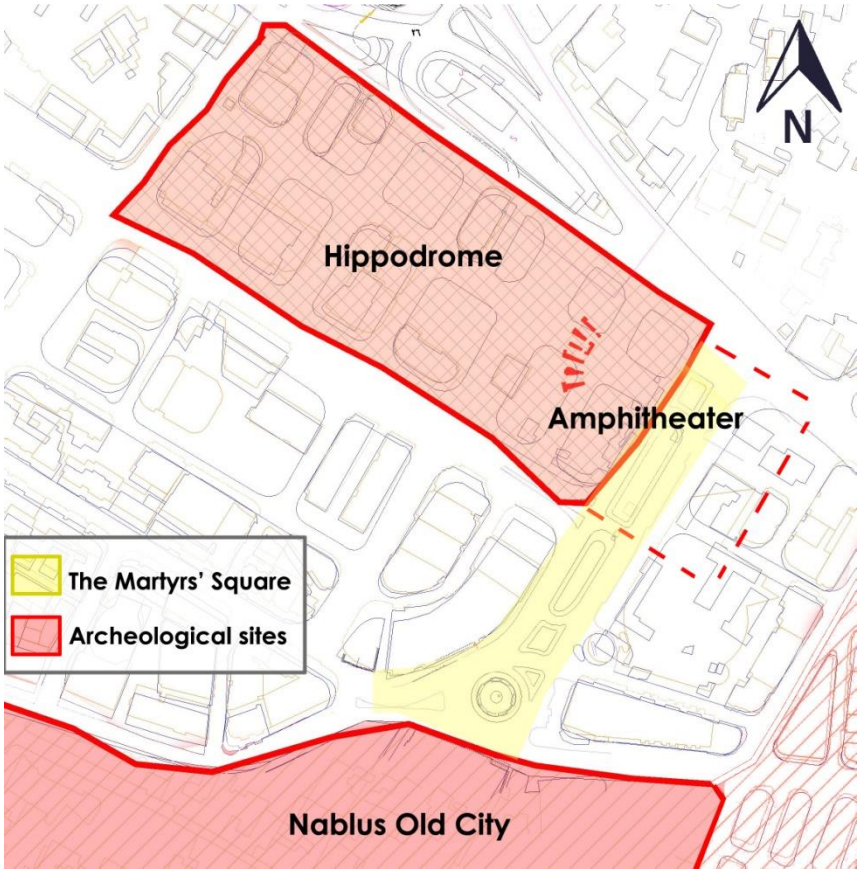

Figure 14: Archeological sites in the Martyrs' Square area

Source: after (Planning department - Nablus Municipality, 2016) (Mustafa O. A.-A., 2010)

[1] (Mustafa O. A.-A., 2010)
[2] (Nablus Municipality, 2016)
[3] (Mustafa O. A.-A., 2010)

3.1.7. Economic significance

Nablus city nowadays is considered as a Palestinian commercial and cultural center, it is famous for a number of industries due to the big number of crafts workshops; such as traditional soap, building stones, aluminum and furniture in addition to textile and food industries. A field survey conducted by the ARIJ team in 2013 for the distribution of labor by economic activity in Nablus city showed that the economy in Nablus is mainly dependent on the trade sector, which absorbs 41.6% of the city's workforce.[1] See Figure 15. Recently, a new sector emerged in Nablus pertained to services including hotels, restaurants, stock-exchange, and communications.[2] [3] Not to mention, enfolding An-Najah National University, the largest Palestinian institutions of higher education and the historic city of Nablus; also adds value and significance to the city's economic and cultural situations.

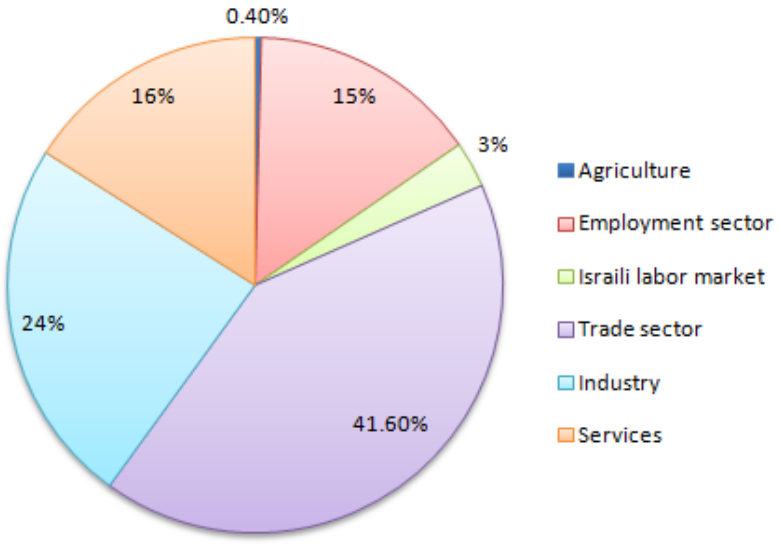

Figure 15: Distribution of labor force among main economic activities in Nablus

Source: after (The Applied Research Institute – Jerusalem (ARIJ), 2014)

[1] (The Applied Research Institute – Jerusalem (ARIJ), 2014)
[2] (Nablus Municipality, 2016)
[3] (هيئة الموسوعة الفلسطينية, 1984)

Being the main public space and the new commercial center in the city of Nablus, the Martyrs' Square gathers a variety of uses and functions. However, the commercial use is the most prevalent in the square area with the presence of some other services (Figure 16), not to mention, that the Martyrs' Square area as being a part of the city center is classified as a commercial zone according to the master plan of Nablus city (Figure 8).

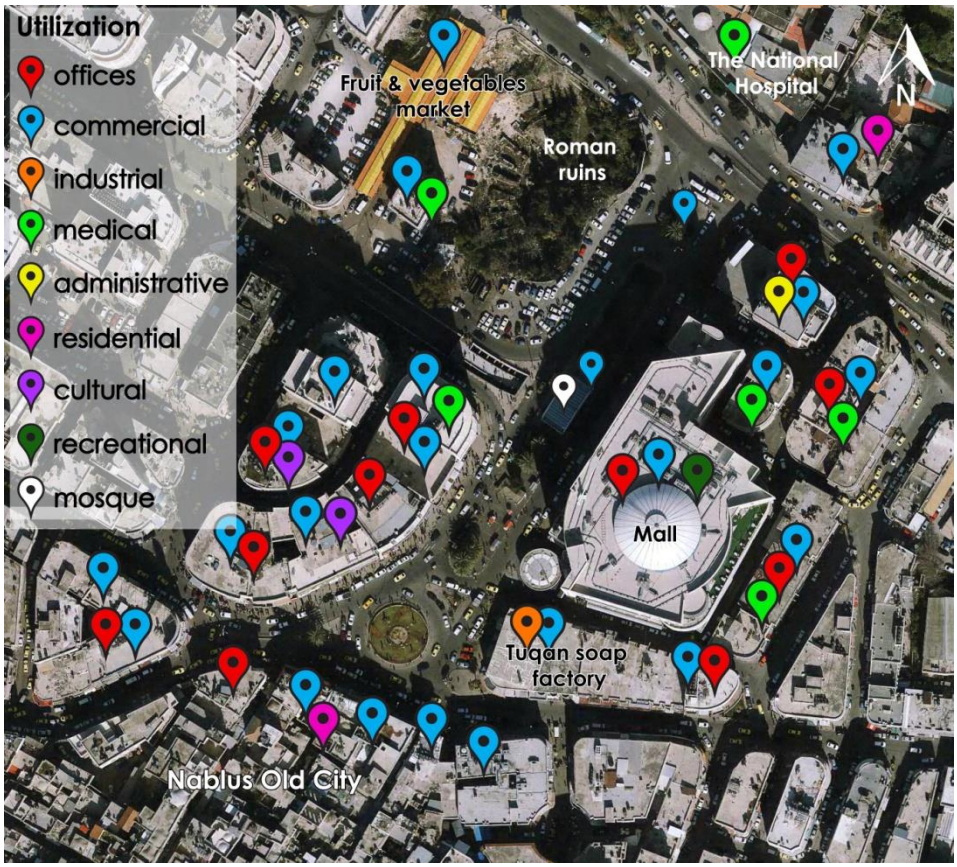

Figure 16: Main utilizations in the vicinity of the Martyrs' Square

Source: the researcher

3.1.8. Symbolic significance

In Nablus city, the Martyrs' Square is considered as a symbol of identity and power; it combined the community events, demonstrations and sit-ins as a center of expressing freedom and practicing democracy, it even played a prominent role in fighting against Israeli occupation as many confrontations took place in the vicinity of the square (Figure 17) whose even walls did witness the citizens' protests and screams. For this reason it also became a tool for the Israeli occupation military to oppress and control the Palestinian identity and power during periods of military invasion on Nablus.[1] Not to mention, this public space was named after the martyrs to commemorate and immortalize their heroism, and enfolds many posters and memorials glorifying their bravery. See Figure 18.

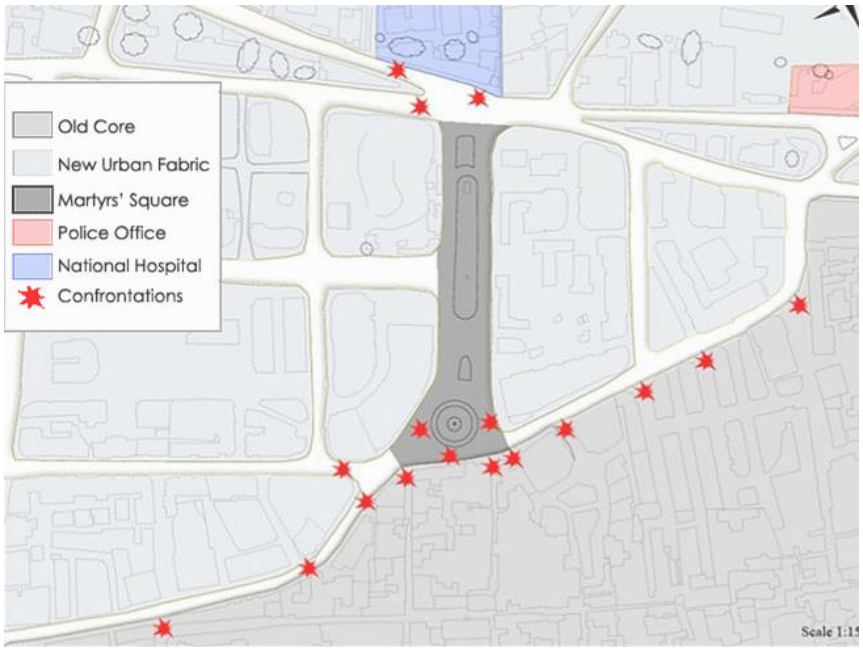

Figure 17: Confrontations in the Martyrs' Square

Source: after (Zahraa Zawawi, Eric Corijn, Bas Van Heur, 2012)

[1] (Zahraa Zawawi, Eric Corijn, Bas Van Heur, 2012)

Figure 18: stone memorials erected for Martyrs in the Martyrs' Square

Source: the researcher

3.1.9. Spatial attributes

The Martyrs' Square is considered as a street type public space; it is characterized with a longitudinal shape beginning in the south with a relatively wider part as a roundabout (Figure 20) -the reason why the square is popularly called as "Dawwar" - at the borders of the old city and extends linearly straight towards the Northeast with an approximate total length of 220 m. and an average width of 40 m. shared by two streets and a median island (Figure 19).

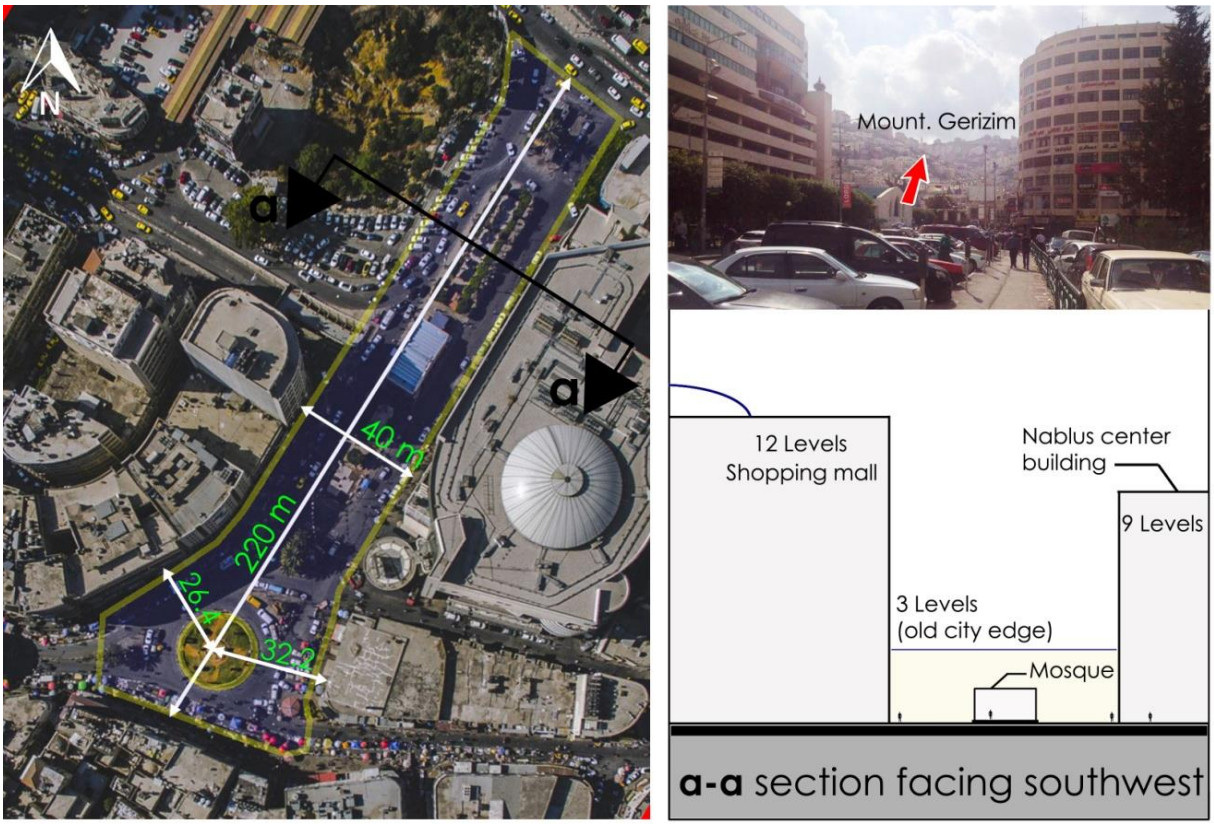

Figure 19: the Martyrs' Square shape and dimensions

Source: the researcher

Figure 20: the Martyrs' Square roundabout and surroundings

Source: (Batta, 2015)

Unlike the old city of Nablus with its' traditional clustered pattern, the Martyrs' Square area was based on a grid building system being influenced by the European styled pattern of architecture.[1] [2] Figure 21 shows the evolution of the square in the fifties and the sixties from the last century and reveals the vast spaces between the buildings and their modest heights which harmonized the space with the human scale. In recent decades, multi-storey buildings have arisen and increased in the Martyrs' Square area including huge constructions such as shopping malls and service centers (Figure 22) that gave the square a great value as a focal point gathering commercial activities and services. However, the existence of such large buildings in the vicinity of this narrow square somehow denies the human scale of the space users as well as being disproportionate with the building heights in the surrounding urban fabric, not to mention, the adjacent buildings of the old historical city. Figure 23 displays the heights of the buildings that surround the Martyrs' Square in a range between a two to twelve storeys for the shopping mall.

Figure 21: The Martyrs' Square evolution in 1: early fifties, 2&3: late fifties and 4: mid sixties

Source: after (Google, 2016)

[1] (Dweikat, 2009)
[2] (Idreikh, 2005)

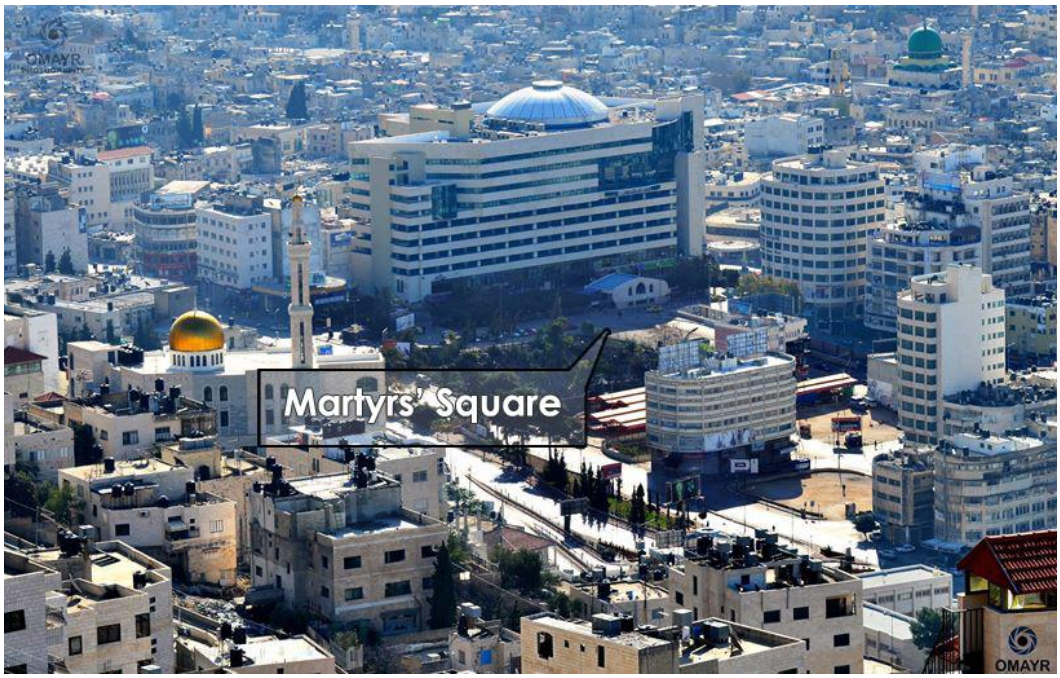

Figure 22: The Martyrs' Square 2015 and the surrounding multi-story buildings

Source: after (Google, 2016)

Figure 23: Heights of the buildings that surround the Martyrs' Square

Source: the researcher

3.1.10.Adjacent buildings

The Martyrs' Square is surrounded by a variety of buildings that were constructed in different periods of time, back from the beginning of the last century or even older right up to the present time (Figure 24). Being prominently following a modern architectural style, these multi-story buildings emphasize rectangular forms and horizontal and vertical lines besides a generous use of glass with minimal details, except for very few buildings that retain some traditional architectural features such as the small narrow arched openings and the use of the old stone as well as the modest rise that didn't exceed a three storey as in the National Hospital, the Tuqan soap factory and some of the old city buildings in the south edge of the Martyrs' Square.

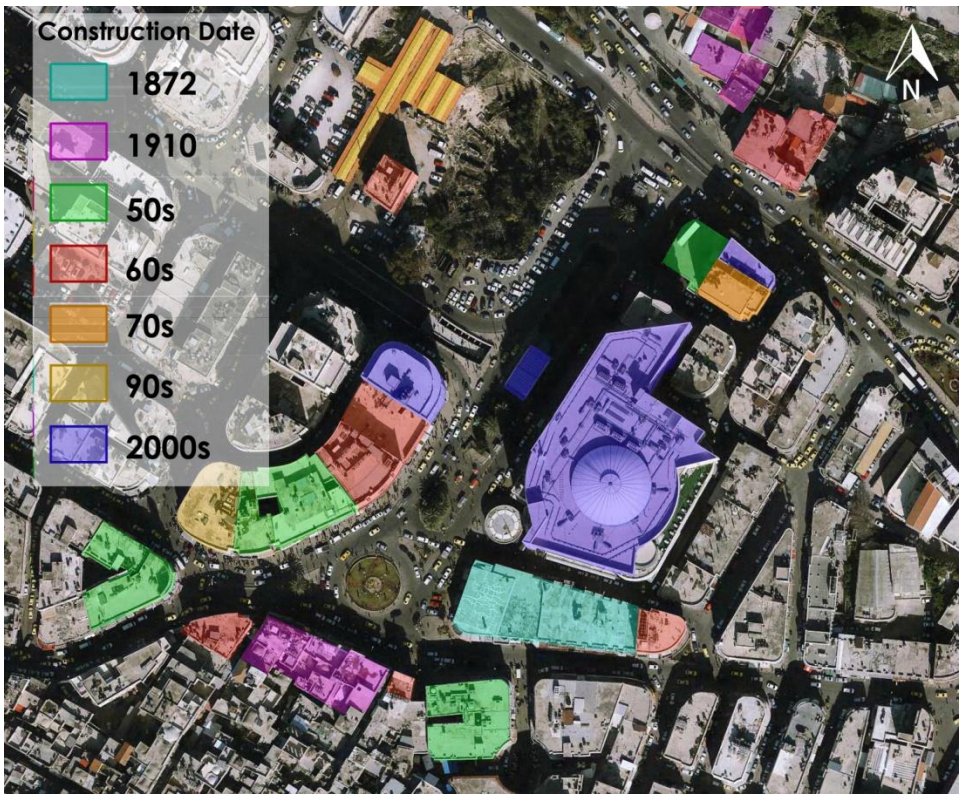

Figure 24: First construction dates of the buildings in the Martyrs' Square vicinity

Source: the researcher based on old photographs and interviews with owners/occupants

For used materials, the surrounding buildings in the great majority had been constructed using stone in the exterior elevations except for few where concrete was solely used, however, modern materials were used in external extensions in some of the old buildings facades; for example the use of composite panels and glass fronts in some shops and restaurants at the southern edge of the Martyrs' Square (Figure 25). Figure 26 displays some snapshots in the Martyrs' Square; through these photos one can notice some of the surrounding buildings such as: the massive Martyrs' Square shopping mall (photo no. 6), the mosque (photo no. 5), the general view from the Martyr's Square towards the south (photo no. 2), the historical Tuqan soap factory (photo no. 1), the Martyrs' Square roundabout and modern multi-story buildings (photo no. 4) and the old buildings at the historical city boarder side by side with the glass fronts and the composite panels exterior extensions (photo no. 3).

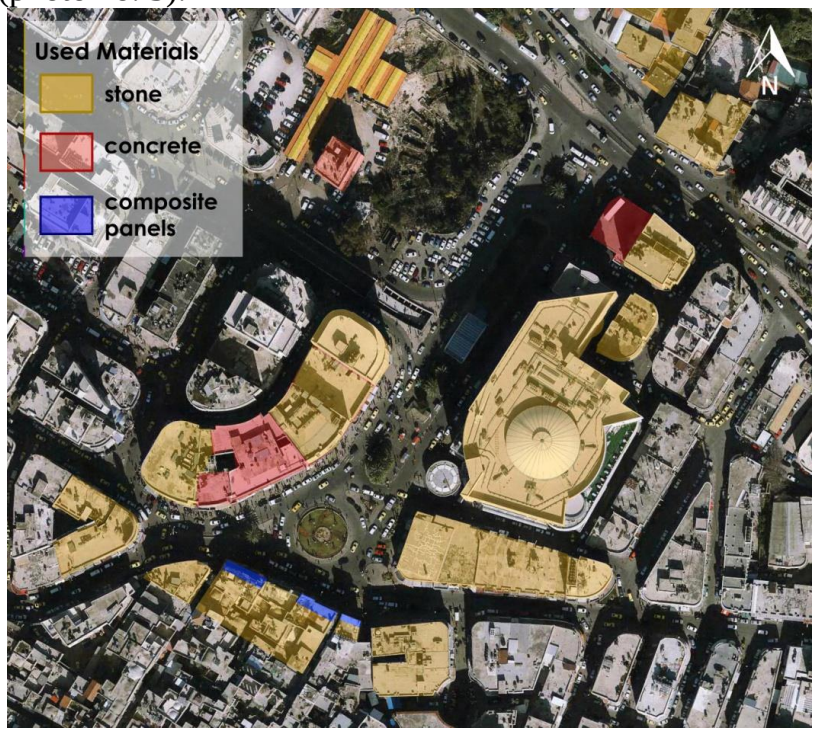

Figure 25: materials used in the facades surrounding the Martyrs' Square

Source: the researcher

Figure 26: multiple snapshots in the Martyrs' Square

Source: the researcher - 2016

3.1.11.Appliances and furniture

The Martyrs' Square as a street type of public space is furnished with the basic street appliances; such as the paved sidewalks against the boundaries of the space as well as the roundabout and the median island, the street lighting and the garbage bins which are distributed along the median island, the surrounding sidewalks and the roundabout. Moreover, the main median island is provided with some benches (Figure 29) along both sides leaning against the two mini gardens (Figure 28) which were accomplished by the parks and city beautification department crews in Nablus municipality in August 2016; for the sake of creating an aesthetic and green element in Nablus main public space.[1] Some booths are also located on the median island in the north section and besides the mosque in the middle selling snacks, soft drinks, perfumes, etc. See Figure 31. Regarding the greenery aspect, in addition to the two mini gardens in the main median island, some trees and palms are planted separately on the other sections of the median island and along the sidewalk against the shopping mall and the north gas station as well as the roundabout, whereas, regrettably, trees and weeds are randomly dispersed around the ruins of the roman amphitheater area. For the water element it is not present in the Martyrs' Square except for the tiny fountain which is located at the center of the roundabout (Figure 30). Figure 27 displays the distribution of the appliances and furniture in the Martyrs' Square including: sidewalks, parking, lights, garbage bins, benches, and green areas.

With the concentration and the overcrowding of shops and services in the Martyrs' Square area, parking lots is a necessity. In the Martyrs' Square parking lots are

[1] (Public Relations Department - Nablus municipality, 2016)

distributed along the sidewalks around the space as well as the paved area around the roman ruins which is also being used for parking. It's worth mentioning that the lower floors in the shopping mall enfold the public transportation complex, which makes the Martyrs' Square as the destination where the journey of the public transportation cars starts and ends back.

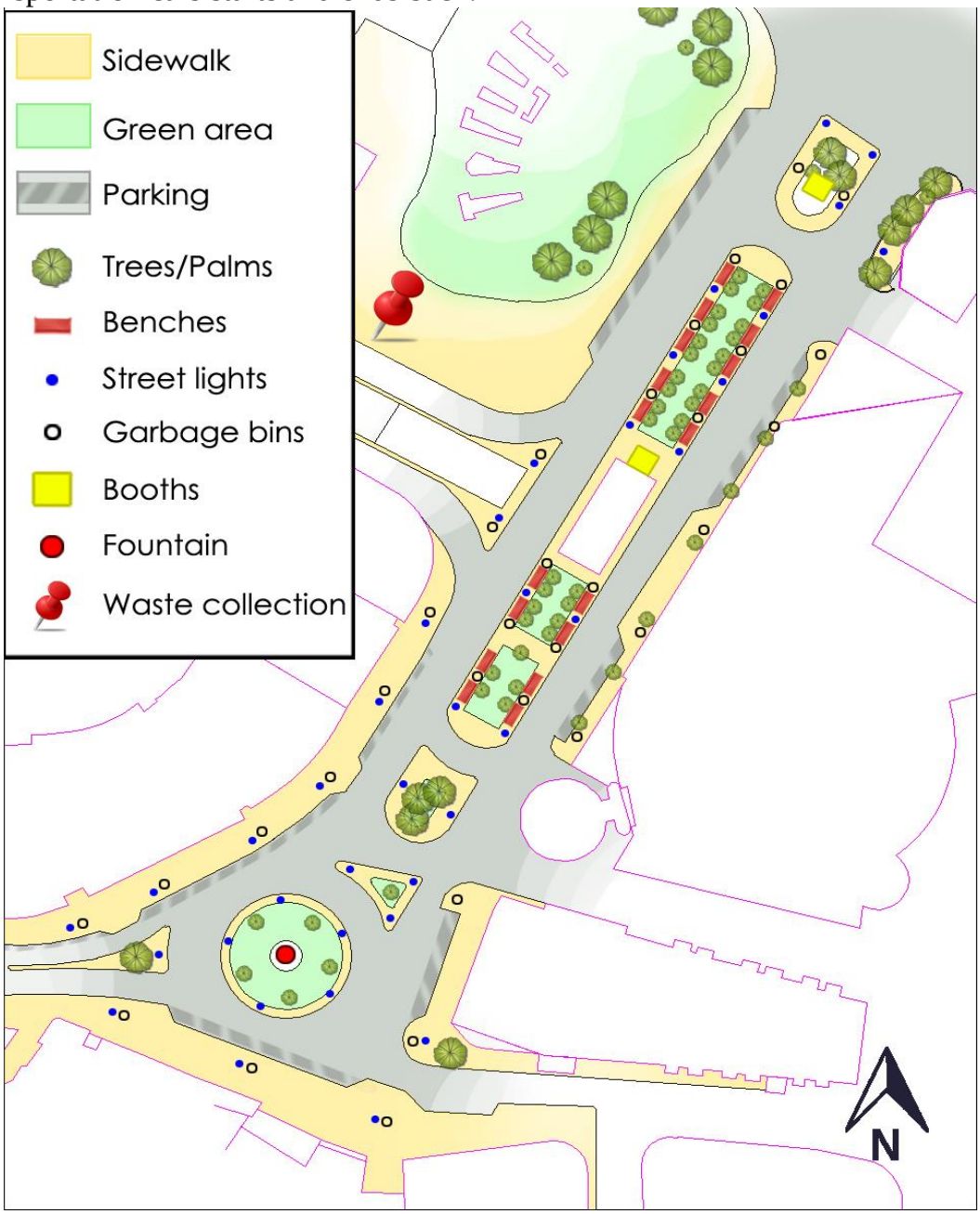

Figure 27: The Martyrs' Square existing appliances and furniture distribution map

Source: the researcher

Figure 28: the gardens at the median island in the Martyrs' Square

Source: the researcher

Figure 29: benches area in the Martyrs' Square

Source: the researcher

Figure 30: the fountain in the center of the roundabout in the Martyrs' Square

Source: the researcher

Figure 31: booths in the Martyrs' Square

Source: the researcher

To conclude, based on the foregoing, the Martyrs' Square luckily features several historical, economical, and cultural advantages which make it deservedly the commercial center and the main public space in the city of Nablus, and give it the potential to develop and play a great role in enhancing the city while trending towards sustainability. However, the drawbacks of the square may challenge the process and require an appropriate intervention to reduce the aggravation and find the right solutions. In the next chapter the Martyrs' Square will be thoroughly investigated and evaluated as a case study by implementing the adapted criteria – after being refined - to assess the square in terms of sustainability and to identify the square's strengths that need to be maintained and enhanced, and the weaknesses that require upgrading and treatment.

Chapter Four

Methodology, analysis and assessment of the current situation of the Martyrs' Square

4.1. Assessment indicators

The adopted criteria for the assessment process of the Martyrs' Square are the indicators developed by David Barth of what he termed as a high performance public space (HPPS) which refers to a publicly accessible space that generates economic, environmental, and social sustainability benefits for their local community. [1] [2]

These indicators were devised by refining an initial list of 41 potential HPPS criteria which Barth developed from the literature review of the sustainable development indicators and the characteristics of great public spaces. The refinement process was conducted through two rounds of the DELPHI method: round one comprised presenting the initial 41 criteria to 21 experts – including: academics, consultants, researchers, and public/non-profit staff – who were asked to delete any criterion they believed to be irrelevant in identifying a HPPS and to add any new criteria that is necessary to identify a HPPS. The result was an expanded list of 46 criteria. The second round went by presenting the 46 indicators to the same experts to select and highlight their top five criteria within each category: economical/social/environmental and to rank each criterion according to its relevance to a HPPS to prioritize and reduce the number of the final criteria. [3] [4]

This process eventually led to a final list of 25 indicators grouped into the main criteria sections: economic, environmental and social. Here are these indicators with a brief commentary:

Economic Criteria:

[1] (David Barth, Margaret Carr, 2014)
[2] (Barth, 2015)
[3] (David Barth, Margaret Carr, 2014)
[4] (Barth, 2015)

- The space creates and facilitates revenue - generating opportunities for the public/ private sectors; “opportunities within the public space to earn money for a public agency, not-for-profit agency, or private business through the sale of good or services.”[1]
- The space creates meaningful and desirable employment; “jobs that are perceived as fulfilling, valuable, and worth having.” [2]
- The space indirectly creates or sustains good, living wage jobs; “jobs that earn the income necessary for workers to meet their basic needs.”[3]
- The space sustains or increases property values; “the appraised value of privately-owned real estate.” [4]
- The space catalyzes infill development and/or the re-use of obsolete or under-used buildings or spaces; “the process of developing vacant or under-used parcels within existing urban areas that are already largely developed”.[5]
- The space attracts new residents.
- The space attracts new businesses.
- The space generates increased business and tax revenues; “income for businesses through the sale of goods or services; and income for public agencies through the taxation of sales and/or property”.[6]

[1] (Barth, 2015)
[2] (Barth, 2015)
[3] (Barth, 2015)
[4] (Barth, 2015)
[5] (MRSC Local Government Success, 2016)
[6] (Barth, 2015)

- The space optimizes operations and maintenance costs (compared to other similar spaces); "the costs of operating, managing, and/or maintaining public spaces".[1]

Environmental Criteria:

- The space uses energy, water, and material resources efficiently; which means "meeting energy, water and material needs with the least amount of waste".[2]
- The space improves water quality of both surface and ground water. (Water quality: "the physical, chemical, biological and organoleptic (taste-related) properties of water").[3]
- The space serves as a net carbon sink; "that absorbs more carbon than it releases as carbon dioxide"[4] or a "natural systems that suck up and store carbon dioxide from the atmosphere."[5]
- The space enhances, preserves, promotes, or contributes to biological diversity; which is defined as "the variety of life"[6] or "all living species on Earth and their relationships to each other"[7].
- Hardscape materials are selected based on longevity of service, social/ cultural/ historical sustainability, regional availability, low carbon footprint and/or other related criteria. (Carbon footprint: "the measure of the amount

[1] (Barth, 2015)
[2] (Barth, 2015)
[3] (Department for Economic and Social Information and Policy Analysis - Statistics Division, 1997)
[4] (Fern, 2017)
[5] (Andrea Thompson, 2012)
[6] (National Wildlife Federation, 2017)
[7] (biodivcanada.ca, 2017)

of greenhouse gases, measured in units of carbon dioxide, produced by human activities"). [1]

- The space provides opportunities to enhance environmental awareness and knowledge; as familiarity with the natural systems of the site and the surrounding areas.
- The space serves as an interconnected node within larger scale ecological corridors and natural habitat; that the site is "an integral part of a larger ecosystem". [2]

Social Criteria:

- The space improves the neighborhood.
- The space improves social and physical mobility through multi-modal connectivity – auto, transit, bike, and pedestrian:
  i) Social mobility: "the ability of individuals, families or groups to move up or down the social ladder in a society, such as moving from low-income to middle-class. Social mobility is often used to describe changes in wealth, but it can also be used to describe general social standing or education."[3]
  ii) Physical mobility: "the ability to move in one's environment with ease and without restriction".[4]
  iii) Multi-modal connectivity: "The degree of access to multiple modes of transportation including foot, bicycle, automobile, boat, and/or mass transit".[5]

[1] (Encyclopedia of Earth, 2017)
[2] (Barth, 2015)
[3] (Crossman, 2017)
[4] (The Free Dictionary , 2017)
[5] (Barth, 2015)

- The space encourages the health and fitness of residents and visitors.
- The space provides relief from urban congestion and stressors such as social confrontation, noise pollution, and air pollution.
- The space provides places for formal and informal social gathering, art, performances, and community or civic events.
- The space provides opportunities for individual, group, passive and active recreation:
    i) Passive recreation: "Resource-based leisure activities such as hiking or picnicking that do not rely on man-made facilities or development." [1]
    ii) Active recreation: "Facility-based leisure activities such as basketball or tennis that rely on man-made facilities or development."[2]
- The space facilitates shared experiences among different groups of people.
- The space attracts diverse populations.
- The space promotes creative and constructive social interaction.

4.1.1. Refining assessment indicators

As previously mentioned, the assessment indicators which are adopted for the purpose of this research are the "high performance public spaces" indicators which were developed by David Barth. However, based on the fact that this research focuses on the "existing" public spaces in the Palestinian cities and deals with the criteria as an assessment tool that evaluates the public spaces in order to develop and improve what is already there rather than a requirement check list for designing brand new public spaces, there is a need to refine the adopted indicators so that

[1] (Barth, 2015)
[2] (Barth, 2015)

they become more compatible with the nature and the specificity of the Palestinian cities and their public spaces that make them in the initial stages regarding the concept of sustainability.

The methodology that was implemented to refine the adopted criteria is the DELPHI method. Following the steps of Barth, a third round of the DELPHI method was conducted to the final list of indicators he had concluded. Barth's final 25 indicators were presented to 16 experts including academics and consultants in the disciplines of architecture, urban design, urban planning, environmental design, energy and transportation in An-Najah National University. Participant experts -who are also considered as users- were asked to rank each indicator according to how relevant they believe it is to the existing Palestinian public spaces; which means how necessary the expert finds the indicator to identify a sustainable Palestinian public space. Participants were also asked to add their notes, comments or suggestions if they had any.

By means of the Likert scale from one to five, each indicator was ranked by the 16 participants where number five referred to most related end and number one was the least related. Table 1, Table 2 and Table 3 show the total percentage of each rank for each indicator in the economical, the environmental, and the social sections respectively. According to the variety of points of view of the participated experts in the ranking process, results varied from one section to another as a whole and also from one indicator to another in the one section. However, for the purpose of refining and prioritizing the indicators before the actual implementation, the focus was drawn towards the rank of 4 and 5 percentages of each indicator as they

represent the tendency of the indicator to be in the related/ priority side regarding the reality of the Palestinian cities and their public spaces.

Therefore, the total summation of the ranks 4 and 5 percentages of each indicator was calculated so that the resulted percentages could be compared to each other as shown in Table 4, Table 5, and Table 6 for the economical, environmental and social indicators respectively. The values higher than 50% were highlighted in order to identify the indicators which gained the predominant tendency of relevance and being a priority in the Palestinian public spaces, and consequently, were adopted for actual implementation in this research.

Table 1: rank percentage of the economic indicators by participants

Source: the researcher

Economic indicators	Rank (percentage) Least related → most related				
	1	2	3	4	5
The space creates and facilitates revenue - generating opportunities for the public/ private sectors.	0	6.25%	25%	62.5%	6.25%
The space creates meaningful and desirable employment.	0	18.75%	43.75%	25%	12.5%
The space indirectly creates or sustains good, living wage jobs.	0	25%	31.25%	43.75%	0
The space sustains or increases property values.	0	6.25%	31.25%	31.25%	31.25%
The space catalyzes infill development and/or the re-use of obsolete or under-used buildings or spaces.	0	18.75%	31.25%	25%	25%
The space attracts new residents.	6.25%	25%	6.25%	43.75%	18.75%
The space attracts new businesses.	0	0	6.25%	75%	18.75%
The space generates increased business and tax revenues.	0	18.75%	50%	25%	6.25%
The space optimizes operations and maintenance costs (compared to other similar spaces).	0	25%	31.25%	25%	18.75%

Table 2: rank percentage of the environmental indicators by participants

Source: the researcher

Environmental indicators	Rank (percentage) Least related				most related
	1	2	3	4	5
The space uses energy, water, and material resources efficiently.	12.5%	6.25%	18.75%	25%	37.5%
The space improves water quality of both surface and ground water.	18.75%	12.5%	31.25%	6.25%	31.25%
The space serves as a net carbon sink.	18.75%	6.25%	37.5%	18.75%	18.75%
The space enhances, preserves, promotes, or contributes to biological diversity.	18.75%	25%	25%	18.75%	12.5%
Hardscape materials are selected based on longevity of service, social/ cultural/ historical sustainability, regional availability, low carbon footprint and/or other related criteria.	6.25%	18.75%	43.75%	25%	6.25%
The space provides opportunities to enhance environmental awareness and knowledge.	6.25%	12.5%	18.75%	50%	12.5%
The space serves as an interconnected node within larger scale ecological corridors and natural habitat.	6.25%	18.75%	31.25%	37.5%	6.25%

Table 3: rank percentage of the social indicators by participants

Source: the researcher

Social indicators	Rank (percentage) Least related				most related
	1	2	3	4	5
The space improves the neighborhood.	6.25%	6.25%	18.75%	43.75%	25%
The space improves social and physical mobility through multi-modal connectivity – auto, transit, bike, and pedestrian.	0	0	12.5%	50%	37.5%
The space encourages the health and fitness of residents and visitors.	0	6.25%	43.75%	43.75%	6.25%
The space provides relief from urban congestion and stressors such as social confrontation, noise pollution, and air pollution.	6.25%	6.25%	18.75%	37.5%	31.25%
The space provides places for formal and informal social gathering, art, performances, and community or civic events.	0	18.75%	12.5%	31.25%	37.5%
The space provides opportunities for individual, group, passive and active recreation.	0	0	18.75%	56.25%	25%
The space facilitates shared experiences among different groups of people.	6.25%	6.25%	25%	50%	12.5%
The space attracts diverse populations.	0	0	18.75%	56.25%	25%
The space promotes creative and constructive social interaction.	0	18.75%	31.25%	25%	25%

Table 4: total percentage of rank 4 + rank 5 for each economical indicator – values higher than 50% are highlighted

Source: the researcher

Economic indicators	Rank 4 + rank 5 Percentage
The space creates and facilitates revenue - generating opportunities for the public/ private sectors.	68.75%
The space creates meaningful and desirable employment.	37.50%
The space indirectly creates or sustains good, living wage jobs.	43.75%
The space sustains or increases property values.	62.50%
The space catalyzes infill development and/or the re-use of obsolete or under-used buildings or spaces.	50%
The space attracts new residents.	62.50%
The space attracts new businesses.	93.75%
The space generates increased business and tax revenues.	31.25%
The space optimizes operations and maintenance costs (compared to other similar spaces).	43.75%

Table 5: total percentage of rank 4 + rank 5 for each environmental indicator – values higher than 50% are highlighted

Source: the researcher

Environmental indicators	Rank 4 + rank 5 Percentage
The space uses energy, water, and material resources efficiently.	62.50%
The space improves water quality of both surface and ground water.	37.50%
The space serves as a net carbon sink.	37.50%
The space enhances, preserves, promotes, or contributes to biological diversity.	31.25%
Hardscape materials are selected based on longevity of service, social/ cultural/ historical sustainability, regional availability, low carbon footprint and/or other related criteria.	31.25%
The space provides opportunities to enhance environmental awareness and knowledge.	62.50%
The space serves as an interconnected node within larger scale ecological corridors and natural habitat.	43.75%

Table 6: total percentage of rank 4 + rank 5 for each social indicator – values higher than 50% are highlighted

Source: the researcher

Social indicators	Rank 4 + rank 5 Percentage
The space improves the neighborhood.	68.75%
The space improves social and physical mobility through multi-modal connectivity – auto, transit, bike, and pedestrian.	87.50%
The space encourages the health and fitness of residents and visitors.	50%
The space provides relief from urban congestion and stressors such as social confrontation, noise pollution, and air pollution.	68.75%
The space provides places for formal and informal social gathering, art, performances, and community or civic events.	68.75%
The space provides opportunities for individual, group, passive and active recreation.	81.25%
The space facilitates shared experiences among different groups of people.	62.50%
The space attracts diverse populations.	81.25%
The space promotes creative and constructive social interaction.	50%

4.1.2. Discussion

After reviewing the final list of indicators that are adopted for actual implementation in Table 7, Table 8, and Table 9, some points need to be recognized and highlighted:

Firstly, the largest share of the votes went in favor of the social section with 7 indicators out of 9, whereas the environmental section was the one with the least fortune with only 2 indicators out of seven, and the economic section was somewhere in the middle with 4 indicators out of 9.

Secondly, the social section in average had the highest total percentages including three indicators with more than 80 %, followed by the economic section with one

indicator that gained more than 90 % in total, nevertheless, both of the environmental indicators earned the least percentages that is 62.5 % each. Figure 32 shows the average percentage of each indicator in the three sections, with the social indicator at the top of the list and the environmental at the bottom.

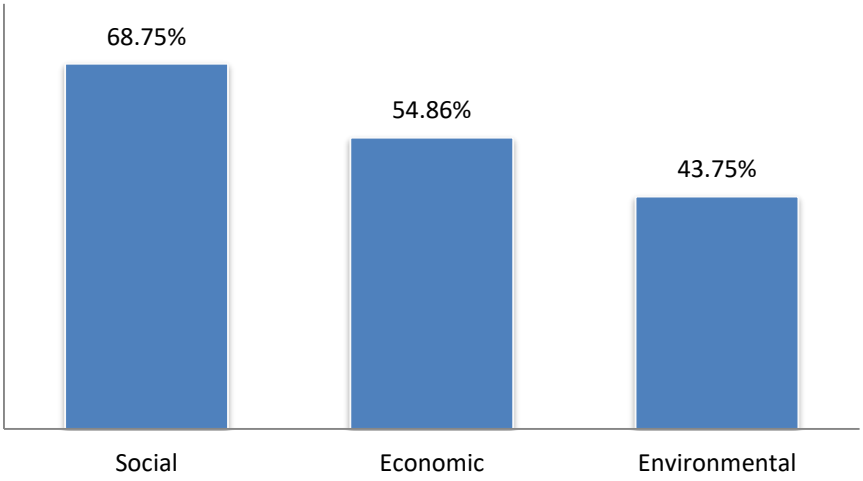

Figure 32: average percentage of each indicator in the three sections

Source: the researcher

Although the economic section came in the second place in terms of the final number of indicators and the average total percentages, the highest percentage of all indicators in the three sections went for an economic indicator with regard to the space attraction of new businesses.

These notes give an initial indication that the main role which the existing Palestinian public spaces play or have the potential to play in achieving sustainability within the current stages is overwhelmingly the social role. The economic role comes in the second place, whereas the environmental role is not only still shyly taking its first steps into existence, but also one of the two final environmental indicators indirectly emphasizes the social role of the Palestinian public space by taking charge of enhancing the environmental awareness and

knowledge in community. The other environmental indicator on the other hand, relates to the situation of the Palestinian cities in terms of the shortage of water and energy resources especially with the obstacles opposed by the Israeli occupation; that makes the efficient and thoughtful use of the available resources an urgent priority. [1] [2] [3] [4]

Such indices approve and support the importance of this research and the need of a multi-dimensional investigation of the public spaces (economic, environmental and social) in order to help achieve more sustainability in our cities and communities.

Table 7: the final adopted economic indicators

Source: the researcher

	Economic indicators	Rank 4 + rank 5 Percentage
1	The space creates and facilitates revenue - generating opportunities for the public/ private sectors.	68.75%
2	The space sustains or increases property values.	62.50%
3	The space attracts new residents.	62.50%
4	The space attracts new businesses.	93.75%

[1] (Yaseen, 2007)
[2] (Omar Kittanah, Mohammed Hilow, Ali Hamouda, May 8, 2012)
[3] (Palestinian Water Authority, 2012)
[4] (Mustafa W. , 2016)

Table 8: the final adopted environmental indicators

Source: the researcher

Environmental indicators		Rank 4 + rank 5 Percentage
1	The space uses energy, water, and material resources efficiently.	62.50%
2	The space provides opportunities to enhance environmental awareness and knowledge.	62.50%

Table 9: the final adopted social indicators

Source: the researcher

Social indicators		Rank 4 + rank 5 Percentage
1	The space improves the neighborhood.*	68.75%
2	The space improves social and physical mobility through multi-modal connectivity – auto, transit, bike, and pedestrian.	87.50%
3	The space provides relief from urban congestion and stressors such as social confrontation, noise pollution, and air pollution.	68.75%
4	The space provides places for formal and informal social gathering, art, performances, and community or civic events.	68.75%
5	The space provides opportunities for individual, group, passive and active* recreation.	81.25%
6	The space facilitates shared experiences among different groups of people.	62.50%
7	The space attracts diverse populations.	81.25%

*Note: in the case of the Martyrs' Square as being located in the city center rather than a in a neighborhood, the 1st indicator in the social section -the space improves the neighborhood- will be skipped in the implementation process of these criteria, this indicator is also related to the 3rd economical indicator –the space attracts new residents- which implies that the existence of the "high performance" public space in a residential area or a neighborhood should attract new residents to that area. However, the latter indicator was kept in the assessment process to check out if the

Martyrs' Square as a commercial city center public space may also attract new residents to the center of Nablus city. Similarly, for the 5th indicator in the social section -the space provides opportunities for individual, group, passive and active recreation- since the Martyrs' Square is a street type public space and performs as the city center of Nablus city, and with its limited area and linear geometry, the "active" recreation part will be skipped from this indicator as there is no opportunity for this square to take in such facility-based activities like basketball or tennis. However, all these indicators are still valid and applicable on other case studies if they fall within the suitable category of public spaces.

4.1.3. Field survey and data collection

This research combined both the subjective and the objective approaches in collecting the needed data and the survey of the Martyrs' Square. The main tool of data collection in this research is the questionnaire; which facilitated probing how users perceive the Martyrs' Square and helped identifying their concerns and aspirations regarding the space. The reasons behind adopting the questionnaire as the main data collecting tool belong to the fact that users are the main affected party whether positively or negatively by any changes occur in the space, not to mention, the growing resentment voices against the current situation of the Martyrs' Square via social media from time to time. As David Barth indicated, the sustainable communities are the desired outcome of the planning and design process and that the public realm is a subsystem of sustainable communities.[1] Secondly, the lack of studies related to this particular space and the insufficiency

[1] (Barth, 2015)

of objective data to count on especially that this research is multi-dimensional and addresses the Martyrs' Square from diverse aspects. Nevertheless, the results of the questionnaire were also, whenever possible, combined with corresponding objective data; such as: former statistics of the space, observation, mapping, photographing, in-situ measurements and personal interviews with officials and specialists.

4.1.4. Building the questionnaire

The questionnaire was built with reference to the final adopted indicators within three main sections; economical, environmental and social. Each section included various questions that helped in exploring the participants' views regarding each indicator.

In building the questionnaire, it was considered to diversify the questions between direct and indirect, simple and detailed, inquiring about the space and how users feel about it. Furthermore, the questions did not stop at the extent of determination of whether the Martyrs' Square achieved the indicators or not, but also they looked deeply in causes and obstacles, and more importantly, they engaged the Martyrs' Square users through asking for their suggestions and aspirations for the space. Finally, in designing the questionnaire, it was meant to make the questions overlap and intersect with regard to a particular subject, so that the answers of these questions support each other and assure the accuracy of the derived data.

According to Krejcie and Morgan table[1] for sample size determination from a given population, the representative sample for this study must be 384 with a

[1] (Robert V. Krejcie, Daryle W. Morgan, 1970)

confidence level of 95 % and a marginal error of 5 %, nevertheless, the sample in this research already exceeded that limit which indicates a higher confidence level and a lower marginal error.

The questionnaire was distributed during May 2017 and targeted two samples of users of the Martyrs' Square who are older than sixteen - as younger users lack the objective insight and the sufficient experience in the addressed subjects in the questionnaire - in order to make a comparison between their responses: the first included 500 participants of ordinary users of the Martyrs' Square -whether they live in the city of Nablus or not - and the second consisted of 60 employees of Nablus municipality which is in charge of the Martyrs' Square since it is the responsible body of providing certain services to the residents of Nablus City; including waste collection, street cleaning and public services in addition to road rehabilitation and construction, protection of historical sites, as well as the provision of public market, transportation and the management of public parks, etc.[1]

It's worth mentioning here that Planning and decision-making in the Nablus municipality is issued by the municipal council represented by its chairman[2] so that the municipality's staff will implement them only rather than presenting their suggestions and recommendations.[3] Therefore, the general vision of the city and the Martyrs' Square in particular changes continuously according to the council's change. It was therefore thought to involve the municipal staff in the evaluation

[1] (The Applied Research Institute – Jerusalem (ARIJ), 2014)
[2] (Abbas, 2008)
[3] (Nasrullah, 2017)

process to examine their compatibility with the users' vision and their representation of their needs and aspirations.

The municipal departments whose staff had participated in filling in the questionnaire were: the public relations department, traffic department, works department, planning department, sanitation department, water department, department of parks and beautification of the city, and the department of regulation. The questionnaire was distributed to the municipal staff by hand, whereas for the sample of the Martyrs' Square users; the questionnaire was published online on the WebPages of Nablus city news aiming to reach as many users as possible.

4.1.5. General information about the samples

The 500 users of the Martyrs' Square who participated in filling in the questionnaire were divided into 59.6 % females and 40.4 % males. Young users had the largest share of participation with 56.6 % who aged between 20 - 30 years, 21.2 % between 30 - 40 years, and 9.4 % between 16 -20. Older users also had their important input in the process with a percentage of 11.4 % in the age of 40 - 60 years and 1.4 % who were older than 60.

About half of the sample had their jobs (40 % in the private sector and 15.2 % in the public sector) where 44.8 % were unemployed. The majority were residents of Nablus city, who comprised 57.5 % of the sample, followed by 18.2 % who lived in Nablus rural areas, and 2.2 % of Nablus refugee camps residents. A significant portion of the participants was from outside Nablus governorate; 15 % lived in other governorates of the West Bank, 6.4 % lived outside Palestine and 0.6 % in

the occupied territories in 1948. Regarding the visiting rate to the Martyrs' Square, 45 % of participants were reaching for the square on a daily basis, 30.4 % were weekly visitors, 14 % were visiting the square from month to month and 10.2 % were less frequently visitors.

The municipal sample on the other hand, was equally divided between males and females, 71.7 % of whom were between 30 – 50 years of age, and 95 % of them lived in the city of Nablus. The rate of their visits to the Martyrs' Square was mostly every day with a percentage of 76.7, while 15 % of them visited the square weekly, and the remaining 8.3 % had a lower rate of visits.

Based on the above, it is clear that the questionnaire sample did include a fair diverse mixture of different types of users of the Martyrs' Square; whether males or females, the wide range of ages, both the public and the private sectors besides the unemployed, residents of the city, the villages, the refugee camps, the other cities and those who live outside the country, as well as the frequent and the occasionally visitors, not to mention, the municipality officials who are responsible for running the square and the city in general.

4.2. Questionnaire results and analysis

The results of the questionnaire are presented below categorized in the main three sections: economic, environmental and social. These results will be combined whenever possible with objective data regarding the Martyrs' Square in each section.

4.2.1. The economic section

When asked if the Martyrs' Square as a location of their business would help increase their revenue and attract more customers, both the users and the municipality participants were almost unanimous on approval; as 90.8 % of the users and 90 % of the municipal staff answered with "yes" they believe that the Martyrs' Square would increase and facilitate revenue generating.

Regarding the property values in the vicinity of the Martyrs' Square, 87.8 % of the square users believed that property values in the Martyrs' Square were high compared to other areas in the city. A greater approval came from the municipality employees with 96.7 % who found that the property values in the vicinity of the Martyrs' Square were comparatively high; this might be due to the nature of their occupation that gives them knowledge of the city matters and issues, in addition to the fact that the municipality of Nablus is located close to the Martyrs' Square.

In the same context, 94.8 % of the Martyrs' Square users believed that the square had an influence on raising the surrounding property values and 91.7 % of the municipality participants supported the same notion.

With reference to the indicator of attracting new residents; as mentioned before, this indicator is suggested to be related to the public spaces which are located within neighborhoods, which is not the case with the Martyrs' Square. However, this indicator was left in the assessment process to investigate if the Martyrs' Square as a commercial city center may attract any new residents, and the results were overwhelmingly negative; as 86.8 % of the square users and 88.3 % of the municipal staff both answered with "no" when asked if they prefer to reside in the vicinity of the Martyrs' Square.

To examine the attraction of the Martyrs' Square for new businesses, participants were asked if they would prefer the Martyrs' Square as a location if they had the opportunity to start their new business, and the results were as follows: 78.8 % of the square users answered with "yes" they would prefer to start a new business in the Martyrs' Square area rather any other area in the city, whereas, the municipality employees had relatively less agreement with 68.3 % of acceptance.

As discussed in the 3rd chapter, the commercial use is the most prevalent in the Martyrs' square area with the presence of other diverse services (Figure 16). According to the land registration department in Nablus; hardly any blank plots are left in the Martyrs' square area due to the strong turnout of investment in that zone.[1] With respect to the property values in the vicinity of the Martyrs' square, the land registration department appraiser was interviewed by researcher in 11-6-2017 to stand at the land prices in the specified area and the other regions in the city of Nablus. Table 10 shows the average price of 1 M^2 of land in the Martyrs' square area, whereas Table 11 displays the average land prices in other areas in Nablus city in JD/M^2.

By reviewing the prices listed in the tables below, one can notice that The Martyrs' Square tops the list with a price of 10000 JD/M^2, and that the variance of prices is significant between The Martyrs' Square and the other regions in the city except for Sufian street zone which is attracting more investments lately due to its direct connection with The Martyrs' Square; not to mention, that the eastern area of the square is almost fully sold or invested. These facts come in line with the results of the questionnaire in terms of the comparatively high values of property in the

[1] (Zuhd, 2017)

vicinity of The Martyrs' Square and the direct influence of the Martyrs' Square on raising the prices of the nearby property such as plots wither blank or built-up, as well as the intensive attraction of new investments in the square area.

Table 10: average prices of 1 M² of land in the vicinity of the Martyrs' square

Source: (Zuhd, 2017)

The vicinity of the Martyrs' Square	Average price of 1 M² in Jordanian Dinars		
	Blank plots – suitable for construction	Blank plots – unsuitable for construction	Built-up plots
The Martyrs' Square area	7000 - 10000	2000 - 3000	1000 - 1500
Sufian Street West of The Martyrs' Square	7000	1500 - 1000	200
North of the Martyrs' Square (Classification: C area)	200 - 250	-----	100 - 120
Eastern area of the Martyrs' Square	No blank plots	No blank plots	1800 - 2000

Table 11: average prices of 1 M² of land in different regions in Nablus city

Source: (Zuhd, 2017)

Regions in Nablus city	Average price of 1 M² in Jordanian Dinars	
From the Martyrs' Square east towards the county building	600 - 800	
East of the governorate building	100 - 400	
Beit Eiba main street	800 - 1200	
Beit Eiba town	80 - 120	
Rafedia main street	2000 - 3000	
Rafedia – Almraij area	Blank : 400 - 800	Built-up: 120 - 180
Ras Al-Ain area	150 - 200	
The old city	120 - 150	
North Mount. area	Blank : 150 - 200	Built-up: 80 - 100
Al-Najah old campus main street	Blank : 600 - 800	Built-up: 200 - 300
Al Bathan st. (landslides area)	10 -12	
Amman street	200 – 400	
Balata town area	100 -120	
Askar town area	100 - 120	
Industrial area – al Hussein st.	150 - 250	
Al- Dahiya area	60 - 90	
Aseera street	400 – 600	
The vicinity of Al-Ain camp	60 – 100	
The vicinity of Al-Najah hospital	200 – 300	
Al-Amriya housing	200 – 250	
Nablus al-jadida	120 – 140	
South of Ras Al-ain area	50 - 90	

4.2.2. The environmental section

In the environmental section participants were asked about several issues that are related to the 1st environmental indicator which deals with the efficient use of energy, water and material in the public space.

Initially, participants were requested to give their opinion on how they felt about the lighting level in the Martyrs' Square at night whether excessive, convenient or

poor. Results of this question according to the users and the municipal participants are displayed side by side in Figure 33 which indicates that the results in both samples are almost identical; with about 68 % who found the lighting level quite convenient and a trend towards the poor lighting option since it earned the second highest percentage out of the three.

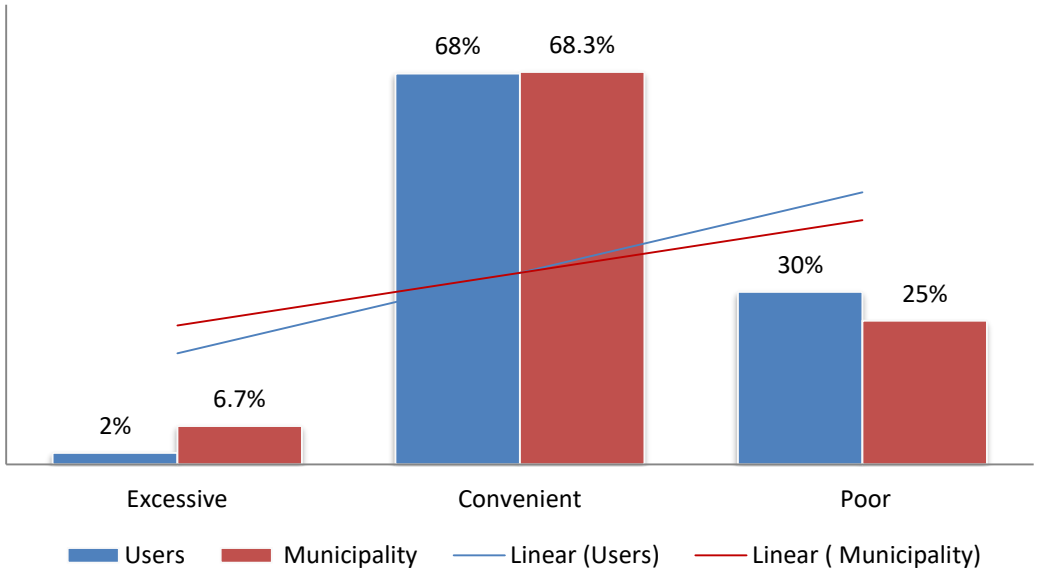

Figure 33: lighting level in the Martyrs' Square at night (proportions + linear trends) according to users and municipality staff

Source: the researcher based on questionnaire

Objectively, the Martyrs' Square used to be lit by high pressure Sodium lamps until 2014 when they were replaced with LED system: the high LED lights which are the main and constant lighting source in the square are electrically powered and operate according to a timer in order to meet the needs of the space users in the different seasons with minimal waste of energy. For example, the lights are operated from 7:30 pm to 5:00 am in summer and from 5:00 pm to 6:00 am in winter.[1] Not to mention, LED lights in general are considered extremely energy

[1] (Yaish, water management in the Martyr's square, 2017)

efficient relative to other lighting technologies in the market, since they waste very little energy in the form of infrared radiation, plus they emit light directionally (over 180 degrees vs. 360 degrees which means far fewer losses from the need to redirect or reflect light), in addition to the relatively long lifespan and low maintenance costs.[1] [2] In comparison with the old HPS lamps, although LED lamps cost far more, they result in more than 50 % consumption reduction and last for 15 years Vs. 3 years for HPS, which make this technology very cost efficient besides offering a very good quality of light while being good for the environment.[3]

A secondary type of lighting in the Martyrs' Square is the lower PL lamps at 2.5 m height which are also electrically powered and operate according to a timer. PL lighting efficiency in general is high[4] [5], however, compared to LED lights the PL lamps waste a fair amount of their light in the fixture as they emit light in all directions, and they are relatively less efficient than LEDs. Thankfully, this type of lighting is only utilized on special occasions as for Al- Eid days and other events when needed.[6]

As mentioned in the 3rd chapter the street lights are distributed along the median island sides, the surrounding sidewalks and the roundabout. Both lighting types are shown in Figure 34. It should be noted here that while the trend of participants' views showed tendency towards the poor lighting option which needs to be taken into consideration, the municipality, on the other hand, deplored the misuse of

[1] (Stouch Lighting Staff, 2016)
[2] (Gaughan, 2017)
[3] (SEAP consultants, CES-MED experts, 2016)
[4] (Philips Lighting Company, 2013)
[5] (SG Automotive)
[6] (Yaish, water management in the Martyr's square, 2017)

some individuals towards the Martyrs' Square and its appliances such as smashing some of the lights and ruining the plants.

Figure 34: lighting types in the Martyrs' Square

Source: the researcher

The second investigated issue in the environmental section was water usage in the Martyrs' Square; participants were asked how often they noticed any squandering while using water in the Martyrs' Square such as: during plants irrigation, operating the fountain or in maintenance work. Results are shown in Figure 35 for the users and the municipality participants and in both samples the normal pace was selected by the majority: 62.4 % of user and 50 % of municipal staff, followed by the rare rate option with 28.6 % of users and 31.7 % of municipality employees; in other words the trend is leaning towards the rareness of water wasting in the Martyrs' Square.

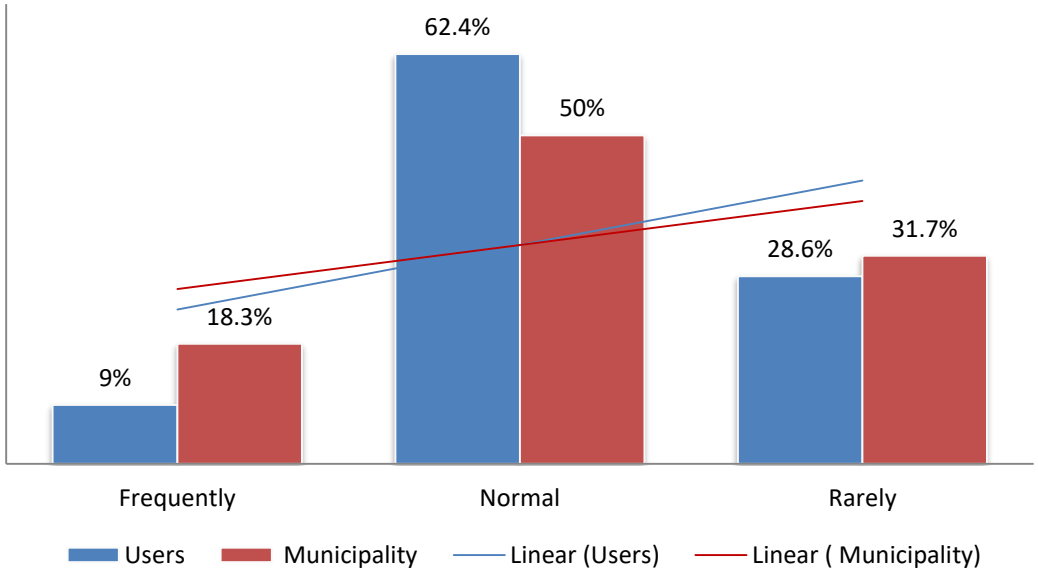

Figure 35: frequency of water wasting in the Martyrs' Square (proportions + linear trends) according to users and municipality staff

Source: the researcher based on questionnaire

As a matter of fact, water usage in the Martyrs' Square is limited to the garden plants irrigation and the operation of the central fountain which in both cases potable water is used. The central fountain is operated according to a timer; so that it works for three hours and stops for one hour consecutively and the operation is suspended after 10:00 pm. The fountain is also equipped with a 10 M^3 water tank underneath that is dedicated to operate the fountain in the first place and to irrigate the surrounding plants with average consumption of 2 – 3 M^3 for irrigation; in which process water is guaranteed to be continually replenished, water rot is avoided, while rationing water consumption. [1]

With regard to the garden on the median island, plants are irrigated by means of a drip irrigation system which ensures the least possible consumption of water. However, due to the poor water pressure, the garden worker is sometimes forced

[1] (Yaish, water management in the Martyr's square, 2017)

to use water hoses to manually irrigate the plants so that they are supplied with adequate amount of water during his official working hours (Figure 36).[1]

All of these arrangements that aim to manage water use in the Martyrs' Square support the results of the questionnaire which confirm the thoughtful exploitation of water and the minimal waste. On the other hand, during the process of the manual irrigation using water hoses little water leakage may be experienced which may explain – besides lack of knowledge of the fountain mechanism - why few participants considered the frequent rate option.

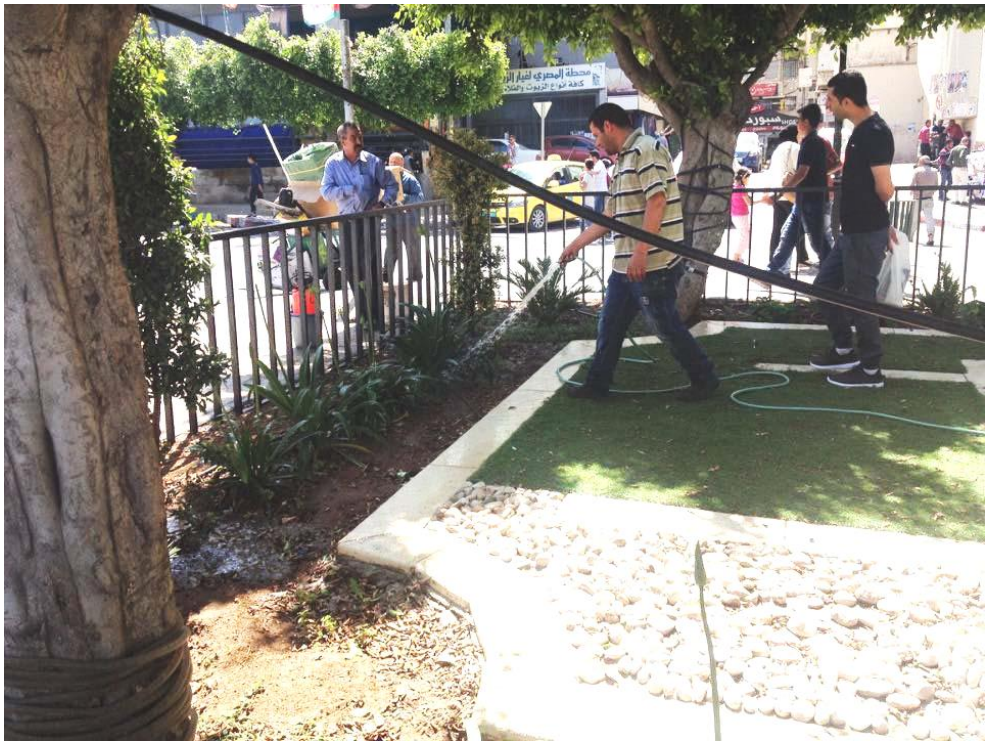

Figure 36: using manual irrigation with water hoses in the Martyrs' Square garden when water pressure is insufficient

Source: the researcher

[1] (Yaish, water management in the Martyr's square, 2017)

The third discussed topic was maintenance; such as the streets, the sidewalks, the garden and waste management in the Martyrs' Square. At first participants were asked to describe the streets and sidewalks condition in the Martyrs' Square as very good, average or bad. As presented in Figure 37, the majority of both samples had converged in the medial area since 58.8 % of users and 63.3 % of municipality staff described the streets and sidewalks condition in the Martyrs' Square as "average". The second highest percentage was contradictory in the two samples; the users sample selected the "bad" option (31.8 %) whereas the municipal participants picked up the "very good" (20 %). This indicates that the trend of the users' view went toward describing Martyrs' Square streets and sidewalks as bad, while on the contrary, the trend of the municipal view tended towards the very good condition.

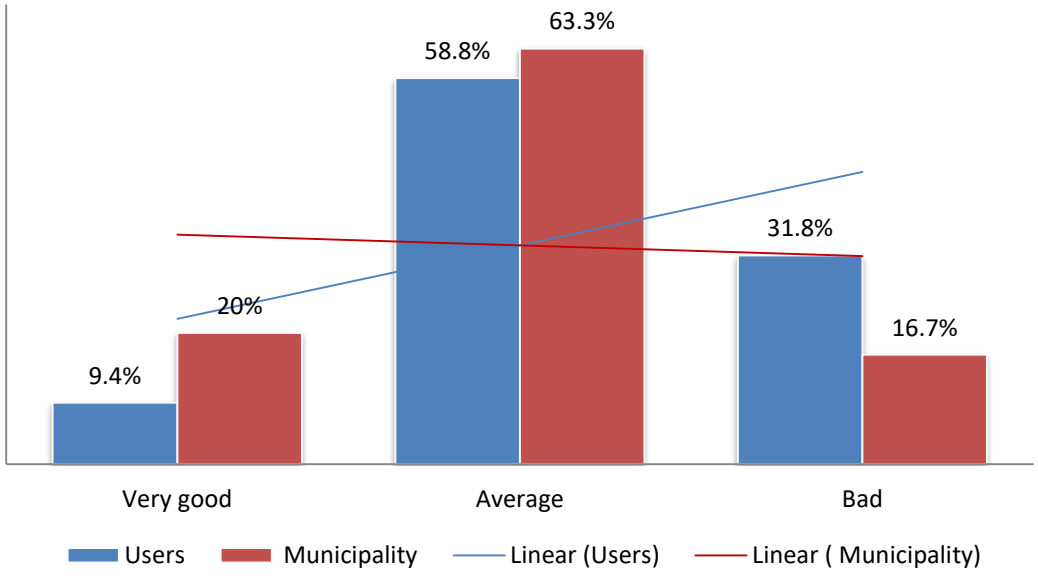

Figure 37: streets and sidewalks condition in the Martyrs' Square (proportions + linear trends) according to users and municipality staff

Source: the researcher based on questionnaire

Secondly, participants were asked if the Martyrs' Square streets and sidewalks where adequately maintained; notably, a considerable percentage (37 %) of the users sample couldn't make a judgment about this subject and preferred to answer with "I don't know"; noticeably, when this group was checked, turned on that almost 70 % of which were Nablus governorate residents and visited the Martyrs' Square daily or weekly as Figure 38 and Figure 39 manifest. The explanation of this situation can be that sometimes the more frequent a user visits the square, the less conscious he becomes to details and changes.

Nevertheless, this option gained only 13 % of the municipal participants as their kind of job necessitates their knowledge and follow-up on the square matters on a regular basis.

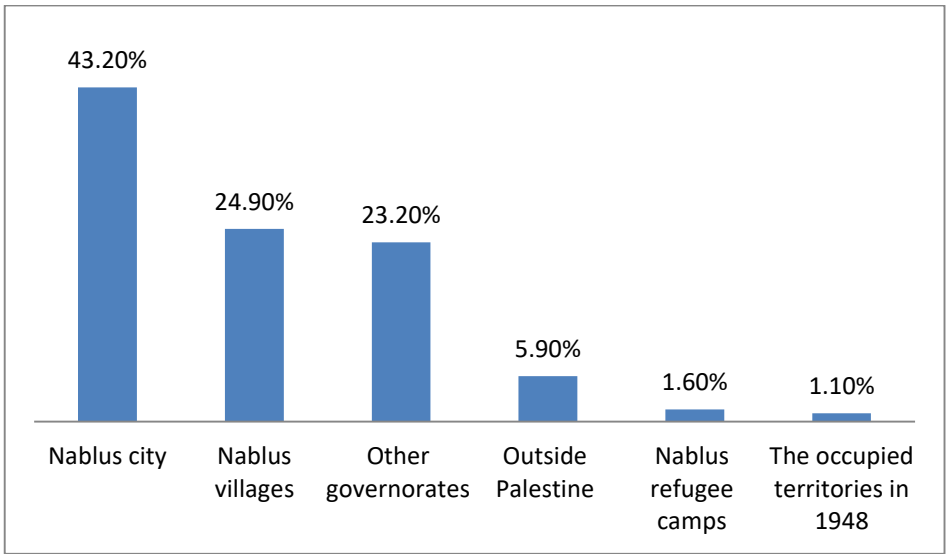

Figure 38: residence place of users who couldn't determine if the Martyrs' Square streets and sidewalks where adequately maintained or not

Source: the researcher based on questionnaire

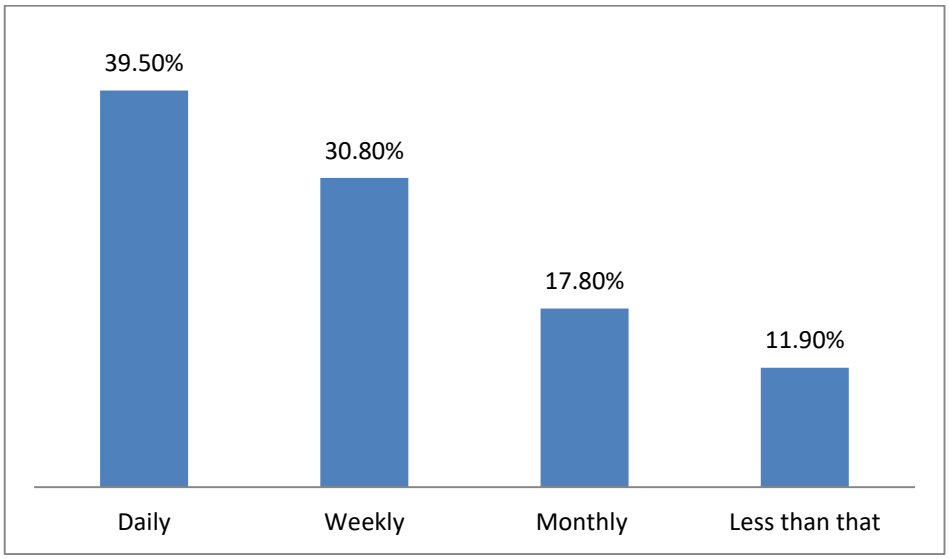

Figure 39: visiting rate of users who couldn't determine if the Martyrs' Square streets and sidewalks where adequately maintained or not

Source: the researcher based on questionnaire

Focusing on the other substantial options: as Figure 40 displays, the largest proportion of participants from both samples responded negatively to the question and believed that the Martyrs' Square streets and sidewalks where not adequately maintained with almost 50 % of both samples. However, when looking at the results in the positive option; one can notice the significant portion of the municipal participants (36.7 %) who thought that the Martyrs' Square streets and sidewalks where adequately maintained in comparison with the users responses (14.6 %). In conclusion, the trend of the users' views and the municipal views are similarly leaning towards denying that the Martyrs' Square streets and sidewalks had adequate maintenance, nevertheless, the users' trend towards the negative option is way stronger and more distinct than the municipal trend due to the considerably high proportion of the positive responses in the municipal side.

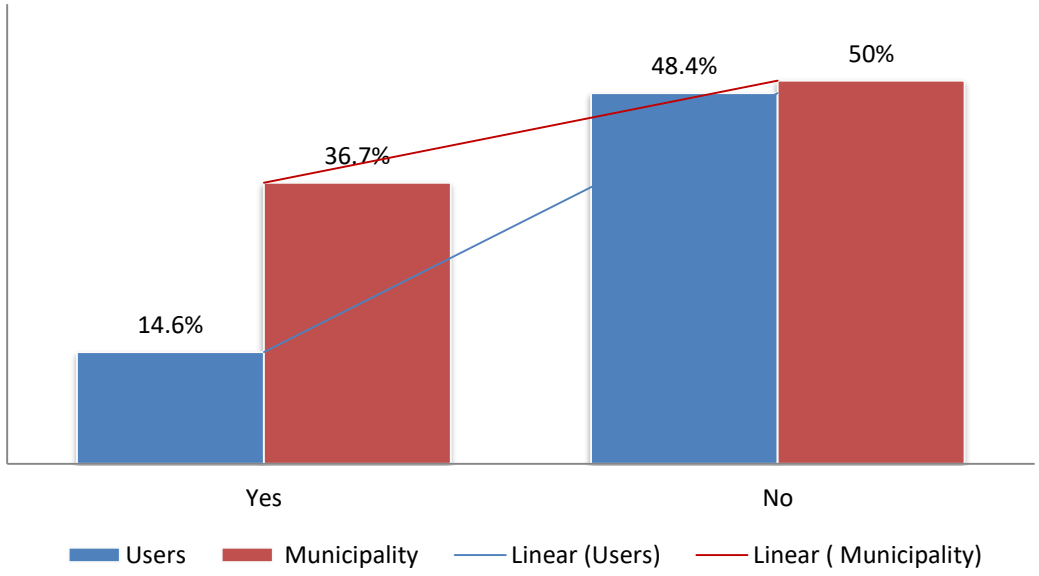

Figure 40: participants' answers when asked if the Martyrs' Square streets and sidewalks where adequately maintained (proportions + linear trends)

Source: the researcher based on questionnaire

In the same regard, participants were also asked to give their opinions at how frequent damages in the Martyrs' Square streets and sidewalks occur, requiring renewal of used materials. Again the majority of both samples had converged in the medial area since 53 % of users and 58.3 % of municipality staff thought that damages in the streets and sidewalks of the Martyrs' Square occurred at an "average" rate. The second highest percentage in the two samples was the frequent occurrence of damages with 35.2 % of users and 25 % of municipality participants; which means that the trend of the users' views and the municipal views are similarly leaning towards confirming that the Martyrs' Square streets and sidewalks are subjected to frequent damages, whereas, the users trend is relatively more intense. See Figure 41.

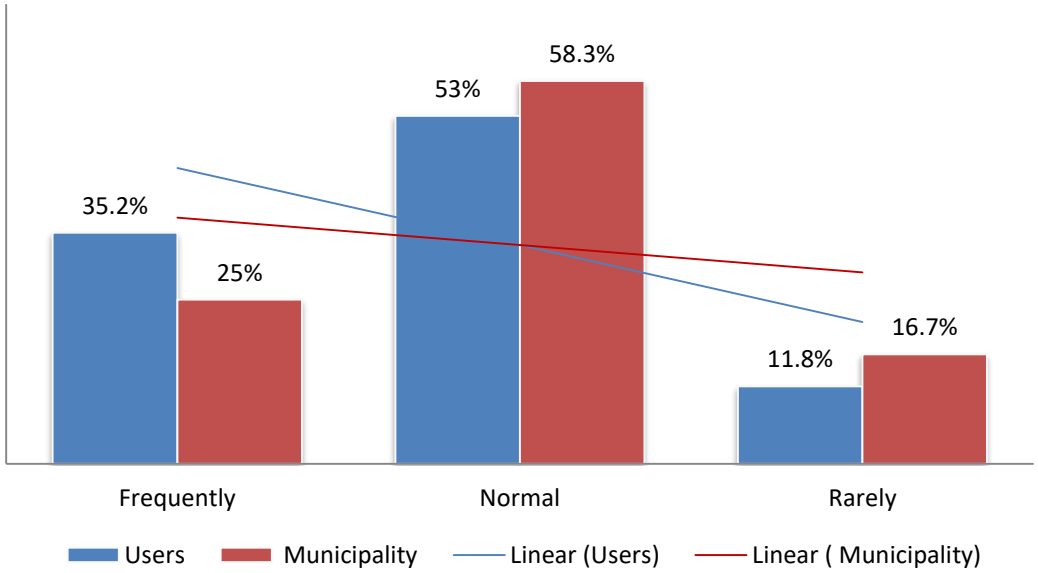

Figure 41: frequency of damage occurrence in the Martyrs' Square streets and sidewalks (proportions + linear trends) according to users and municipality staff

Source: the researcher based on questionnaire

Coming to the last maintenance aspect, which was participants evaluation of maintenance level and the time required to be accomplished. Once again the moderate option gained the highest percentage: 56.4 % of users sample and 58.3 % of the municipality sample described the maintenance level and its accomplishment time as average. See Figure 42. The second highest percentage in the both samples went to the slow maintenance option with 34.2 % of users and 26.7 % of municipality sample, resulting in one trend in both samples towards the slow maintenance with slightly more distinctness in the users' side.

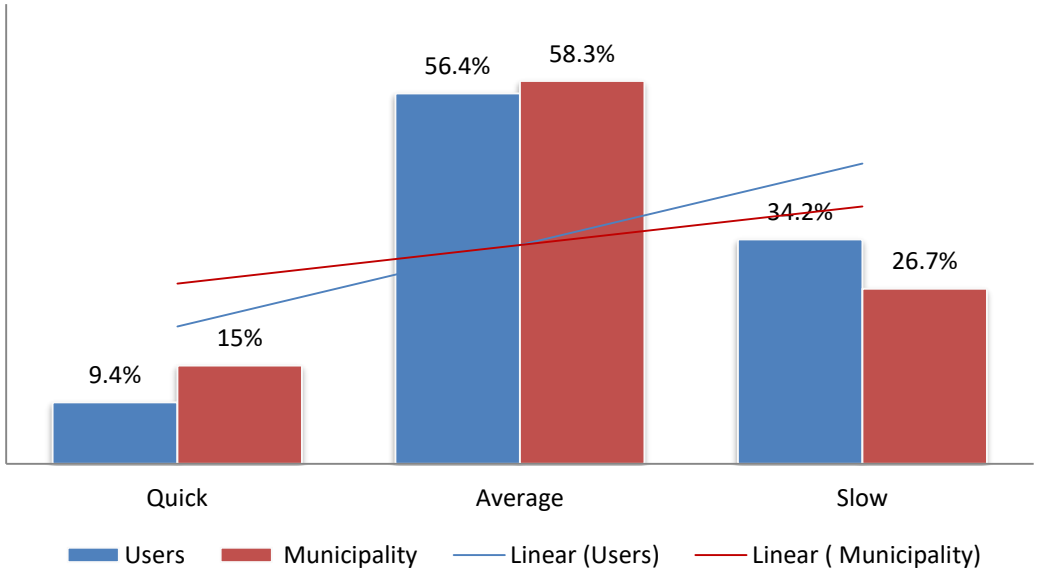

Figure 42: evaluation of maintenance level and the time required to be accomplished (proportions + linear trends) according to users and municipality staff

Source: the researcher based on questionnaire

To investigate actual maintenance work details, Eng. Yosuf Nasrullah head of the works section in Nablus municipality was interviewed. According to Nasrullah there is no regular maintenance or official inspection visits to the Martyrs' Square, however, data related to the Martyrs' Square and other areas are periodically updated. The usual maintenance of the Martyrs' Square is conducted when a particular damage occurs including repair of pavement stones and asphalting streets where any digging was carried out for the purpose of installation or repair of water, electricity, communications or sewage networks. Taking into consideration that the rate of occurrence of such damages doesn't usually exceed once per year and that municipal maintenance crew responds quickly, nevertheless, they are usually challenged by finding the convenient time to get their job done.[1] The last comprehensive maintenance took place in 2012 and comprised gravelling, pavement of sidewalks and erection of metal barriers, whereas the last entire

[1] (Nasrullah, 2017)

asphalting of the Martyrs' Square streets was in 2002. In 2014 the asphalt had been evaluated and was found to be in a good condition. [1]

With reference to the Martyrs' Square garden, as mentioned in chapter 3 this garden was accomplished by the parks and city beautification department crew in Nablus municipality in August 2016 with a total cost of 40000 $ that led to citizens' resentment and criticism of Nablus municipality.[2] According to Yaish – head of the parks and city beautification department in Nablus municipality – this cost had covered the following: installation of 5 cm thick stone edges, concrete layer under the stone edges, planting the site, installation of artificial grass, installation of gravel valley and volcanic stones, installation of a drip irrigation system, installation of handrails, concrete benches and repair of surrounding sidewalks. The cultivated plants in the Martyrs' Square garden which had been selected so that they do not require much care or water for irrigation included the following species: Juniperus Sabina, Agapanthus, Lamparanthus, Cycus revoluta, Convalvolus, Cidom, Segalit, Nephrolepis, Hydrangea hortensis, Santolina, Siziqium pyramidalis and Myrtus communis.[3]

The maintenance work of the Martyrs' Square garden is handled by two employees supervised by the parks and city beautification department in Nablus municipality; they stay in the Martyrs' Square area throughout their official working hours starting from 8 am to 2 pm in order to undertake maintenance of the garden which includes: weeding, cutting and pruning, plants formation, fertilization, spraying insecticides and cleaning the garden from dirt dumped by users.[4]

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[1] (Nasrullah, 2017)
[2] (NablusTV, 2016)
[3] (Yaish, management of the Martyr's square garden, 2017)
[4] (Yaish, management of the Martyr's square garden, 2017)

On another level, participants were polled about their preferences in terms of water resources, energy resources and waste disposal methods to be used in running the Martyrs' Square. Results showed that the vast majority of both the users and the municipality participants supported the environment friendly options such as waste separation and recycling, using renewable energy and using treated water respectively. See Figure 43, Figure 44, Figure 45.

The environment friendly option that gained the least percentage of the three was the water treatment with almost 70 % of participants in each sample compared to the renewable energy and waste recycling. This can be associated with the previously discussed procedures adopted in the Martyrs' Square to rationalize water consumption which was confirmed by participants in both samples as the trend of their views inclined towards the rareness of water wasting in the Martyrs' Square. It's worth mentioning here that a water purification plant located in Deir Sharaf – 6 Km from Nablus city – is utilized in refining 10000 M^3 of water per day, nevertheless, the reclaimed water is used in irrigating the surrounding farmlands rather than transferring it to Nablus city due to the distance and the high costs of the operation.[1]

Using renewable energy resources option came in the second place out of the three supported by 86.4 % of users and 73.3 % of the municipality staff; this can be related to the results of an earlier question about the lighting level – as the main energy consumer in the Martyrs' Square – which had a trend towards the poor lighting condition that implicitly indicates the need to improve the lighting level and may comprise adopting new energy resources for that purpose.

[1] (Yaish, water management in the Martyr's square, 2017)

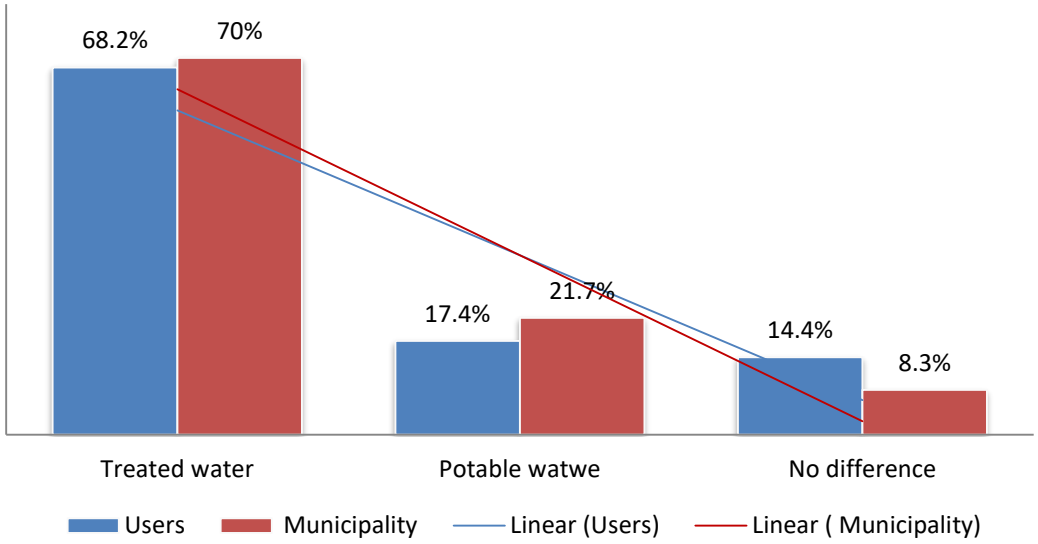


Figure 43: preferable water resource to be used in the Martyrs' Square (proportions + linear trends) according to users and municipality staff

Source: the researcher based on questionnaire

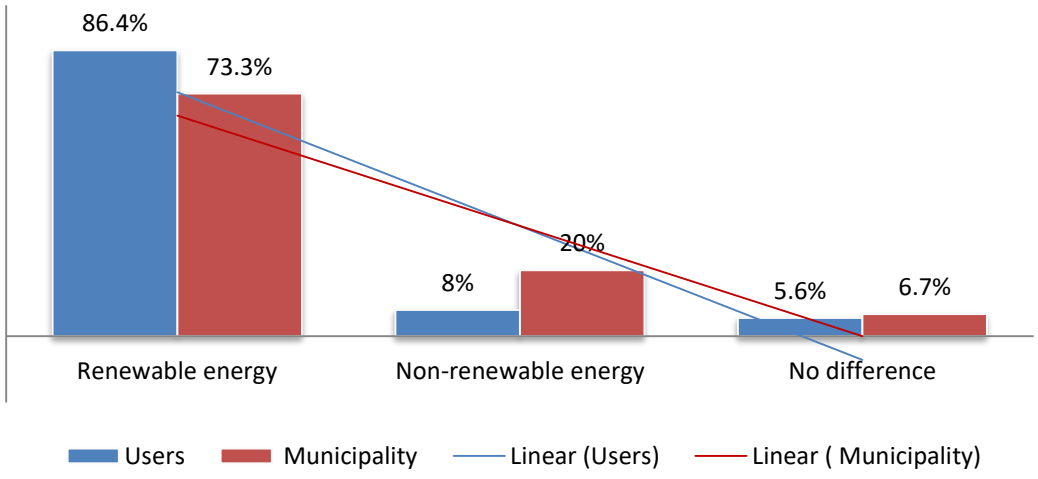


Figure 44: preferable energy resource to be used in the Martyrs' Square (proportions + linear trends) according to users and municipality staff

Source: the researcher based on questionnaire

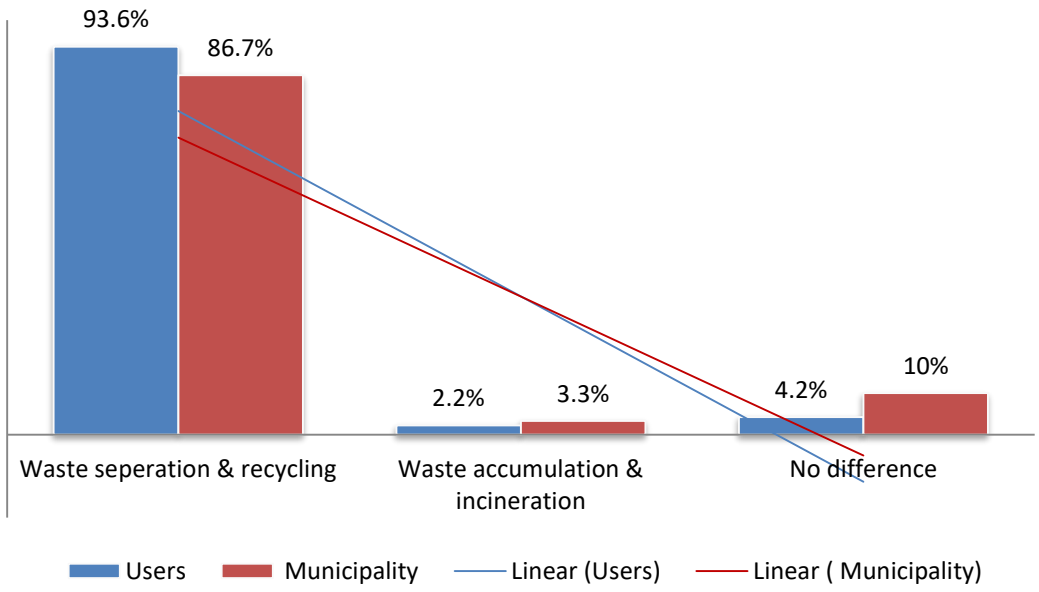


Figure 45: preferable waste disposal method to be used in the Martyrs' Square (proportions + linear trends) according to users and municipality staff

Source: the researcher based on questionnaire

With regard to the cleanliness of the Martyrs' Square, it is noteworthy that the square suffers from the accumulation of waste as a result of negligence and sometimes the intentional dumping of waste by users.[1] See Figure 46. Figure 47 shows the accumulation of waste around the large containers at the end of Sufian street in the vicinity of the Martyrs' Square. Waste accumulation dramatically increases during occasions and holidays due to the large commercial activity which continues until late at night. For example, the municipality of Nablus stated that the sanitation employees collected about 300 tons of waste from the city center only on the eve of Eid al-Fitr 2017; which is equivalent or exceeds the total waste of the entire city in normal days.[2] [3] See Figure 48.

[1] (Yaish, water management in the Martyr's square, 2017)
[2] (Public Relations Department - Nablus municipality, 2017)
[3] (SEAP consultants, CES-MED experts, 2016)

In regular days, the Nablus municipality solid waste department is responsible for solid waste collection in the city.[1] Sanitation employees sweep the streets and empty the small and the large garbage containers between 6 am and 10 am in the morning to avoid congestion during the day, while cleaning the streets of the Martyrs' Square with water is limited to occasional events and holydays such as Eid al-Fitr and Eid al-Adha. See Figure 49. As for waste disposal in the Martyrs' Square, the waste in the large containers is transported to the Sairafy landfill, where it is sorted into metal, plastic, paper and organic waste. Organic waste is thereafter transported to Zahrat al-Funjan landfill in Jenin to be disposed by burial[2] where as the other types of waste are sold to those concerned. [3]

Figure 46: waste in the Martyrs' Square: 1- the roman amphitheater area, 2- the garden

Source: the researcher

[1] (SEAP consultants, CES-MED experts, 2016)
[2] (محمد, 2015)
[3] (Yaish, water management in the Martyr's square, 2017)

Figure 47: garbage accumulation in the vicinity of the Martyrs' Square

Source: the researcher

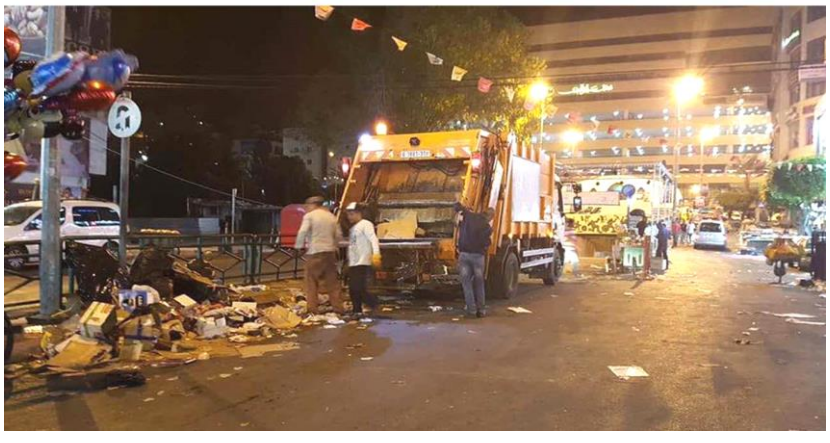


Figure 48: garbage accumulation in the vicinity of the Martyrs' Square eve of Eid al-Fitr 2017

Source: (Public Relations Department - Nablus municipality, 2017)

Figure 49: cleaning the Martyrs' Square streets with water - Eid al-Fitr 2017

Source: (Public Relations Department - Nablus municipality, 2017)

For the second environmental indicator which concerned the space ability of providing opportunities to enhance environmental awareness and knowledge, participants were asked about some relevant issues like if they found anything in the Martyrs' Square to remind them of the importance of preserving the environment and its resources; such as posters, signs or any appliances. Results are displayed in Figure 50 through which a large percentage of users (85.2 %) appear to deny their observation of any signs or appliances that could draw their attention towards environment preservation versus 66.7 % in the municipal side. Accordingly, the trend of the users sample towards negation is quite stronger than that of the municipality staff.

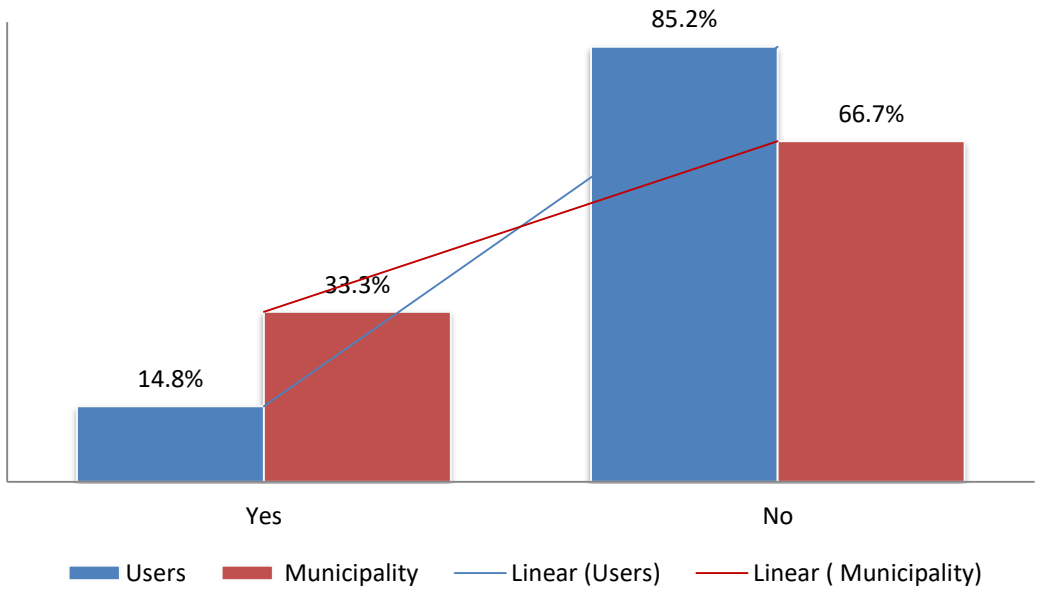


Figure 50: participants' answers when asked if they found anything in the Martyrs' Square that draws attention to environment preservation (proportions + linear trends)

Source: the researcher based on questionnaire

Within the same context, when asked if there were any activities in the Martyrs' Square aimed at increasing the environmental awareness, the largest proportion of participants in both samples again denied having any activities organized in the Martyrs' Square for that purpose, with a firmer denial in the municipal sample which can be related to their knowledge and follow-up on the square matters on a regular basis versus a considerable proportion of the users' sample who were not sure about it and contented to pick "I don't know". See Figure 51 for more details. One more time, when reviewing the group of users who couldn't determine if any activities were organized in the Martyrs' Square for increasing environmental awareness, it was found that 64.6 % of which were Nablus governorate residents and 65.4 % visited the Martyrs' Square daily or weekly as shown in Figure 52 and Figure 53.

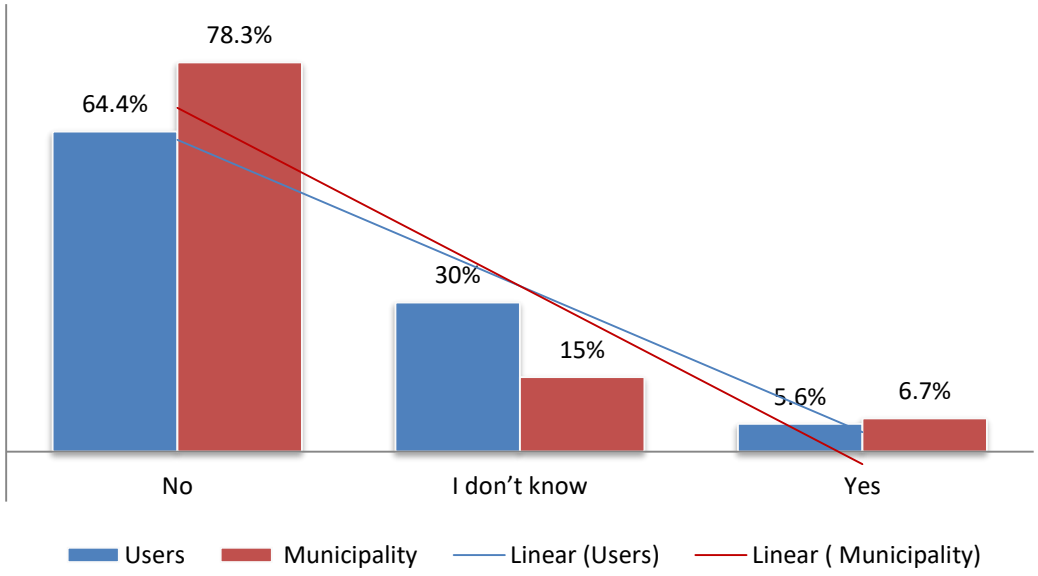


Figure 51: participants' answers when asked if the Martyrs' Square comprised any activities to increase the environmental awareness (proportions + linear trends)

Source: the researcher based on questionnaire

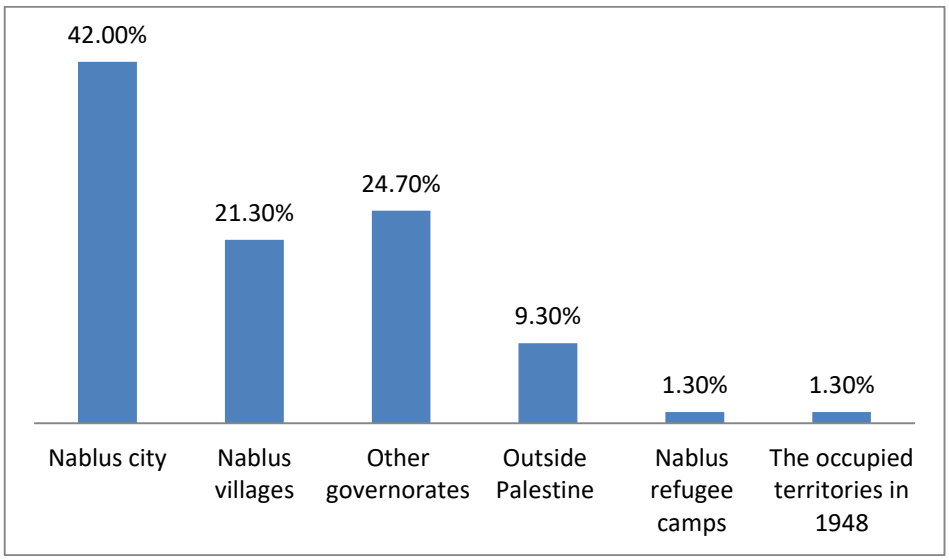


Figure 52: residence place of users who couldn't determine if the Martyrs' Square comprised any activities to increase the environmental awareness or not

Source: the researcher based on questionnaire

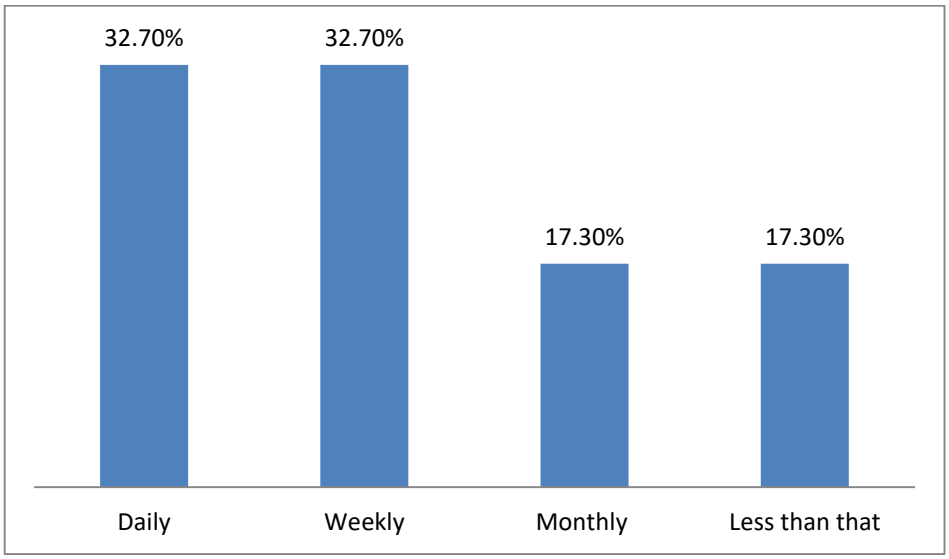


Figure 53: visiting rate of users who couldn't determine if the Martyrs' Square comprised any activities to increase the environmental awareness or not

Source: the researcher based on questionnaire

On the other hand, participants expressed their views about the number and the distribution of the garbage bins in the Martyrs' Square, and they had a clear tendency towards the insufficiency of these bins in the Martyrs' Square. Figure 54 shows that the "few" option earned the highest percentage in the users sample with 52.8 % while the highest percentage in the municipality sample was for the "average" option; which made the users' trend towards the insufficiency of the garbage bins in the Martyrs' Square way stronger and more distinct than that of the municipality.

In addition, 80.8 % of the users' sample were able to confirm that the garbage bins in the Martyrs' Square didn't embrace any environmental messages such as waste sorting or recycling which goes in accord with the reality of the Martyrs' Square during the research period 2016/2017, see Figure 55, whereas this percentage didn't exceed 66.7 % in the municipal sample and surprisingly 13.3 % of the

municipality participants approved that the garbage bins in the Martyrs' Square comprised environmental messages as displayed in Figure 56.

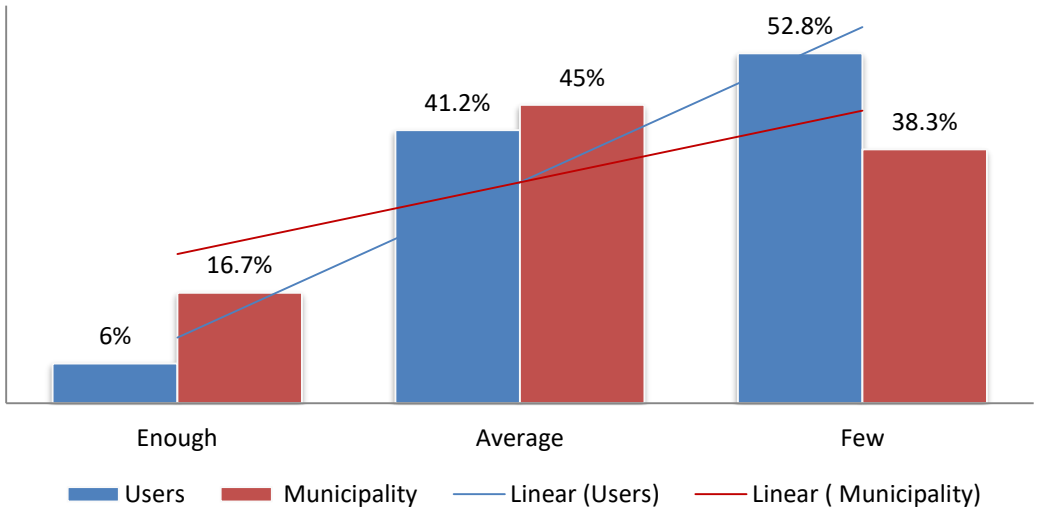


Figure 54: garbage bins number and distribution in the Martyrs' Square (proportions + linear trends) according to users and municipality staff

Source: the researcher based on questionnaire

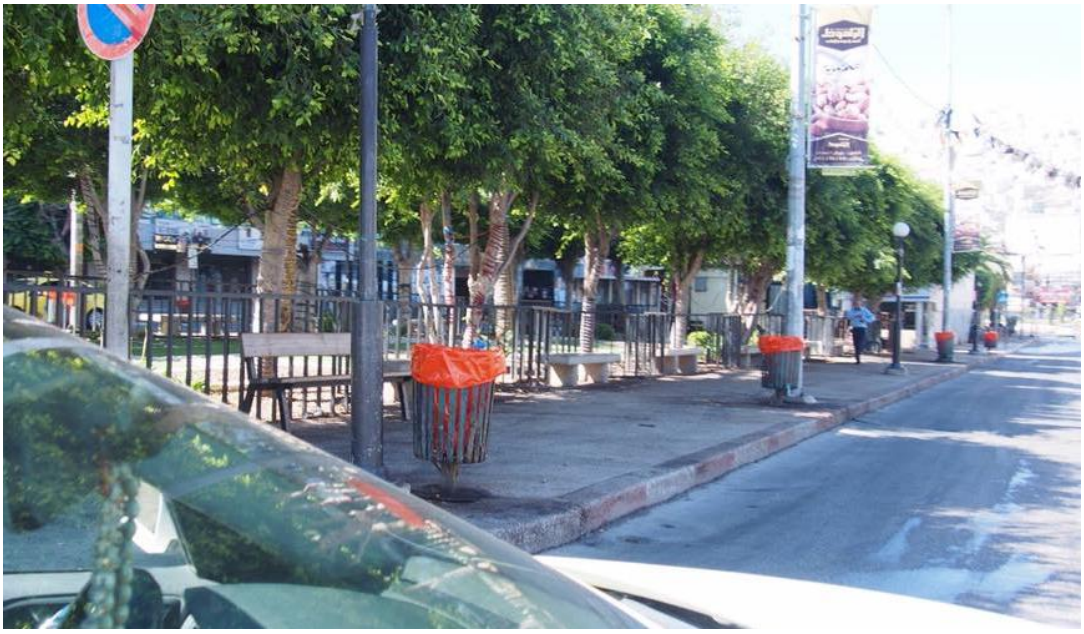


Figure 55: regular garbage bins in the Martyrs' Square

Source: (Public Relations Department - Nablus municipality, 2017)

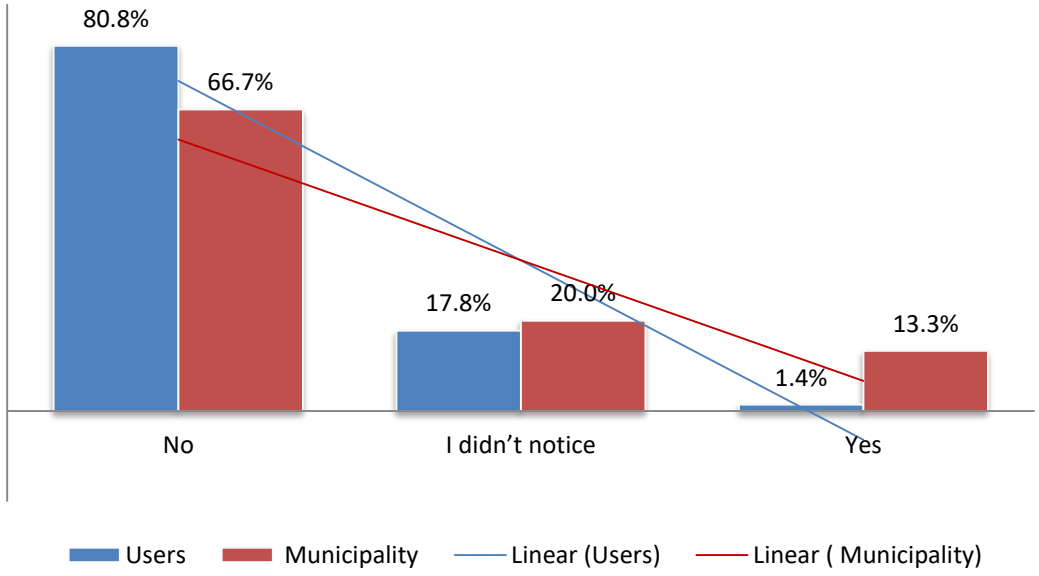


Figure 56: participants' answers when asked if the garbage bins in the Martyrs' Square comprised any environmental messages (proportions + linear trends)

Source: the researcher based on questionnaire

The final part in the environmental section was dedicated to open the door for the participants to share their ideas and suggestions simply and freely regarding developing the Martyrs' Square and the contribution to preserving the environment. This part was deliberately set optional, yet, the response rate in this part was optimistically promising; since gratefully 143 out of 500 users and 30 out of 60 municipal employees had made conscious and spontaneous statements on several pressing topics which will be presented next sorted by subject.

The main topic that headed the users' responses was dealing with waste (53 % of respondents); with reference to how grumble and discontent they feel about the accumulation of waste in the Martyrs' Square where a number of solutions and ideas were proposed to handle this problem. The second main topic addressed by users was the traffic in the Martyrs' Square (24 % of respondents), followed by promoting community awareness (15 %), greening the square (9 %) and using

renewable energy alternatives (6 %) as well as other miscellaneous ideas such as: installation of more benches and shadings and organizing street vendors.

The most prominent ideas put forward by users to keep the Martyrs' Square clean and reduce waste accumulation were as follows in descending order:

- Imposing fines on shops and users who dump waste. (22 % of respondents)
- Placement of banners and signs to raise awareness. (15 % of respondents)
- Increasing the number of garbage bins and redistribution of them. (13 % of respondents)
- Use of waste separation and recycling containers. (13 % of respondents)
- Creating a special police unit to follow up the square and monitor the transgressors via cameras. (6 % of respondents)
- Cleaning the area intensively by increasing the number of workers, cleaning machines and passing a nicely smelled garbage collecting vehicle periodically. (5 % of respondents)
- Removal of the large waste containers away from the Martyrs' Square. (4 % of respondents)
- Use of garbage bins with attractive and creative shapes and colors especially for children. (4 % of respondents)
- The presence of volunteers in the Martyrs' Square to guide and alert users. (2.5 % of respondents)

Under the theme of traffic in the Martyrs' Square, these were the main proposed ideas by users:

- Prevention of vehicular access and allocate the Martyrs' Square for pedestrians. (11 % of respondents)

- Facilitation of the movement of pedestrians; by extension and shading of sidewalks to as well as preparing them to suit people with special needs. (5 % of respondents)

A quite noticeable similarity was observed between the ideas suggested by the Martyrs' Square users and those of the municipality employees to help develop the Martyrs' Square and contribute to preserving the environment, nonetheless, for the municipality share of proposing their ideas, the first main topic put forward was traffic by 43 % of respondents; including:

- Prevention of vehicular access and allocate the Martyrs' Square for pedestrians. (33 % of respondents)
- Facilitation of the movement of pedestrians and provide the necessary services for them. (13 % of respondents)

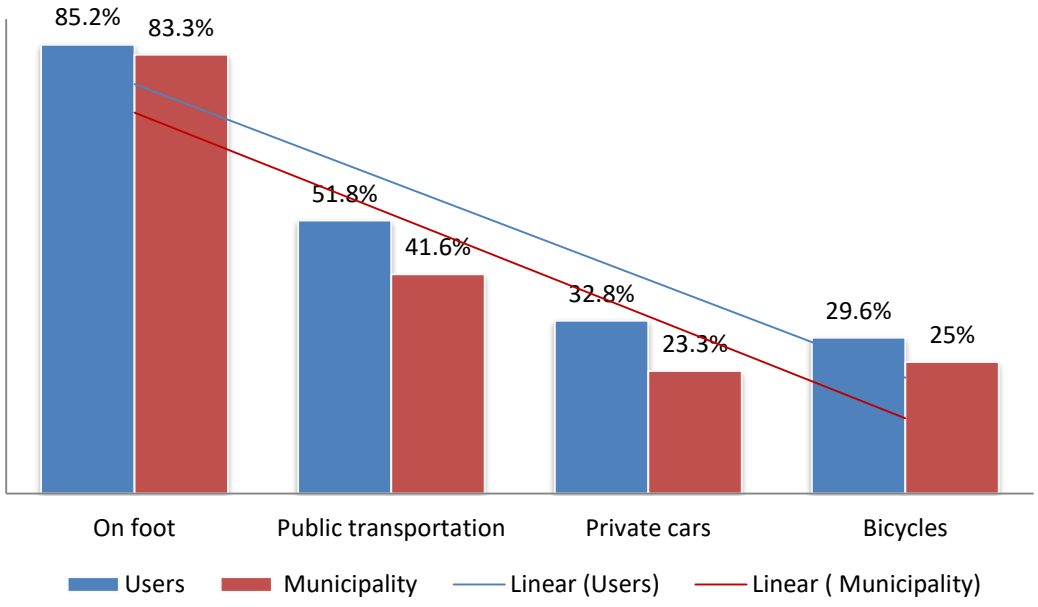
The second topic in terms of municipality staff was handling waste accumulation in the Martyrs' Square (by 37 % of respondents); in which these suggestions were presented:

- Raising community awareness through campaigns, posters and banners. (27 % of respondents)
- Cleaning the area intensively by increasing the number of workers, unloading containers several times during the day and increasing the number of garbage bins. (17 % of respondents)
- Use of waste separation and recycling containers.

Some ideas were suggested by the municipal respondents within a variety of topics such as: greening the square (17 %), installation of more benches and shadings, organizing street vendors and few other proposals.

4.2.3. The social section

As in the economic and the environmental sections, the social section which included the largest share of indicators, each of which was covered up by a variety of questions, starting with the first indicator that concerned the space role in improving mobility through multi-modal connectivity such as: auto, transit, bike, and pedestrian. At first, participants were asked to choose all possible means of transportation that could be utilized in the Martyrs' Square, and results presented in Figure 57 showed almost identical proportions in the users and the municipal sample for each suggested mean of transportation with the option of walking on foot taking the lead of the group, followed by the public transportation, the private cars and bikes respectively. However, in Nablus city in general the public transportation covers 30 % of transport modes including public buses and cars and the other 70 % of transport modes are occupied by private transportation including private buses, cars and motor bikes.[1]



[1] (SEAP consultants, CES-MED experts, 2016)

Figure 57: possible means of transportation in the Martyrs' Square (proportions + linear trends) according to users and municipality staff

Source: the researcher based on questionnaire

Although results showed that according to participants all suggested means of transportation could be used in the Martyrs' Square at varying proportions, when asked to pick their favorite mean of transportation to be used in the Martyrs' Square in its current status, the vast majority of participants in both samples overwhelmingly headed for the option of walking on foot as presented in Figure 58.

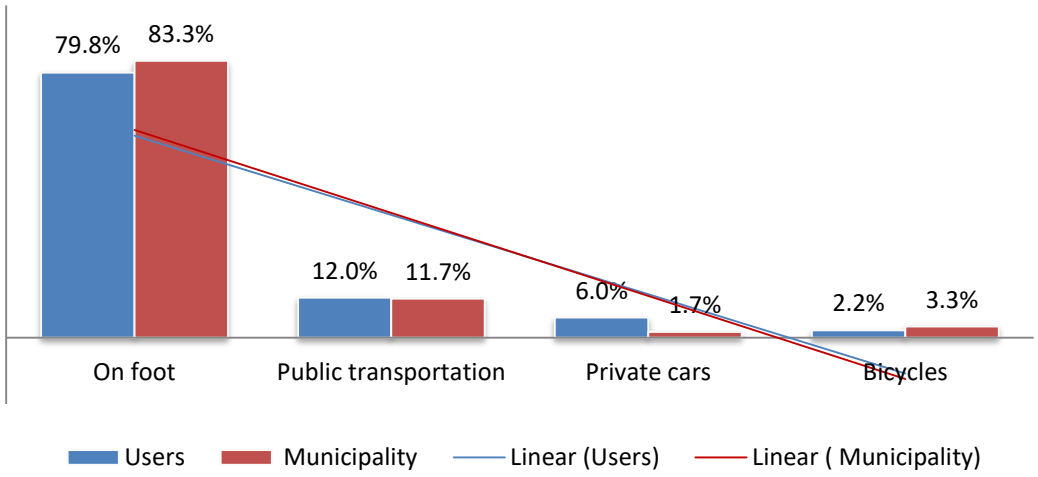


Figure 58: preferable mean of transportation to be used in the Martyrs' Square in its current status (proportions + linear trends) according to users and municipality staff

Source: the researcher based on questionnaire

On another level, considerable portion of participants in both samples admitted that their presence in the Martyrs' Square facilitated their access to the public transportation with a more distinct trend in the municipal side; see Figure 59 for proportions and linear trends.

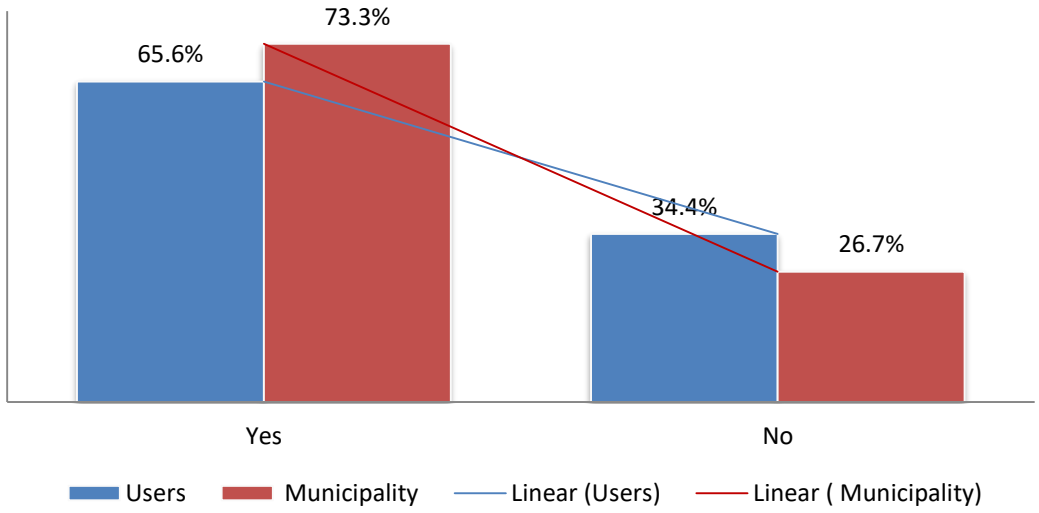


Figure 59: participants' answers when asked if their presence in the Martyrs' Square facilitated their access to public transportation (proportions + linear trends)

Source: the researcher based on questionnaire

Participants were also asked to describe their behavior towards passage from the Martyrs' Square while traveling from one area to another in the city of Nablus and results which are displayed in Figure 60 indicate that in the municipality sample the proportion of those who generally prefer to pass through the Martyrs' Square is quite insignificant in comparison with those who generally avoid it; especially, that a considerable proportion of participants in both samples admitted that they don't willingly like to pass through the square but they are forced to do so besides the last group of participants who expressed their conditional preference of passing through the Martyrs' Square excluding peak hours.

The same trend appears in the results of the users sample but less sharply; since the variance between the percentages of users who generally prefer passing from Martyrs' Square and those who generally avoid it is not as significant as in the municipality sample.

Although the results of the users sample were less negatively distributed than that of the municipality, both samples indicated a general tendency towards avoiding willingly passage from the Martyrs' Square, of which case requires more attention and investigation.

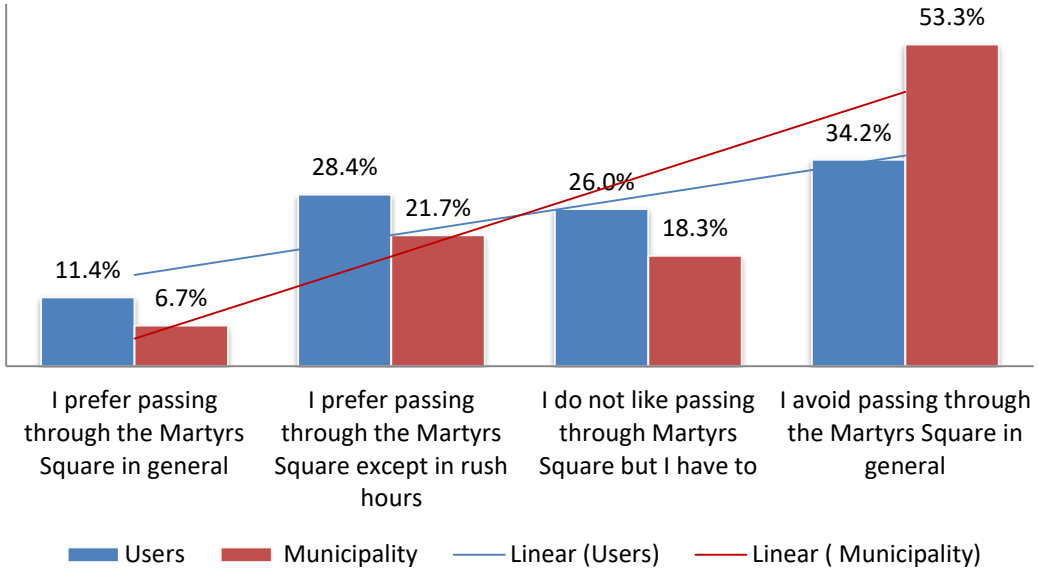


Figure 60: behavior of participants in terms of passing through the Martyrs' Square (proportions + linear trends)

Source: the researcher based on questionnaire

The second social indicator to be discussed investigated the space in terms of providing relief from urban congestion and stressors such as social confrontation, noise pollution, and air pollution. Participants were asked about several relevant issues starting with their perception of the Martyrs' Square with regard to traffic congestion; results showed that the Martyrs' Square is evidently perceived as congested with both vehicles and pedestrians. See Figure 61. Almost 98 % of users and 97 % of municipality staff endorsed that the square is crowded with vehicles, followed by 81 % of users and 73.3 % of municipality staff who agreed that the square is crowded with pedestrians whereas there were barely any participants who

could perceive the Martyrs' Square as uncrowded; which can be associated with avoiding passage through it by a considerable proportion of participants as presented in the 1st social indicator results and discussion.

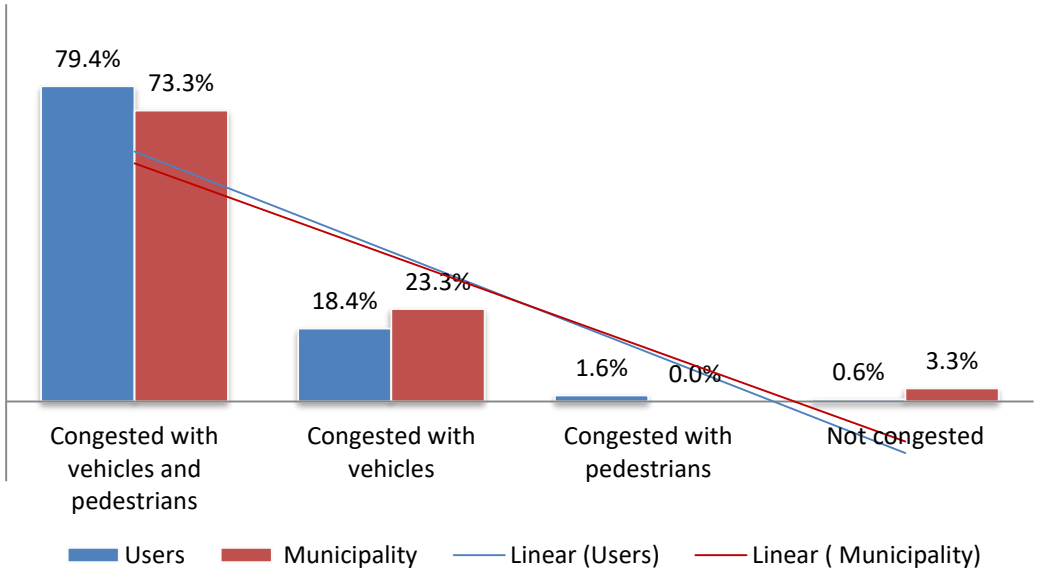


Figure 61: the Martyrs' Square condition in terms of traffic congestion (proportions + linear trends) according to users and municipality staff

Source: the researcher based on questionnaire

Objectively, as a converging point of major and minor roads, the Martyrs' Square performs as an urban node where not only streets meet, but also a variety of uses and functions gather in the vicinity of the square. Figure 62 shows the traffic direction in the Martyrs' Square and in the adjacent streets according to the new traffic plan which has been implemented in October 2016 in an effort to ease the traffic congestion in the square area, since the city has been witnessing serious traffic jams on a daily basis especially in peak hours. The new plan comprised changing the traffic direction in some streets nearby the Martyrs' Square such as

the Omar Al-Mukhtar Street.[1] [2] However, after experimenting with new traffic plan for two months now it is noticed that the traffic congestion hasn't been controlled or eased yet; drivers even believe that the recent traffic alterations have led the situation to get more complicated. Hence, this plan is still under probation and some modifications may take place in the future.[3]

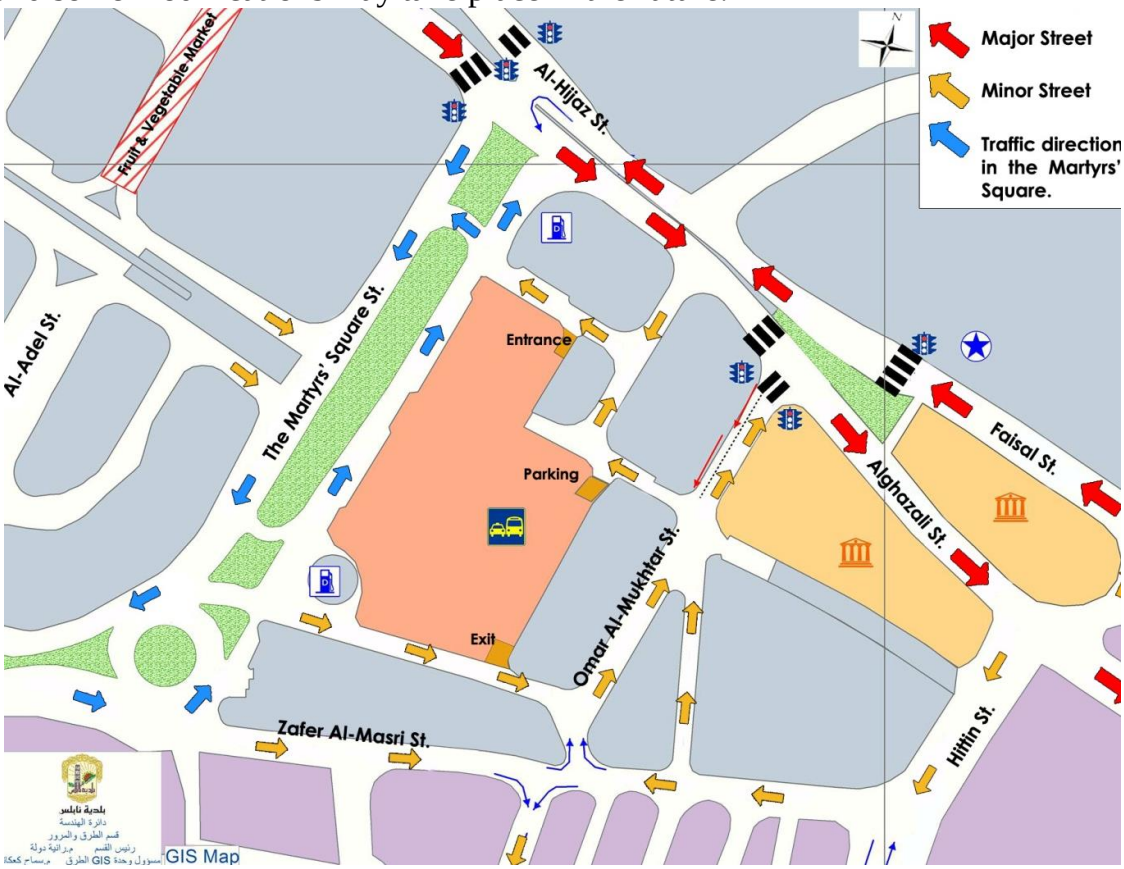


Figure 62: Traffic direction in the Martyrs' Square and the major and minor streets in the area according to the new traffic plan 2016

Source: after (Traffic Department - Nablus municipality, 2016)

A computer simulation was conducted using Synchro traffic simulation program to measure out the performance of Nablus CBD network during the peak hour and the results are presented in Table 12 including: traffic volume, the average delay

[1] (Public Relations Department - Nablus municipality, 2016)
[2] (Ma'an News Agency, 2016)
[3] (Raya.ps, 2016)

of each vehicle, the intersection capacity utilization, level of service, the amount of fuel consumed and the fuel economy in selected streets in Nablus CBD including the Martyrs' Square and surrounding streets. The displayed data shows that the Martyrs' Square north and south streets – depending on traffic direction – have a traffic volume that consumes about half of their capacities which are positively associated with an (A) level of service and a comparatively more economical fuel consumption. On the contrary, the north border of the Martyrs' Square (Faisal and Al-Ghazali) streets both witness high traffic volumes that utilize 0.85 of Faisal street capacity and exceed the capacity of Al-Ghazali street with 1.28 ICU; and accordingly, these streets are associated with (E) and (H) levels of service respectively with high fuel consumption and low economical fuel value. On the other hand, when compared to Faisal and Al-Ghazali streets, the south border of the Martyrs' Square (Zafer Al-Masri street) experiences less traffic volume that consumes 0.63 of its capacity with a (C) level of service and a less fuel consumption. While reviewing the displayed measures, one can notice that Al-Ghazali street has the highest ICU and consequently the worst level of service among the selected streets in the table, Omar Al-Mukhtar street witnesses the highest delay and highest fuel consumption with the least economy.

A comparative study was carried out in 2004 by Khaled Al-Sahili regarding the impact of the traffic circulation plan for Nablus city network on quality of life; in which the existed traffic conditions in Nablus CBD were simulated and it was found that the fuel consumption economy for the CBD network was 2.48 km/liter.[1] A quick comparison between Nablus CBD fuel consumption economy in 2004 and

[1] (Al-Sahili, 2004)

in 2017 - which is 1.5 km/liter according to Table 12 – shows that through these years Nablus CBD network in general has witnessed certain traffic circumstances that led to less economical fuel consumption which is associated with higher delay and simply more congested network.

Table 12: summary of CBD Network Measures of Performance during the peak hour

Source: (Traffic Department - Nablus municipality, 2017)

Street Name	Traffic Volume (vehicles/Hr)	Number of Lanes	Total Delay (hours)	Avg. Delay (sec)	ICU	LOS	Fuel Consumed (liter)	Fuel Economy (km/liter)
Faisal St.	2690	3	25	33.46	0.85	E	162	4.0
Al-Ghazali St.	2900	3	15	18.62	1.28	H	151	5.8
Zafer Al-Masri St.	1275	2	-	-	0.63	C	23	7.2
Martyrs' Square St. (north)	630	2	-	-	0.51	A	26	8.5
Martyrs' Square St. (south)	490	2	-	-	0.52	A	11	10.3
Gharnata St.	1270	2	-	-	0.91	E	17	7.0
Omar Al-Mukhtar St.	880	2	56	229.1	-	E	175	0.4
Hittin St.	300	2	-	-	0.66	C	6	10.3
CBD Network	-	-	2850	-	-	-	9624	1.5

ICU: Intersection Capacity Utilization
LOS: Level of Service (A: best, E:medium, I: worst)

As for noise pollution in the Martyrs' Square, results showed that the largest proportion of participants in both samples (81.4 % of users and 88.3 % of municipality staff) found the square to be noisy most of the time as displayed in Figure 63. When asked to identify the possible causes of noise in the Martyrs' Square from their point of view; vehicles received the largest percentage of votes (88.2 % by users and 86.6 % by municipality staff), peddlers came in the second

place, followed by pedestrians, shops, motor cycles and maintenance work respectively. See Figure 64 for details. These results reflect almost the same trend in the views of the users and the municipality samples; however, “peddlers” option gained a significantly higher percentage in the municipality sample than that in the users’.

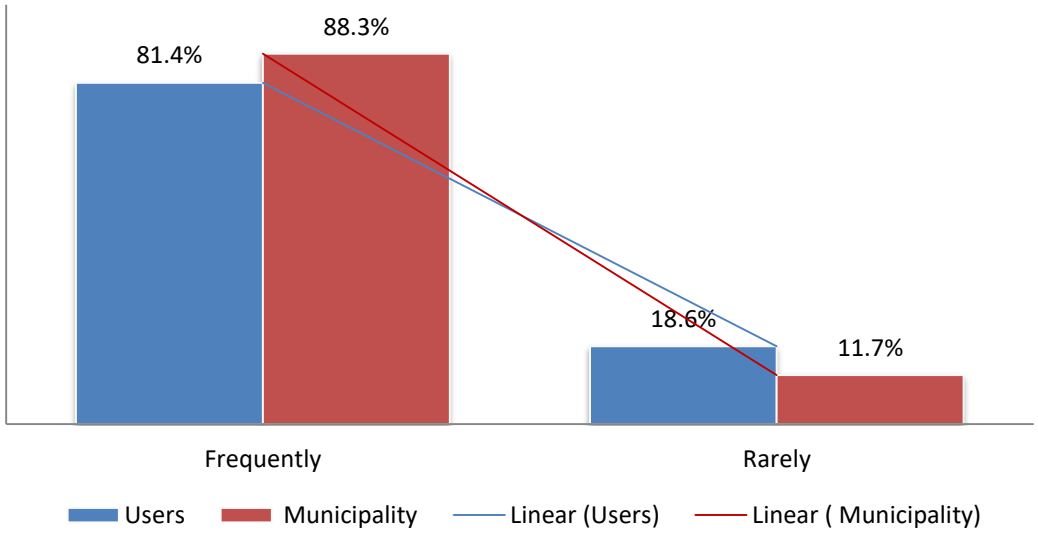


Figure 63: how often participants felt the noise in the Martyrs’ Square (proportions + linear trends) according to users and municipality staff

Source: the researcher based on questionnaire

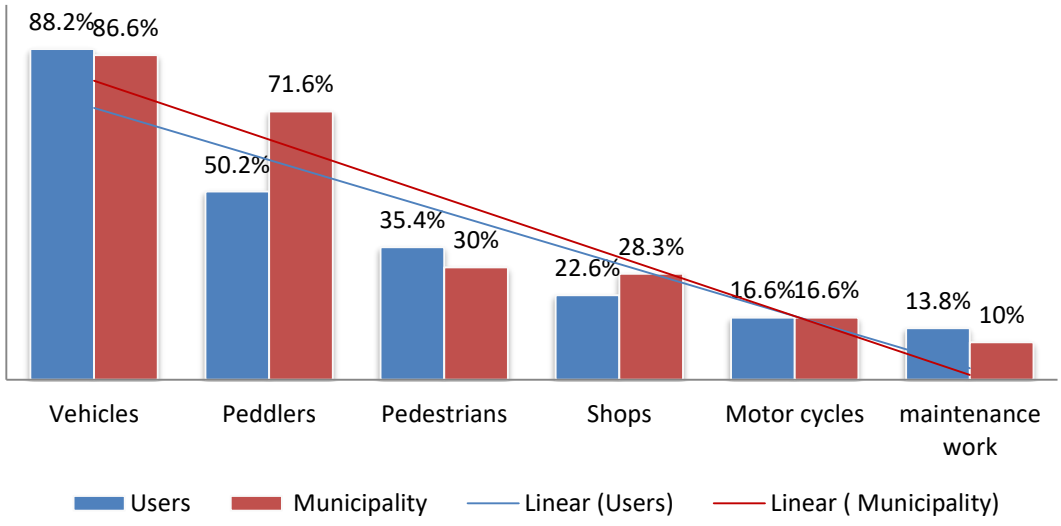


Figure 64: causes of noise in the Martyrs' Square according to participants (proportions + linear trends)

Source: the researcher based on questionnaire

On the objective side, regrettably no scientific researches have been conducted on soundscape[1] [2] in the Palestinian public spaces, not to mention, the Martyrs' Square. A general study of noise pollution was held in the city of Nablus in 2000 by Issam Abdel-Raziq, through which the equivalent sound level was measured for 50 locations spread over the city. The obtained sound level was 68 dB in average, and the values for 58% of the locations were exceeding 65 dB. These results were obviously higher than the adopted international standards; upon which researcher Abdel-Raziq considered the area of Nablus as an unacceptable living area and required severe reconstruction and modification plans.[3]

Urban sounds are a characteristic part of a city's identity, and they all contribute to the whole city image and how people would perceive it.[4] In public spaces, particularly, recent studies have shown that the acoustic environment plays an important role in overall comfort, [5] and that noise is just one element influencing perceptions of whether a space is tranquil or peaceful.[6] All these facts plus the results of the questionnaire which showed that the vast majority of participants in both samples found the Martyrs' Square to be noisy most of the time, led the

[1] Soundscape: (by analogy with landscape), is a term coined by Schafer and refers to our sonic environment, the ever-present array of sounds with which we all live.
[2] (Schafer, 1993)
[3] (Abdel-Raziq, 2000)
[4] (Abu-Lughod, 1987)
[5] (Mei Zhang, Jian Kang, 2007)
[6] (Mary Stevens, Frances Bellord, 2010)

researcher to take in situ measurements and investigate thoroughly the actual sound levels in the space.

The acoustic measurements in the Martyrs' Square were taken in summer (July - 2017) using a 31-band Real Time Spectrum Analyzer with Built-in calibrated measurement microphone (PAA3 by PHONIC)[1] according to the following protocol:

- The measuring process was conducted during two representative days: Thursday as a regular working day; where the city witnesses a heavy citizen movement from early morning till night since private and the public departments and institutions are open including schools, universities and shops besides the arrival of visitors from outside the city, not to mention, that Thursday is the last working day in the week before the weekend holiday. The second measuring day was Friday as a holiday where the city experiences the minimal movement during the day as the private and the public departments and institutions close their doors, and shops generally remain closed except for some which often open from the afternoon and on. In the evening, however, the citizens' movement normally increases as they go shopping and hiking.
- Measurements were taken three times each day: (8:00 – 8:30) during the morning rush hour, (2:00 – 2:30) during the afternoon rush hour and (7:00 – 7:30) at the evening. Each sound measuring session was accompanied with taking instantaneous photos of the space to capture the current

[1] (Phonic, 2017)

atmosphere. See Figure 66, Figure 67, Figure 68, Figure 69, Figure 70, and Figure 71.

- During each measuring session, measurements were taken at three locations (A, B and C) which were located on the center line along the Martyrs' Square as displayed in Figure 65.
- During the measuring session, at each location 10 measurements of sound level were taken using (A-weighting) filter[1] - seconds between successive readings in each location to minimize the variance as no continuous measuring device was available - upon which the equivalent sound level (Leq) was calculated. In other words, each measurement session output 3 equivalent sound levels distributed along the Martyrs' Square.

This sound measuring protocol made it possible to make several comparisons at various levels within the space; for example: between one location and another in the one session, between one session and another at the one location and a general comparison between the two days whether at certain times or certain locations.

[1] A-weighting filter: is the most frequently used devised filtering to correspond to the varying sensitivity of the human ear to sound over the audible frequency range according to ANSI (American National Standard Institute) and is used for measuring lower sound levels.

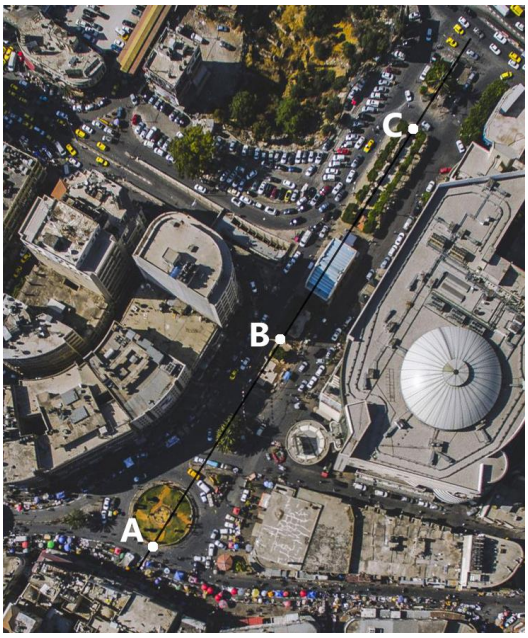


Figure 65: locations at which sound measurements were taken in the Martyrs' Square

Source: the researcher

Equivalent sound levels (Leq) at the three locations during the three measuring sessions are displayed in Table 13 for Thursday and in Table 14 for Friday. By reviewing these presented readings one can notice the following:

- In five out of six measuring sessions in Thursday and Friday, location (C) had the highest readings compared to (A) and (B) within the same session.
- In four out of six measuring sessions in Thursday and Friday, location (B) had the lowest readings compared to (A) and (C) within the same session.
- The variances between the readings in the three locations during the morning and the afternoon measuring sessions were distinct, while the evening readings were more homogeneous in both Thursday and Friday.
- In Thursday, the highest sound readings were during the afternoon peak hour, followed by the morning peak hour whereas the lowest readings were during the evening measuring session.

- All readings taken during Friday were generally lower than those taken during Thursday.
- In Friday, the readings gradually rose throughout the day; the morning measuring session had the lowest readings whilst the afternoon readings were slightly higher and the highest ones were taken during the evening measuring session.
- When comparing these sound readings with the recommended noise standards – for example the recommended noise standard by the Committee of Noise Pollution Control constituted by The Central Pollution Control Board in India which is 65 dB in commercial areas during day time (6 am - 9 pm)[1] and the noise level limit according to UAE Federal Environment Agency which is 55 – 65 dB (A) in commercial areas and downtown during day time (7 am – 8 pm)[2] - we find that 8 out of 9 of Thursday readings had exceeded that limit, whereas, in Friday, readings generally were within the recommended standard except for one reading in the evening measuring session in location (C).

Table 13: equivalent sound pressure levels in (dB) taken in Thursday - 13 July 2017

Source: the researcher

Location	Leq (8:00 – 8:30) am	Leq (2:00 – 2:30) pm	Leq (7:00 – 7:30) pm
A	67.9	71.1	66.5
B	64.4	66.1	66.6
C	67.3	71.8	66.6

[1] (The Central Pollution Control Board , 2010)

[2] (Environmental Planning and Studies Section (EPSS) - Environment Department, April 2011)

Table 14: equivalent sound pressure levels (dB) taken in Friday - 14 July 2017

Source: the researcher

Location	L_{eq} (8:00 – 8:30) am	L_{eq} (2:00 – 2:30) pm	L_{eq} (7:00 – 7:30) pm
A	59.8	60.4	64.8
B	57.9	63	64.1
C	61.2	64.2	65.6

Figure 66: shots of the Martyrs' Square: Thursday (8:00 – 8:30) am

Source: the researcher

Figure 67: shots of the Martyrs' Square: Thursday (2:00 – 2:30) pm

Source: the researcher

Figure 68: shots of the Martyrs' Square: Thursday (7:00 – 7:30) pm

Source: the researcher

Figure 69: shots of the Martyrs' Square: Friday (8:00 – 8:30) am

Source: the researcher

Figure 70: shots of the Martyrs' Square: Friday (2:00 – 2:30) pm

Source: the researcher

Figure 71: shots of the Martyrs' Square: Friday (7:00 – 7:30) pm

Source: the researcher

Discussion:

Location (C) which was associated with the highest acoustic readings, was the nearest of the three to the north border of the Martyrs' Square (Faisal and Al-Ghazali streets) which as discussed earlier witness the heaviest traffic volume during peak hours (see Table 12). The second highest readings were mostly taken in location (A) which is the nearest location to the south border of the Martyrs' Square (Zafer Al-Masri street) which also experiences the second heaviest traffic volume within the Martyrs' Square area.

Location (B) which generally had the lowest acoustic readings was almost located in the middle of the Martyrs' Square; where the streets had considerably less traffic volume (see Table 12) and also at the farthest point from Faisal, Al-Ghazali and Zafer Al-Masri streets where the heavy traffic volume usually takes place. Besides the fact that location (B) was set within the median garden whose trees had played an important role in reducing the value of the acoustic readings.

The heavy traffic volume in Faisal, Al-Ghazali and Zafer Al-Masri streets during the peak hours was also the reason of the distinct variance between the readings of the three locations during the morning and the afternoon measuring sessions, and the relative decrease of that traffic volume in these streets during evening time helped making the acoustic readings more homogeneous throughout the Martyrs' Square.

Due to active citizens' movement and the heavy traffic particularly during the peak hours, the acoustic readings were higher in the morning and the afternoon measuring sessions in Thursday compared to the evening one where the traffic volume was distinctively lower – especially in Faisal, Al-Ghazali and Zafer Al-

Masri streets - and accompanied with more people's conversations and birds singing. Whereas for Friday, as described earlier, the Martyrs' Square witnesses minimal citizen and traffic movement during the day except for some shops that often open from the afternoon and on, which explains the low acoustic readings during the morning and the afternoon measuring sessions where traffic volume was minimal and birds singing was more audible. In Friday evening, however, the citizens' movement and the traffic volume normally increase the reason why the readings during the evening measuring session were comparatively the highest throughout the day.

In terms of security in the Martyrs' Square, the larger proportion of participants in both samples expressed their sense of safety during their presence in the square, although the percentage of those who rarely felt safe while using the Martyrs' Square was noteworthy as Figure 72 shows. In an earlier study by Firas Dweikat in 2009, the Martyrs' Square was partially investigated and the results of his study clearly revealed a low sense of security among participants while using the square.[1] Comparing the results of this research with those by Dweikat study reveals an improvement in the level of users' sense of security while using the Martyrs' Square.

To explore the subject in greater detail, participants were then asked to identify the possible causes of anxiety and insecurity in the Martyrs' Square from their point of view; and the answers of those who rarely felt safe in the Martyrs' Square are presented in Figure 73; according to users sample results were in the following order starting with the vehicles as the main cause, frequent brawls in the second

[1] (Dweikat, 2009)

place, harassment from others came thirdly, followed by the lack of cleanliness while the lower portions went for the square inconvenience for special needed people, the insufficient night lighting and motor cycles. As for municipality sample the frequent brawls topped the list with 70.8 % of votes, followed by vehicles, harassment from others and lack of cleanliness, the insufficient lighting came next and the last percentage went for the square inconvenience for special needed people and motor cycles.

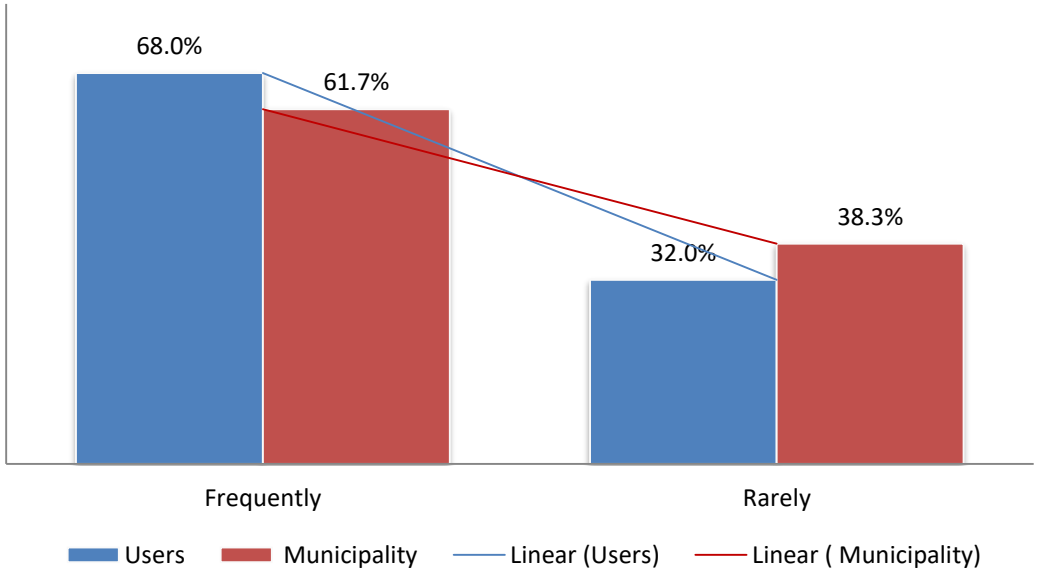


Figure 72: how often participants felt safe in the Martyrs' Square (proportions + linear trends) according to users and municipality staff

Source: the researcher based on questionnaire

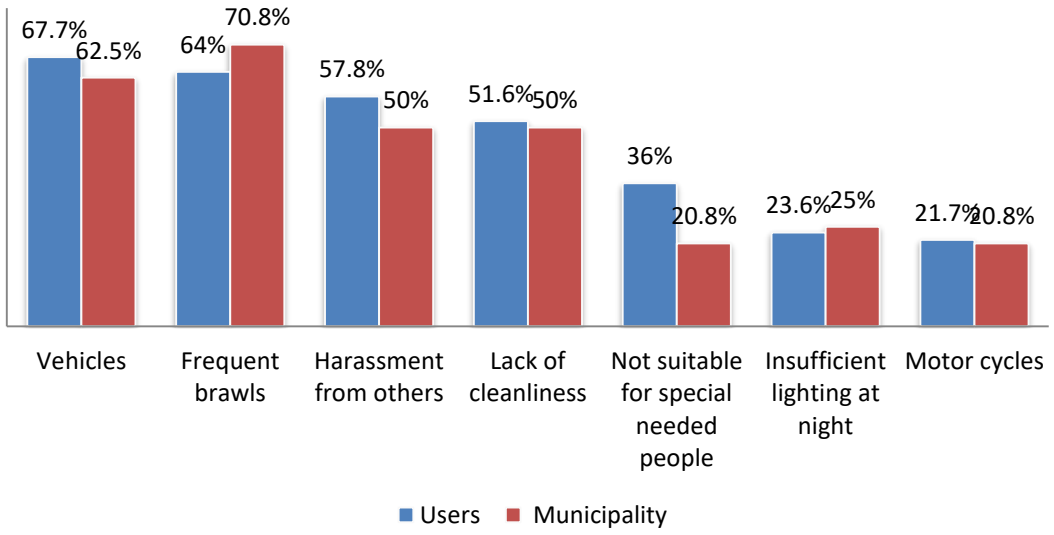


Figure 73: causes of anxiety and insecurity in the Martyrs' Square according to participants

Source: the researcher based on questionnaire

With regard to vehicles as a cause of anxiety and insecurity, Nablus in general occupies a high level among Palestinian Governorates in terms of traffic crash frequency and rate.[1] Specifically, actual statistics support participants' views regarding vehicles; Figure 74 displays the distribution of traffic accidents in the city of Nablus by which one can clearly distinguish that the Martyrs' Square area is located in an area where car accidents occur in a heavy and frequent manner. According to Qash this condition is related to the heavy traffic in the city center resulting from the high density population and the concentration of institutions and activities in the area in conjunction with the narrow streets, the many intersections and the lack of the allocated parking lots.[2]

In a research study (2009 – 2011) of the reality of traffic safety conditions of selected critical locations in the city of Nablus including the Martyrs' Square area

[1] (Palestinian Central Bureau of Statistics, (PCBS), 2012)
[2] (Qash, 2013)

besides other streets and intersections; it was found that 58.3 % of the crashes occurred in the Martyrs' Square involved pedestrians due to their continuous and heavy passing through the square.[1] During 2016 alone, 38 pedestrian accidents occurred within the Martyrs' Square area.[2]

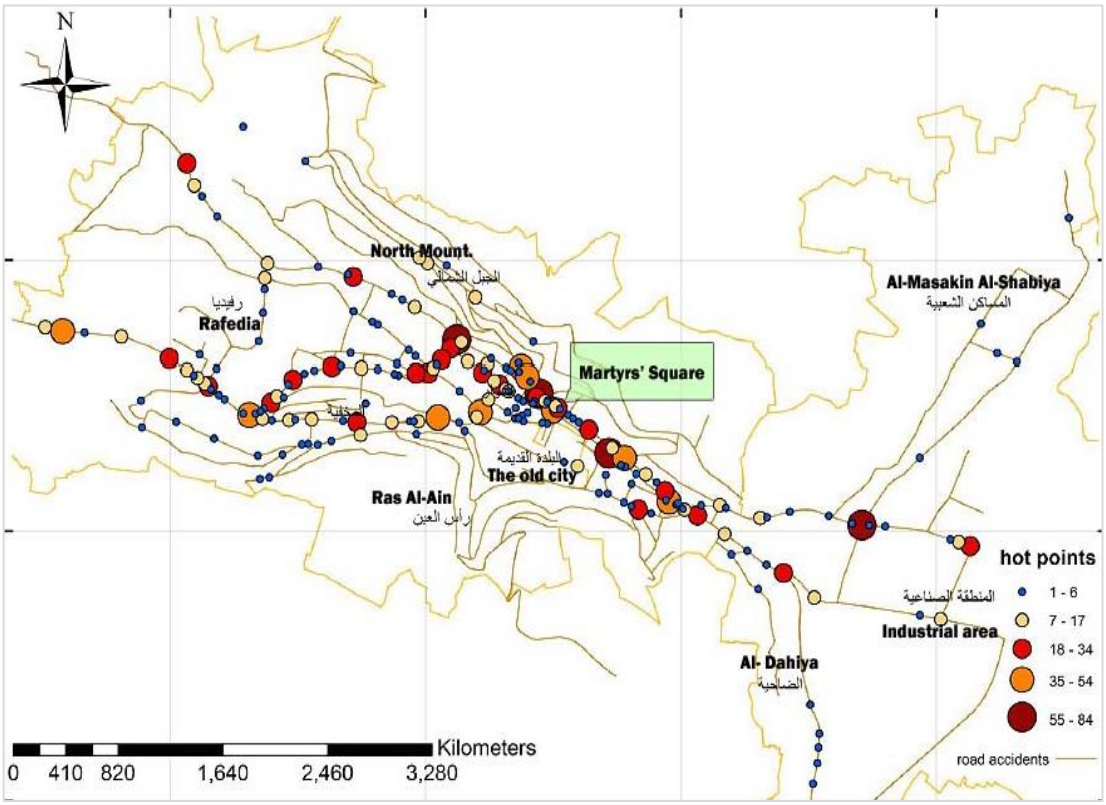


Figure 74: distribution of traffic accidents in the city of Nablus based on 2000 – 2012 statistics

Source: after (Qash, 2013)

With reference to the frequent brawls and the harassment by others, police statistics were requested for the attacks and crimes which had taken place in the Martyrs' Square area through the past few years; and unfortunately, no specified statistics were available regarding the required area since the monitoring of crimes

[1] (Khaled Al-Sahili, Hozaifa Khader, 2016)
[2] (Jaber, 2017)

is carried out in a general manner for the city of Nablus as a whole. However, lieutenant colonel Farahtah, director of public relations in Nablus Police, stated that the number of recorded crimes and harassments in the Martyrs' Square area has decreased significantly over the past years and the square is receiving attention by the police to maintain security and civil peace.[1]

As for the third main cause of anxiety and insecurity in the Martyrs' Square from users' point of view, more details were investigated about the participants who selected "harassment from others" as one of their choices; it was found that 65.6 % of them were females vs. 34.4 % males, 62.6 % aged between 20 – 30 years, and 59 % of them were residents of Nablus city as displayed in Figure 75.

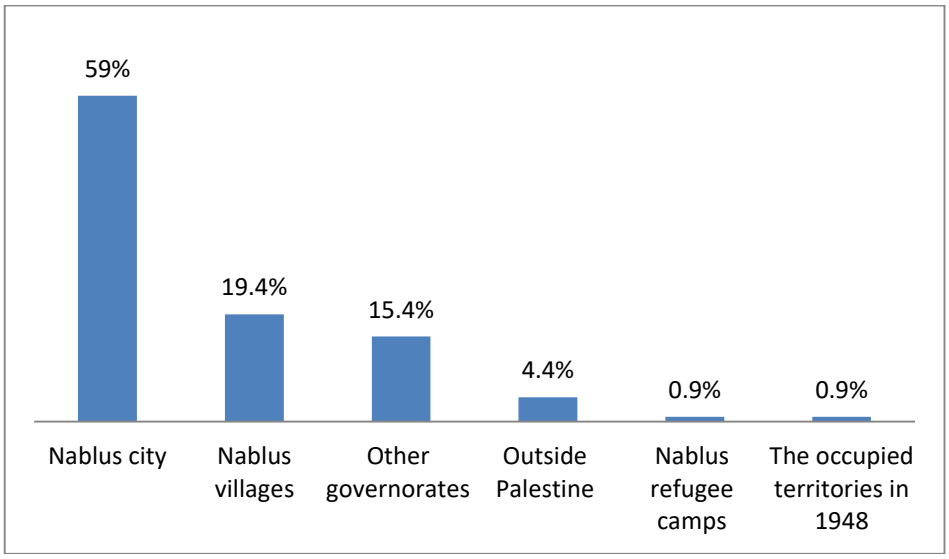


Figure 75: residence place of users who picked the "harassment from others" as one of the causes of insecurity in the Martyrs' Square

Source: the researcher based on questionnaire

Regarding the air pollution, participants were asked about the air quality in the Martyrs' Square whether they generally find it to be fresh and clean or not; and the

[1] (Farahtah, 2017)

results showed that 76.4 % of users participants and 71.7 % of municipality participants rarely found the air in the Martyrs' Square to be fresh or clean as presented in Figure 76. When asked to identify the possible causes of air pollution in the Martyrs' Square from their point of view; the vast majority of participants in both samples agreed that car fumes were the main cause of air pollution with almost 90 % each; which again stresses the severity of the traffic congestion besides the revealed results of the previously discussed questions with regard to noise and insecurity causes in the Martyrs' Square. On the other hand, the second highest percentage in the users sample went for the bad odors whilst the municipality employees tended to pick the dust as the second one as shown in Figure 77.

As a matter of fact the transportation sector is both a significant domain of energy consumption and the second GHG emitter (24% with 94.600 tons CO2 equivalent / year).[1] In Palestine transportation section consumes about 60 % of total imported amounts of fuel, and the average age of the private vehicles in Palestine is 16.5 years which indicates a high fuel consumption especially if these vehicles are not adequately maintained.[2] In 2004 the estimated fuel consumption (economy) for the CBD network in Nablus city was estimated to be 2.48 km/liter and was associated with 0.09 gm/km HC emissions, 6.94 gm/km CO emissions and 0.34 gm/km NO emissions,[3] which according to US light-duty motor vehicle emission standards, had exceeded the limit of CO emissions which was 2.1 gm/km for 1993.[4] When

[1] (SEAP consultants, CES-MED experts, 2016)
[2] (Khaled Al-Sahili, Sameer Abu-Aisha, 2004)
[3] (Al-Sahili, 2004)
[4] (J. G. Calvert, J. B. Heywood, R. F. Sawyer, J. H. Seinfeld, 2 July 1993)

compared to the current estimated fuel consumption (economy) for the CBD network in Nablus city which has dropped to 1.5 Km/Liter (see Table 12), it is expected to be associated with even higher CO, HC, NO emissions at varying degrees according to emission type.

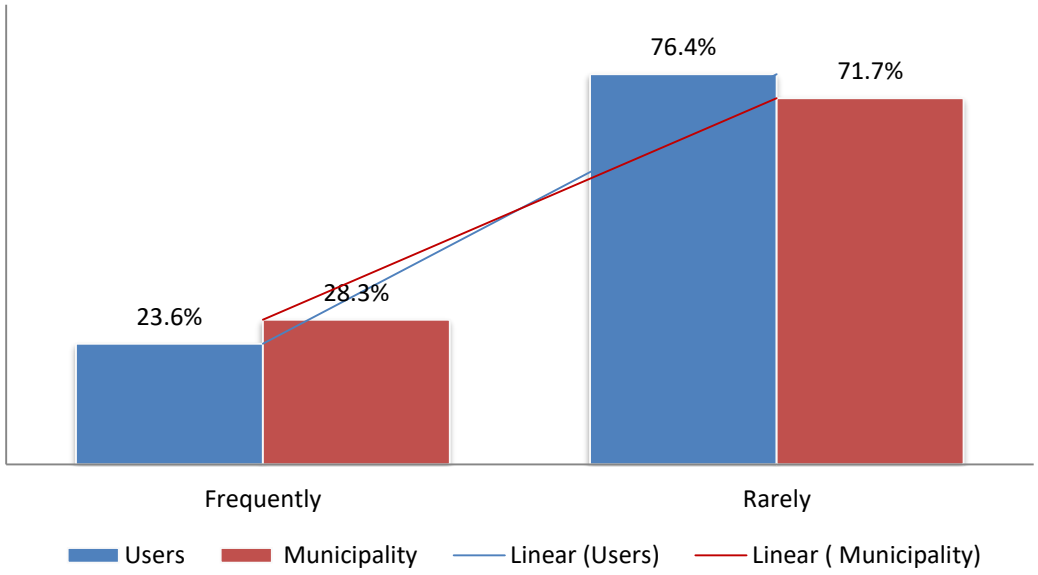


Figure 76: how often participants find air in the Martyrs' Square to be fresh and clean (proportions + linear trends) according to users and municipality staff

Source: the researcher based on questionnaire

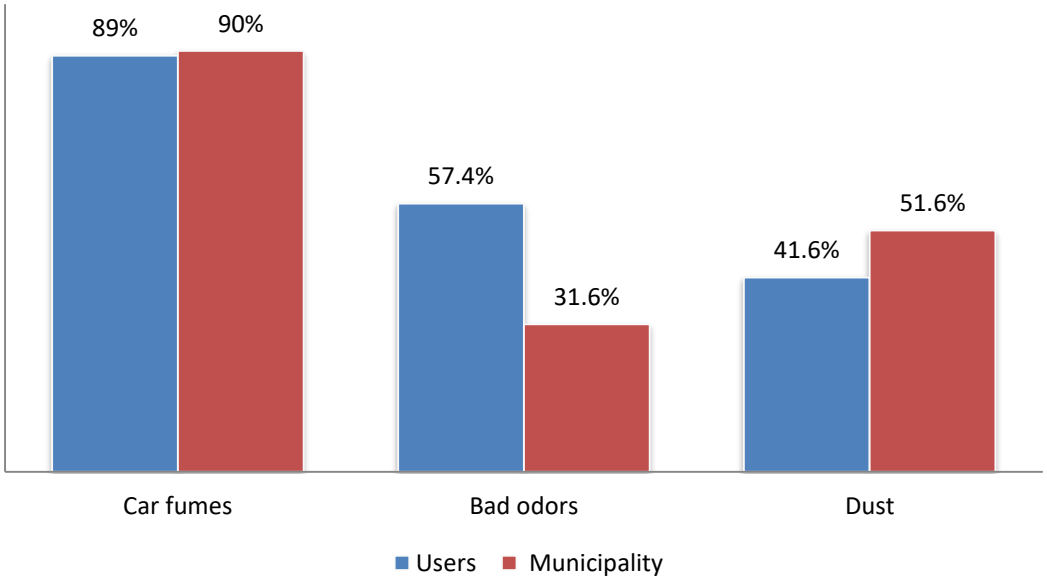


Figure 77: causes of air pollution in the Martyrs' Square according to participants

Source: the researcher based on questionnaire

To investigate the third indicator in the social section which considered the space in terms of providing places for formal and informal social gathering, art, performances, and community or civic events; participants were initially surveyed about the type of activities that usually take place in the Martyrs' Square. Results in both the users and the municipality samples showed that typical activities that usually been held in the Martyrs' Square are for the most part related to protests and sit-ins, martyrs funerals and festivals respectively, and in small percentages about social activities and exhibitions whereas the "artistic performances" was the least fortune choice among all as displayed in Figure 78. These results correspond to the reality of the Martyrs' Square - see Figure 79 - and are confirmed by the statement of the public relation department in Nablus municipality that the activities which are often held in the Martyrs' Square – usually in coordination with Nablus governorate – are linked with sit-ins and solidarity movements in view

of the political reality of the Palestinian society; such as the solidarity movements with the Palestinian prisoners in Israeli jails.[1] See Figure 80.

Participants' views were then probed about how organizing these activities in the Martyrs' Square affected the traffic in the area; and results revealed that the views were similar in both samples since more than 90 % of participants in both the users and the municipality samples agreed that holding these activities in the Martyrs' Square does obstruct the mobility of cars, and more than 78 % of them also believed that these activities obstruct the pedestrian movement as Figure 81 shows. These results indicate that, despite the fact that the Martyrs' Square enfolds multiple activities, there are no designated areas for these activities, which has an influence on traffic within that area.

These results go in line with the results of a previous study conducted in 2008 by Mukarram Abbas which partially investigated the Martyrs' Square from women's point of view where 95.5 % of participated women denied the existence of any allocated area in the Martyrs' Square to practice their social activities.[2]

[1] (Jitan, 2017)
[2] (Abbas, 2008)

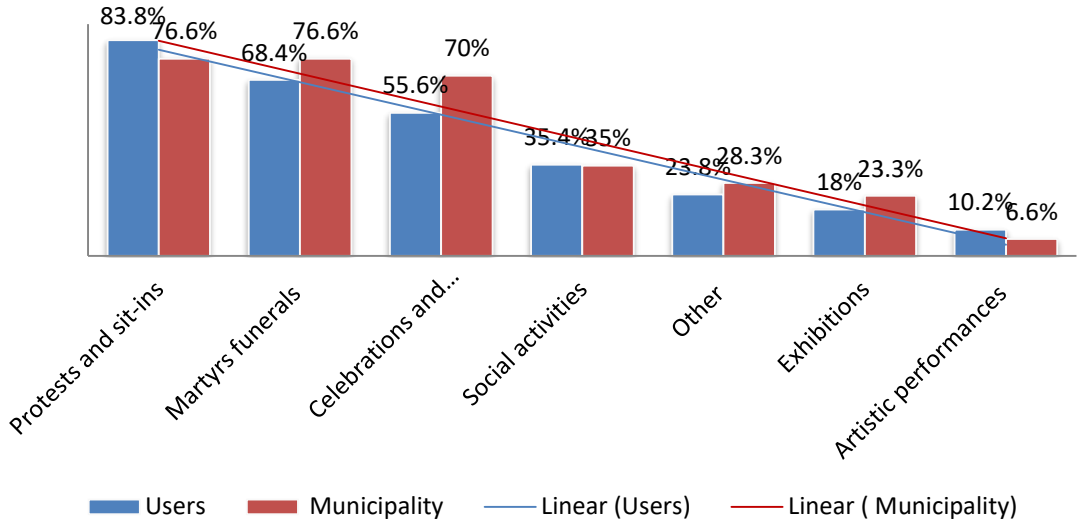


Figure 78: common activities in the Martyrs' Square (proportions + linear trends) according to users and municipality staff

Source: the researcher based on questionnaire

Figure 79: some activities in the Martyrs' Square

Source: after (Google, 2016)

Figure 80: Solidarity tent with Palestinian prisoners in Israeli jails – Martyrs' Square May 2017

Source: the researcher

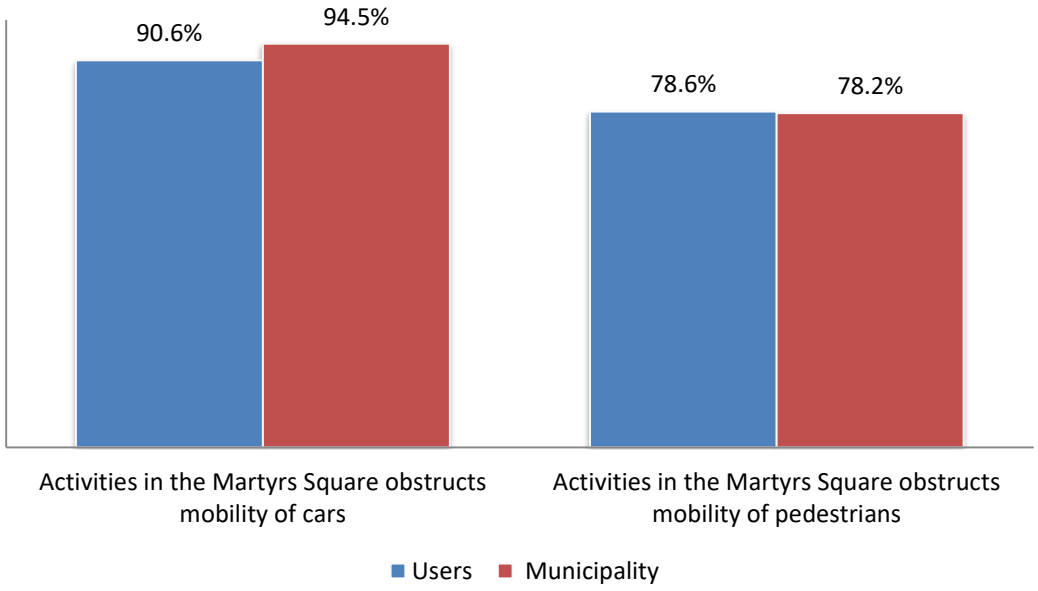


Figure 81: influence of holding activities in the Martyrs' Square on traffic according to users and municipality staff

Source: the researcher based on questionnaire

The forth social indicator deals with the space ability to provide opportunities for individual and group recreation; as mentioned earlier, for this study the focus will be on the passive type of activities due to the limited area and linear geometry of the Martyrs' Square as a street type public space. At first, several activities were suggested and participants were asked to choose what possible ones they could do within the Martyrs Square. According to the results presented in Figure 82 the main activities which participants in the users and the municipality samples could practice within the Martyrs Square were "walking" and "shopping" with almost 70 % of participants' votes in each sample. The second group of activities included "eating", "sitting/rest" and "photography" respectively, whereas, all the other activities received very few votes ranging from 0 % to 8 %.

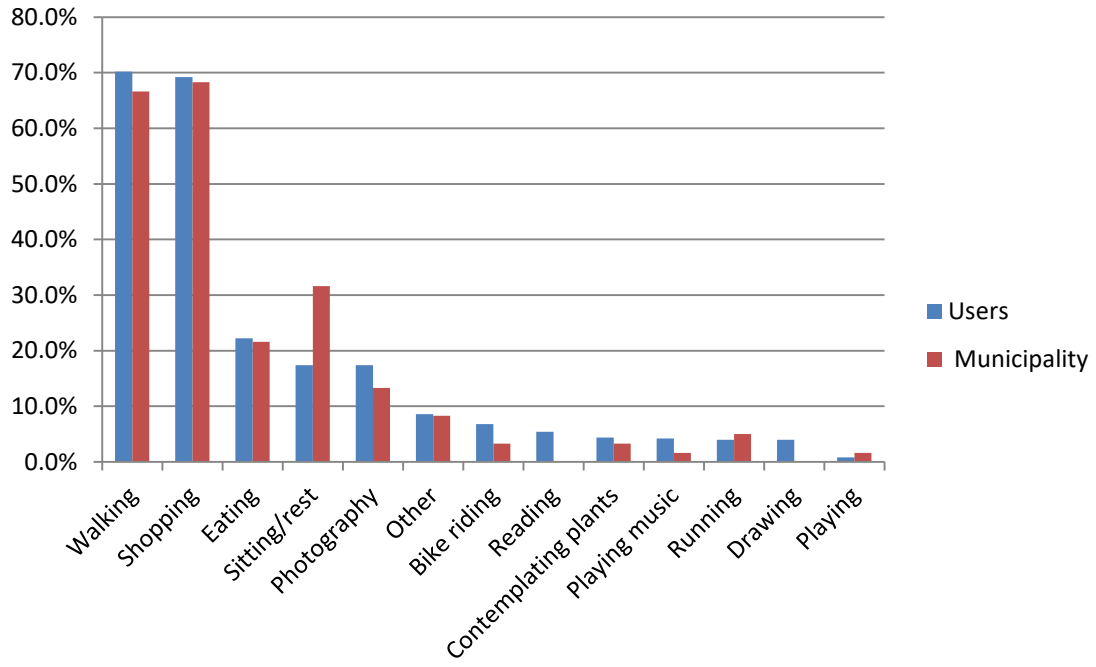


Figure 82: possible activities that participants can practice in the Martyrs' Square according to users and municipality staff

Source: the researcher based on questionnaire

In the same context, participants were asked if they found the Martyrs Square to be equipped with the needed services and facilities to practice the aforementioned activities; and the vast majority of them in both the users and the municipality samples gave a negative response with 86.1 % of users and 83.3 % of the municipality participants. See Figure 83.

Furthermore, they were asked about any facilities they thought the Martyrs Square lacked or needed to develop so that the optimum utilization of the area is achieved; and results revealed that generally all suggested options gained quite higher percentages in the users sample compared to the percentages in the municipality side, the majority of the participants in the users sample agreed upon the need of these utilities in the Martyrs Square: public WCs (77 %), water taps, shading, benches and garbage bins (63.2 %) respectively. The same 5 utilities earned more than 50 % of the municipality participants' votes in the following order: shading (68.3 %), public WCs, benches, water taps and garbage bins (51.6 %). Plantings came next in both samples whilst, the sidewalks, the electric sockets and the lighting had the lower portion of voting in both samples; taking into account that these utilities especially the sidewalks and the electrical sockets according to users participants still comparatively have significant percentages to consider as Figure 84 presents. Note: having the lighting option in bottom of the list is consistent with the users' answers when asked about the lighting level in the Martyrs Square which was convenient by the majority of users and poor by minority.

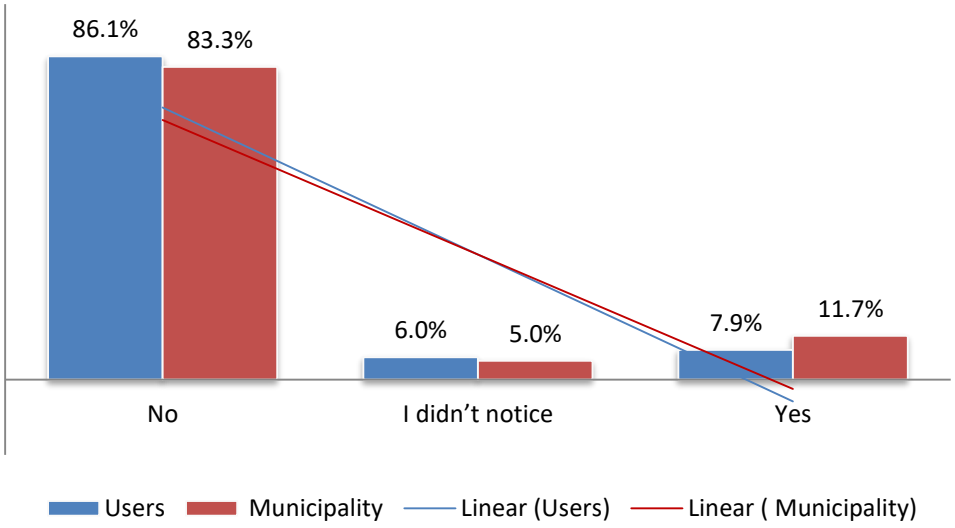


Figure 83: participants' answers when asked if the Martyrs' Square was equipped with the needed services and facilities to practice the mentioned activities (proportions + linear trends)

Source: the researcher based on questionnaire

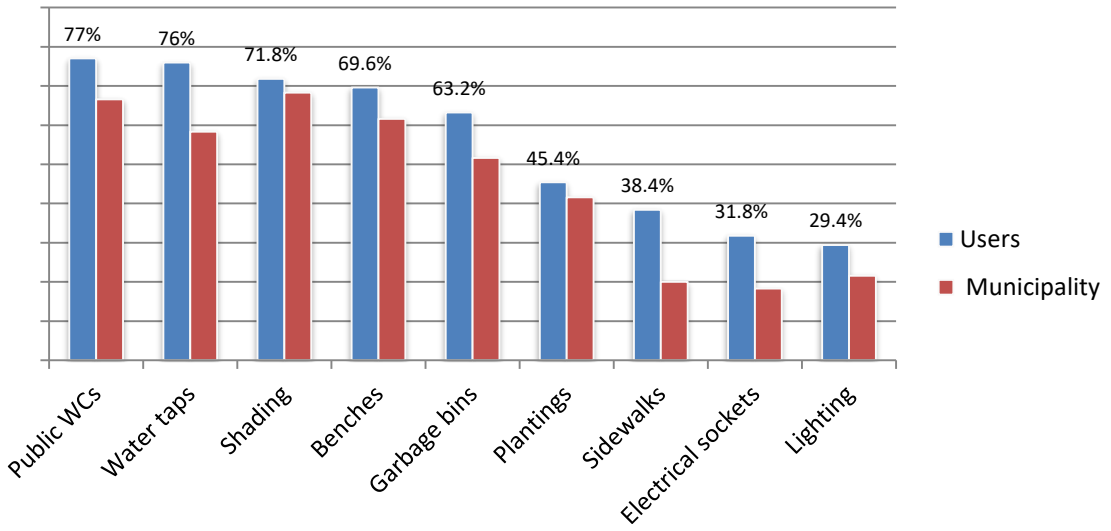


Figure 84: facilities the Martyrs Square lacked or needed to develop according to users and municipality staff

Source: the researcher based on questionnaire

Last but not least, the last two indicators in the social section with regard to the space facilitation of shared experiences among different groups of people and

attracting diverse population were covered at three levels; the first was on an individual scale where participants were asked whether using the Martyrs Square helped them getting to know new people; and results showed that the negative option had the larger share of votes in both the users and the municipality samples. However in the municipality side the results were noticeably more positive since the percentages in the two options were almost equal; which explains the variation in the trends of the two samples as displayed in Figure 85.

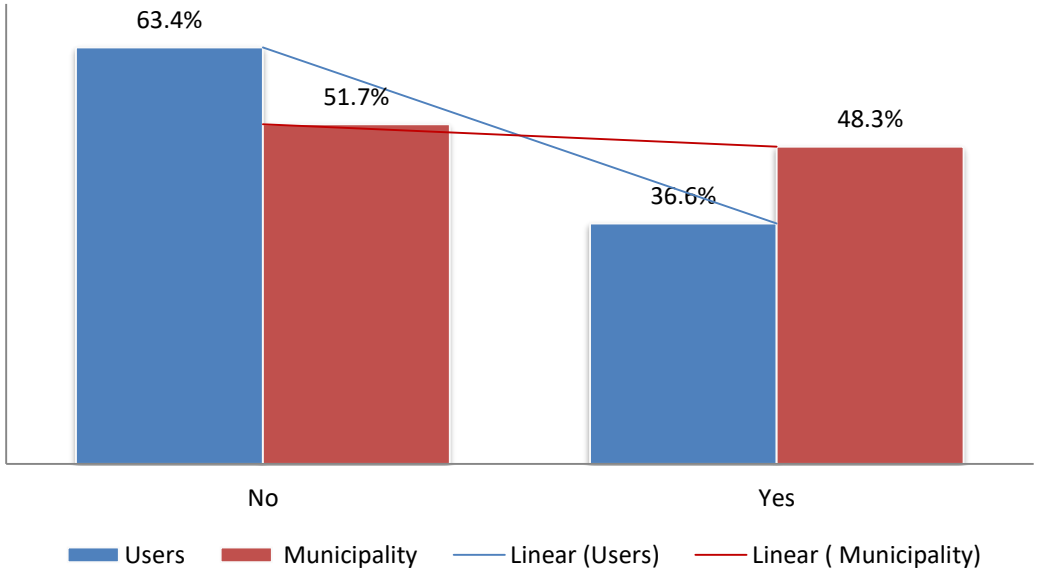


Figure 85: participants' answers when asked if using the Martyrs' Square helped them know new people (proportions + linear trends)

Source: the researcher based on questionnaire

Secondly, participants were asked if the activities held in the Martyrs Square could help create interaction and exchange ideas among users, and results at this level were comparatively more positive in both samples as shown in Figure 86. However, in the results of the users sample the negative answer is still predominant with a slight difference unlike the results of the municipality side of which 58.3 % admitted that activities held in the Martyrs Square helped create interaction and

exchange ideas among users which explains the opposite trends of the two samples.

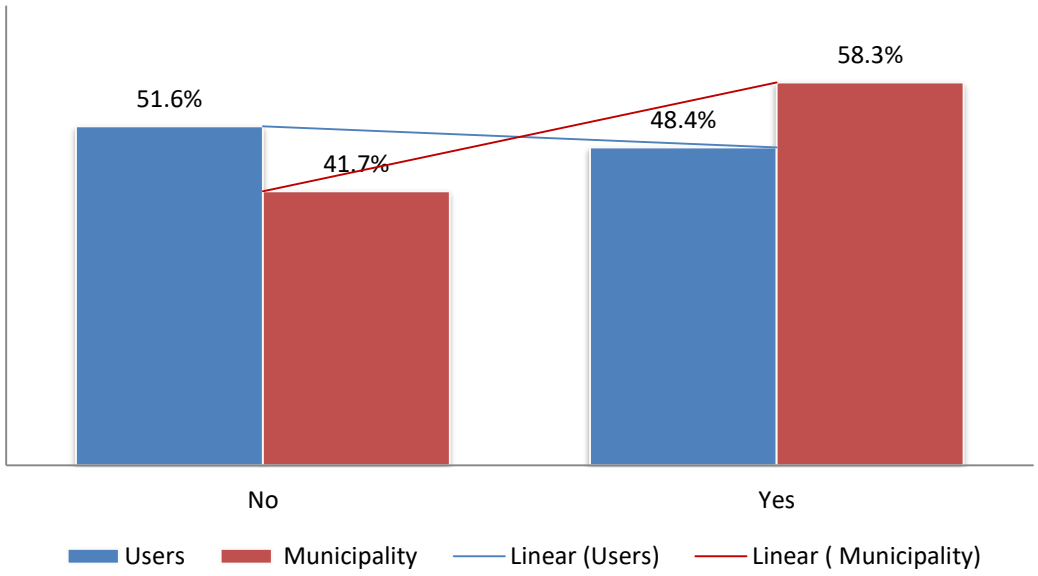


Figure 86: participants' answers when asked if activities in the Martyrs' Square helped create interaction and exchange ideas among users (proportions + linear trends)

Source: the researcher based on questionnaire

On a broader scale, participants were polled about the chance they would take their visitors from outside the city/country to the Martyrs Square area during the tour of Nablus, and the results were quite positive as 87.6 % of the users participants and 83.3 % of municipality employees responded with agreement and confirmed that they would accompany their visitors to the Martyrs Square area during their tour of the city; which has an indication to the Martyrs Square symbolic value that reflects the image of Nablus city and its people to visitors. See Figure 87.

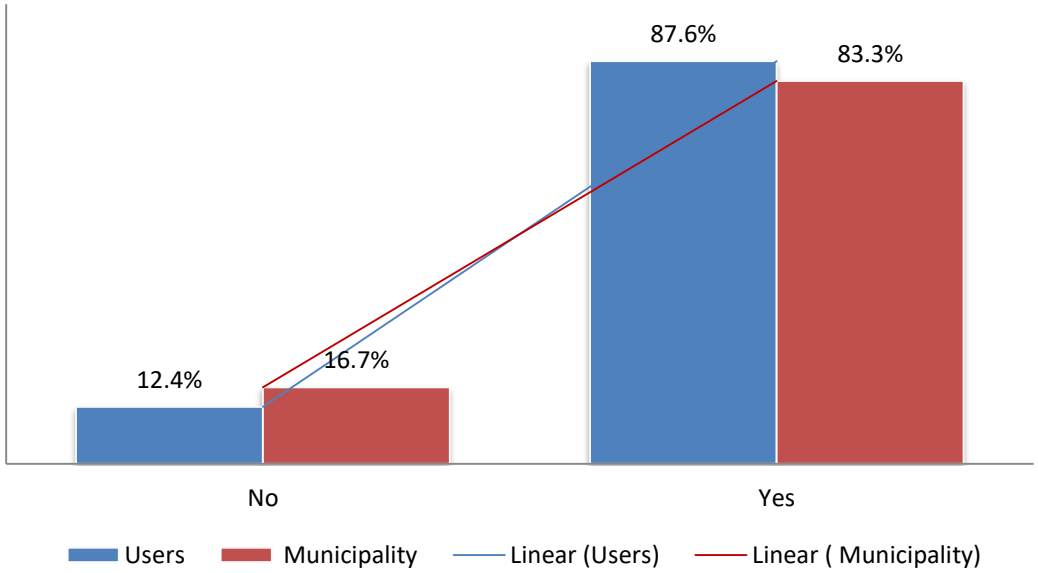


Figure 87: participants' answers when asked if take their visitors to the Martyrs Square area during a tour of Nablus (proportions + linear trends)

Source: the researcher based on questionnaire

To conclude, in this chapter, the criteria of sustainability in public spaces were refined, adapted and used as a mechanism of evaluation and investigation of the Martyrs Square in depth; from several aspects, objectively and subjectively, and from the public users and the officials points of view, so that the weaknesses and imbalances were clearly identified and a deeper and more comprehensive understanding of the space were made easier.

Having examined and evaluated to what extent the Martyrs Square was sustainable; the next chapter will put forward some scenarios that would help develop the square and present a better living and secured area.

Chapter Five

Conclusions and recommendations

5.1. Discussion and conclusions

This research emphasizes the importance of public spaces in achieving sustainability in the community and the city; and suggests that the process of investigating and evaluating the public spaces with reference to sustainability criteria is the first step in understanding the space in a deep and multi-faceted manner, in order to ensure a more accurate and specified identification of the space weaknesses and strengths. This process offers a guide that leads the development plans to accurately target imbalances and confidently reinforce strengths so as to improve the overall public space, meet the needs of its users and consequently achieve more sustainable society and city.

The study consisted of two major phases: the first phase comprised identifying the assessment indicators and refining them so that they become more convenient to be locally implemented and befit with the reality of the existing Palestinian public spaces, while the second phase covered the actual investigation and appraisal process of the Martyrs Square as a case study based on these criteria. The results of both phases were thoroughly discussed and reviewed as follows:

5.1.1. Indicators refinement – DELPHI process

The application of the DELPHI method on the adopted criteria - that basically consisted of 25 indicators - to identify the priorities which make the criteria more compatible with the conditions of the existing Palestinian public spaces resulted into 12 indicators divided into economic, environmental and social.

The resulted criteria reflect the significance of the social role that public spaces might perform within the Palestinian community and point out that, within the

current situation and circumstances of the Palestinian cities, the fundamental aspect that a sustainable public space is supposed to meet is primarily social, the economic aspect is the second and in the third place the environmental aspect comes.

The resulted environmental criteria as falling at the bottom of the list in terms of number of indicators required (Figure 88) compared to the social and the economic sections does not imply any underestimation of the environmental role the Palestinian public space can play, but rather expresses the weakness of this aspect on the existing Palestinian public space level as they were confined to solely two indicators: the 1st is considered as an urgent priority in light of the shortage of water and energy resources especially with the obstacles opposed by the Israeli occupation on the Palestinian cities, whilst the other one drew more emphasis on the social role of the Palestinian public space by taking charge of enhancing the environmental awareness and knowledge in community.

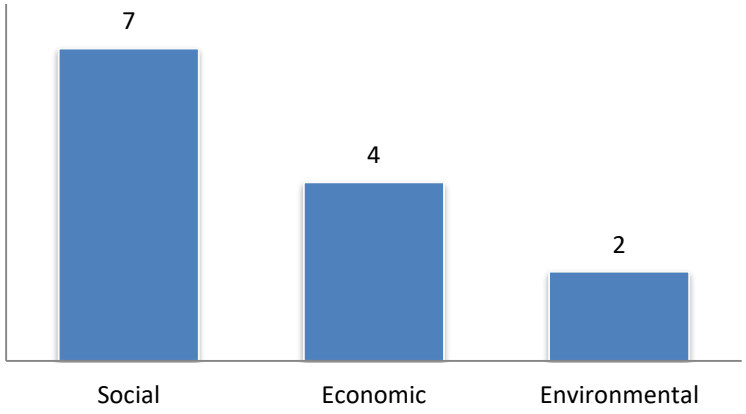


Figure 88: final number of indicators in each section

Source: the researcher

5.1.2. Criteria implementation - Assessment of the Martyr's Square

The results of the Martyr's Square assessment against the refined criteria, depending on the subjective data collected via questionnaire from the square users and the available objective data can be summed up as follows:

Economically, according to the Martyr's Square users; the Martyr's Square was found to be facilitating increasing revenue, opportunities and attracting customers, it also increased the property values within the Square area since they are quiet high compared to other areas in Nablus city due to their location, and that the Martyr's Square was the preferred location for their new businesses and investments.

Objectively, these results were approved by the concentration and the variety of businesses and services in the Martyr's Square area as a city center, the high property values in the vicinity of the Martyr's Square area compared to other areas in Nablus city besides the fact that the eastern area of the square is almost fully sold or invested which led to investment expansion towards the west.

With regard to the Martyr's Square attraction of new residents, the result was overwhelmingly negative which approves the initial suggestion that this indicator relates to public spaces located within neighborhoods and doesn't apply in the case of the Martyr's Square.

Environmentally, in terms of the efficient use of energy, water and material, the Martyr's Square seemed to have adopted some concrete steps to rationalize electricity and water consumption: through the square main lighting system and the water management procedures. Subjectively, the Martyr's Square users

confirmed that they rarely noticed any water wasting, whereas, the lighting level was perceived as convenient to poor which needs to be taken into consideration.

As for maintenance and use of materials, the Martyr's Square generally received average to negative ratings by users in terms of the current condition of the streets and the sidewalks, damage occurrence rate, provided maintenance level and the time required to be accomplished. Available objective data didn't reflect any better condition in the Martyr's Square and neither could disprove the subjective negative trend.

Respecting the environmental awareness, both subjectively and objectively, the Martyr's Square wasn't found to play an active role in spreading or increasing the environmental awareness among users nor contributed to encouraging them to preserve their environment; whether through signs and posters, activities and events or even equipment and services.

Socially, the Martyr's Square generally accommodates multiple modes of transportation, mainly: pedestrians, public transportation, private cars and fewer bicycles, and most users admitted that their presence in the Martyr's Square facilitated transportation access. However, users showed a clear tendency towards lack of preference for traffic from the Martyr's Square.

On another level, users generally expressed their sense of security while using the Martyr's Square, which on the other hand, turned out subjectively and objectively to be witnessing evident traffic congestion with vehicles and pedestrians, higher dB levels than recommended standards in commercial areas during day time, in addition to non-fresh air; which implicitly denies the Martyr's Square provision of relief from urban congestion and stressors as noise and air pollution.

For social gathering and events, the Martyr's Square occasionally comprises some activities that commonly range from sit-ins to martyr's funerals and festivals, and rarely exhibitions or art performances. However, there are no designated areas in the Martyr's Square for these activities, which negatively influence traffic within that area on both vehicles and pedestrian levels.

Furthermore, according to users the Martyr's Square didn't provide sufficient opportunities to meet their needs for recreation as they declared that they hardly could practice any activities within the square beyond walking and shopping, and that the Martyr's Square wasn't equipped with the needed services and facilities to give them the opportunity to do so.

Results also revealed that users keen to accompany their visitors to the Martyr's Square while touring the city of Nablus, which indicates that users view the Martyr's Square as significant landmark that reflects the city culture and people besides being the city center. Whereas, not much indices of interaction or sharing experiences were found on individual and group levels through daily practices or occasional activities.

In conclusion, through discussing and reviewing the implementation results of the refined criteria on the Martyr's Square, it is evident that the Martyr's Square was more economically achievable and viable in comparison with the social and the environmental aspects; since results were not eligible enough to fulfill any environmental or social indicators in a complete and convincing manner except for attracting diverse population, as summarized in Table 15. However, the Martyr's Square still has the potential to play an influential role on environmental and social

levels; as the results have shown some positive features of the square that require more attention and recruitment to optimize the desired benefits.

Table 15: summary of refined criteria implementation on the Martyr's Square

Source: the researcher

Indicator #	Social indicators	Environmental indicators	Economic indicators
1	●	●	●
2	●	●	●
3	●		Not relevant
4	●		●
5	●		
6	●		

●: fulfillment ●: partial fulfillment ●: non-fulfillment

5.1.3. Causes of social and environmental decline in the Martyr's Square

Through this study, investigating the indicators of the refined criteria in the Martyr's Square and monitoring users thoughts had made it possible to uncover a range of the problems and the shortcomings the square users suffer from, and led to the low rating on the social and the environmental levels, which will be reviewed as follows:

- Traffic congestion in the Martyr's Square area that generally exacerbates in peak periods especially in the northern section - Faisal and Al-Ghazali streets – with which study had revealed a direct relationship with some

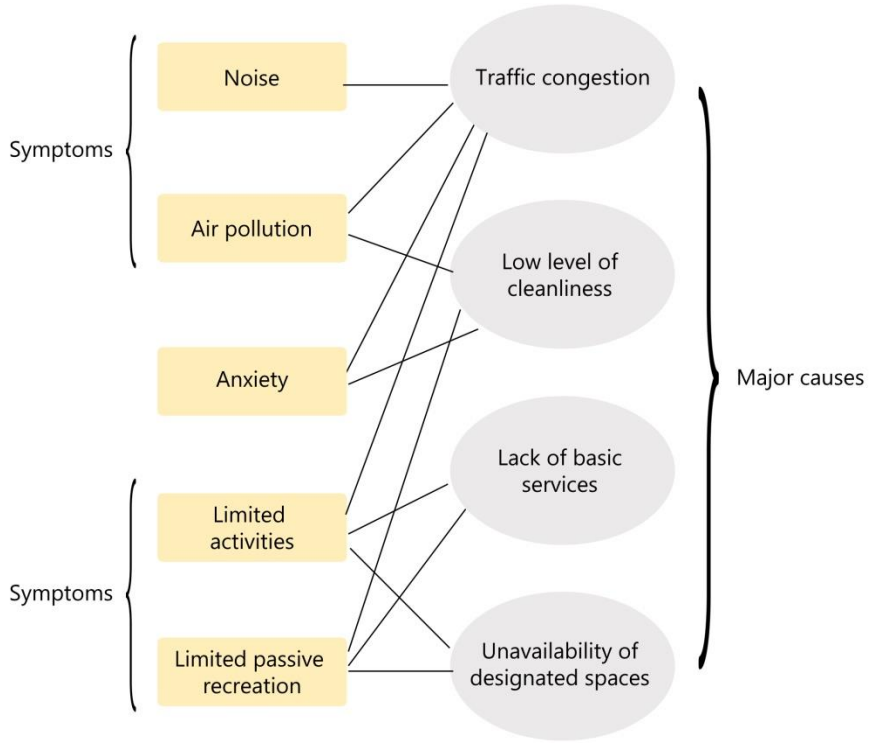
users' avoidance of traffic from the square, their sense of anxiety, noise and air pollution.

- The high dB levels in the Martyr's Square area over regular working days that exceed the recommended standards in commercial areas during day time being at its' highest during peak hours, particularly in the northern section of the square and the southern respectively; which was found to be associated with the heavy traffic volume in the area in the first place.
- Non-fresh polluted air in the Martyr's Square area which was attributed by the square users to mainly vehicles' exhausts, foul odors, and dust, respectively. Particularly, that traffic congestion has increased over the past years; which is accompanied by greater fuel consumption and therefore higher emission rates of vehicles.
- Unavailability of designated spaces for holding events and practicing activities within the Martyr's Square area; which prevents users from engaging in these activities and results in impeding traffic if any were undertaken, and consequently, leads to limitation of held events to those with official character, which in turn plays a role in the lack of interaction between users.
- Lack of basic services in the Martyr's Square that provide opportunities for users to practice their passive leisure activities, which were ranked by users in the following order: public WCs, water taps, shading, benches, garbage bins, plantings, sidewalks, electrical sockets and lighting. Accordingly, limited choices were available for users to practice within the Martyr's

Square, which also in turn plays a role in the lack of interaction between users.

- The low level of cleanliness in the Martyr's Square area which clearly appeared through users thoughts in terms of the inadequacy of garbage containers in the square, lack of supervision and accountability of offenders, lack of creative ideas that encourage users to maintain cleanliness of the square besides the adjacent waste collection container to the square vicinity. Not to mention, that waste accumulation in the Martyr's Square area has shown a clear relationship with air pollution with unpleasant odors, feeling anxious and uncomfortable besides distorting the aesthetic scenery of the area, which is viewed as an attractive destination for Nablus city visitors.
- Lack of adequate follow-up of the Martyr's Square area in terms of periodic maintenance and proper regulation of the use of sidewalks and street vendors, besides lack of consideration of people with special needs.
- Lack of any manifestation of the use of alternative energy sources and any signs, equipment or activities that promote awareness of community towards the importance of the environment and its preservation.

To prioritize these causes, we remark that some of these causes perform as key causes which has consequences, and shouldn't be overlooked by any development plan of the Martyr's Square, and some are sub-causes which are outcomes and symptoms of the underlying causes, which can be summarized as: traffic congestion, low level of cleanliness, lack of basic services and unavailability of designated spaces for holding events and practicing activities within the Martyr's Square area, without underestimating any other deficiencies or weakn



esses. See Figure 89.

Figure 89: major causes of social and environmental decline in the Martyr's Square

Source: the researcher

5.1.4. The Martyr's Square users' vs. Nablus municipality employees' trends

It is interesting to note that the trends of the municipality staff have been very consistent with those of the Martyr's Square users in most of the topics raised. However, some minor variances have emerged in a few subjects; most distinctively in their vision of the Martyr's Square streets and sidewalks condition which had (average to very good) trend vs. (average to bad) trend by users. Another variance showed up in their vision of garbage bins number and distribution in the Martyr's Square which had the trend of (average to few) vs. the conclusive result by users

as (few). The third was their majority thought that activities in the Martyrs' Square would help create interaction and exchange ideas among users on the contrary of the users' majority thought.

Although these variances may indicate a slightly rosy look towards the current situation of the Martyr's Square regarding the aforementioned issues in comparison with the users views, they may be relatively considered nominal. Optimistically, the overall consistency of the municipality staff views with those of the Martyr's Square users, shows the potential of being positively invested to lead the development projects in the square in line with the aspirations and views of its' users.

5.1.5. Potentials

Besides the evident economic power of the Martyr's Square, the adoption of water and lighting management procedures, as well as the consistency of the municipality staff views with those of the square users, this research has shown a range of potential positive aspects that were agreed upon by the square users and the municipal employees, and can be invested to promote the city and the community as a whole in the upcoming future. These potentials are summed up as follows:

- The positive responding of participants in terms of proposing a wide range of creative ideas and suggestions that aimed at developing the Martyr's Square and preserving the environment. This indicates the presence of a class of users who are conscious and educated about the importance of the environment and the significance of the Martyr's Square for the city.

- The distinctive tendency towards environmental friendly notions such as users' preference of: walking on foot as the main transportation mode in the Martyr's Square, using treated water, using renewable energy resources, adopting waste separation and recycling, and increasing the greenery in the Martyr's Square.
- Evident attraction of the Martyr's Square to visitors from outside the city which reveals its significance in expressing the city people and culture besides being a city center.

5.1.6. Marginal Notes

Through the study, the following indirect observations were spotted:

- In some of the topics that participants were asked about regarding the Martyrs' Square, a considerable proportion couldn't make a judgment and preferred the "I don't know" answer; noticeably, turned on that majority of which were Nablus governorate residents and visited the Martyrs' Square at a frequent pace. A possible explanation of this situation can be that sometimes the more frequent a user visits the square, the less conscious he becomes to details and changes.
- The number of female users who found the "harassment from others" as one of the causes of anxiety while using the Martyrs' Square was as twice as much the number of male users who did so. This was supported by some participants' comments about adolescents' frequent hanging around in the area of the Martyrs' Square, that requires to be taken in consideration.

In conclusion, based on this study:

- Any development project of the Martyr's Square towards achieving more sustainability must address at least the four major problems experienced by the square users; which are: traffic congestion, the low level of cleanliness, lack of basic services and unavailability of designated spaces for holding events and practicing activities within the square area, with consideration of the other deficiencies or weaknesses like noise and air pollution.
- Reconsideration of the mechanism of planning and taking action in Nablus Municipality towards the Martyr's Square so that the recommendations of the competent staff can be taken into consideration, rather than limiting their work to the implementation of the municipal council decisions.
- Establishment of a multi-jurisdictional committee responsible for closely following up the Martyr's Square so as to manage the space and ensure the best course of action in various sectors.
- Municipalities should set future visions and long-term plans to develop and improve urban public spaces in their cities in order to cope with the rapid urban development and the emerging challenges.
- The responsible entities for the public spaces should carry out periodic evaluations of these spaces so that any changes that may occur are monitored and used to measure the impact of any developments that take place in these spaces.
- The responsible entities for the public spaces should engage users in the development processes that target these spaces by listening to them and considering their complaints, needs and aspirations.

5.2. Proposal of the Martyr's Square area

Based on the conclusions of this research, the researcher proposed scenarios for the development of the Martyr's Square area suggest the following:

- Turning the Martyr's Square area into a mainly pedestrian zone, with allocating the south section of the Martyr's Square (the roundabout) as a pedestrian and taxi area so that public transportation facilitates the users' access to the square side by side with and improvement of public transportation services. See Figure 90 which presents the 1st preliminary visualization of the Martyr's Square as a pedestrian zone. It is worth mentioning here that this approach in general has been put forward since the late nineties[1] and the concept has been discussed over the years for the sake of reducing the traffic congestion in Nablus city center.

[1] (Dornier System Consult and Universal Group for Engineering and Consulting, 1999)

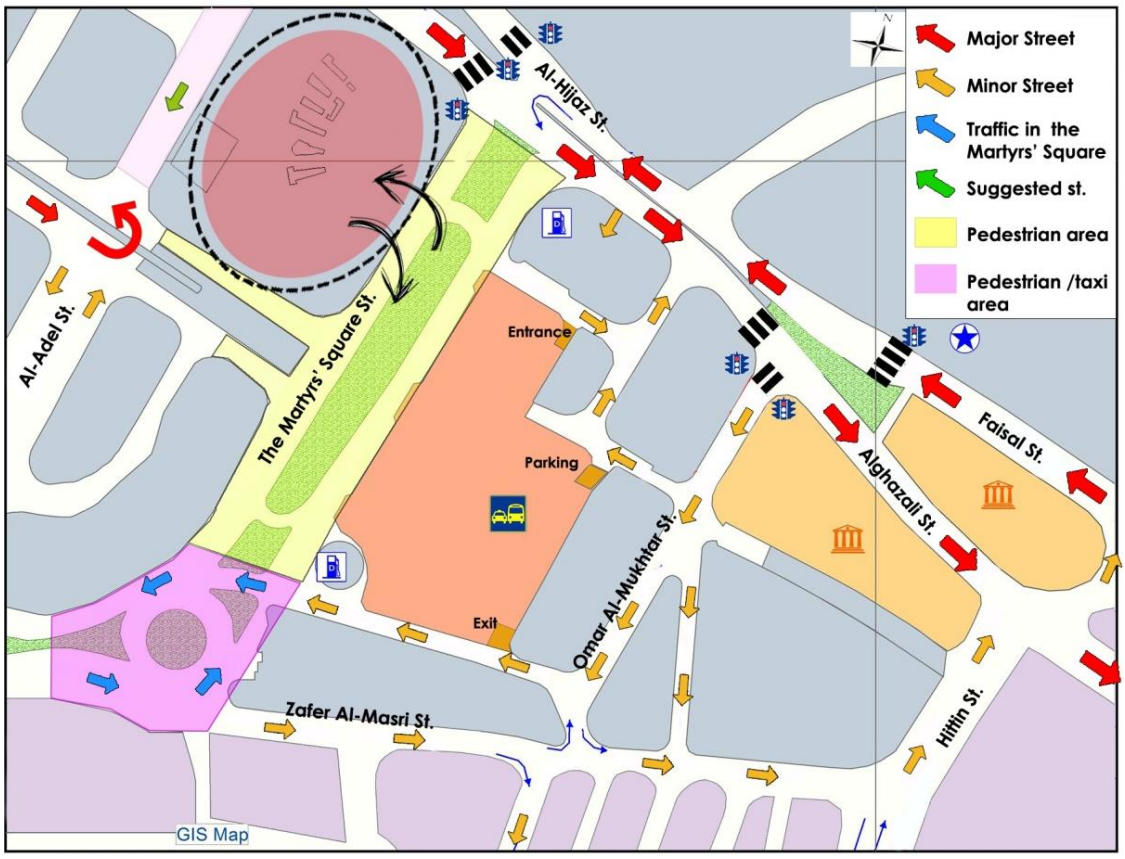


Figure 90: 1st Preliminary visualization of the Martyr's Square

Source: the researcher

- Restriction of the entry of private vehicles to the Martyr's Square area to specified times apart from peak hours so as not to interfere with the movement of pedestrians and their gathering or activities.
- Transfer of the eastern taxi complex from the shopping mall to the crystal yard (al-Ballour yard)1 which means reducing the number of the incoming taxies to the Martyr's Square area by one third2 and consequently, reducing the resulted noise and the polluting emissions of air.

[1] Note: this suggestion has already been proposed and received approval from the various relevant authorities in the local community.

[2] (Traffic department - Nablus municipality, 2017)

- Moving the fruit and vegetable market from the current location and opening the street for the vehicles from Faisal Street to access the city center area besides Omar Al-Mukhtar Street, which implies reduction of waste accumulation in that area and the reduction of traffic congestion in Faisal Street and Omar Al-Mukhtar Street in addition to providing more parking spaces.
- Rehabilitation of the adjacent roman archaeological area and merging it with the Martyr's Square so as to enhance the historical importance of the square as well as the exploitation of the neglected areas in creating spaces for social gathering and practicing activities. See Figure 91.
- Organization and maintenance of the streets and the sidewalks with the preparation for the use of pedestrians including people with special needs.
- Restriction of the use of vehicles horns in the Martyr's Square area except when necessary.

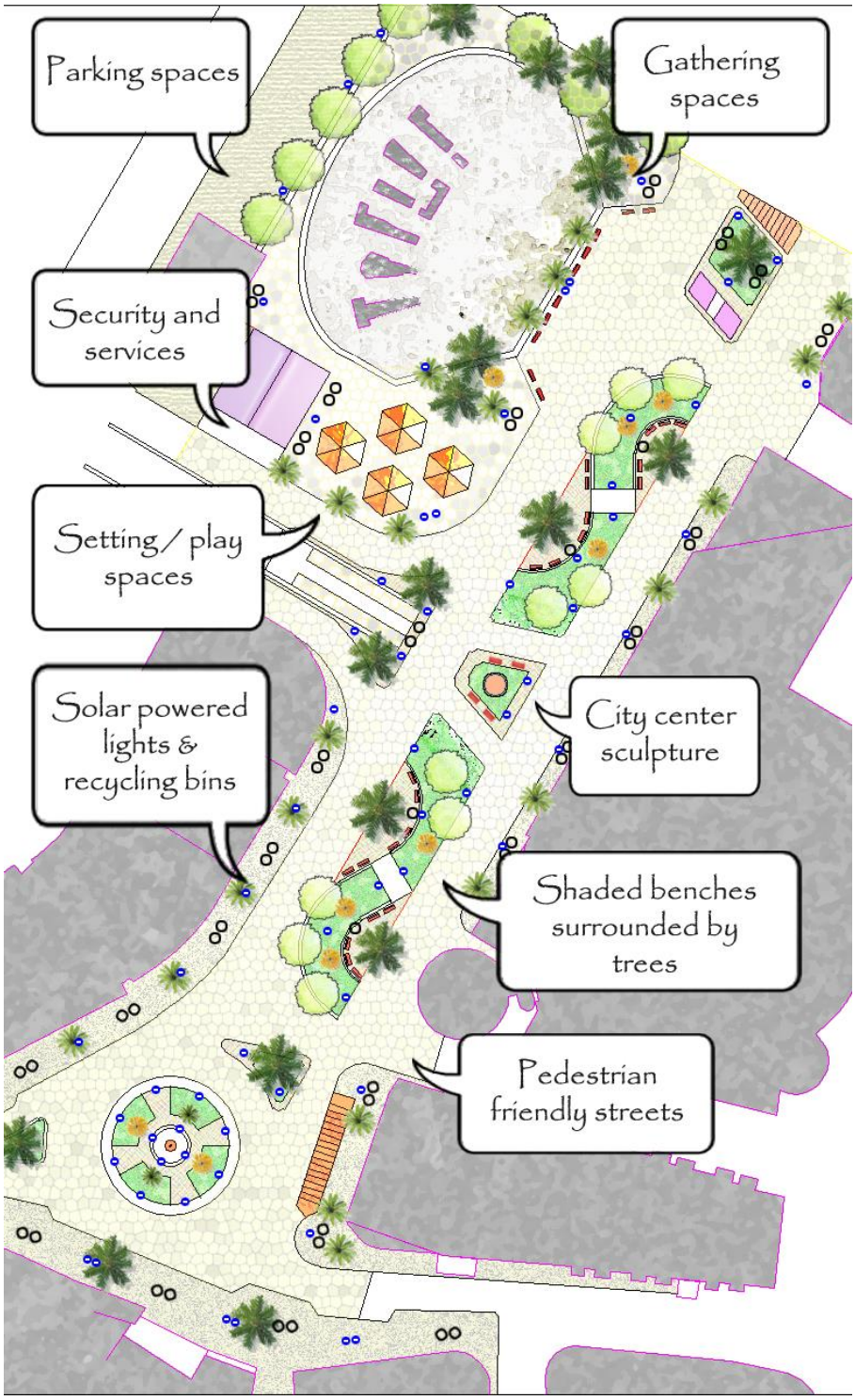


Figure 91: 1st Preliminary proposal of the Martyr's Square

Source: the researcher

- Removal of the main waste container from the current location and the allocation of special containers for basic waste separation according to the waste potential of interaction and corruption; such as food and chemical waste that require special covered containers vs. paper, glass and metal etc. which are less likely to corrupt or interact.
- Increasing the number of garbage bins in the square and distributing them thoughtfully as well as using containers with creative ideas to encourage users, especially children, to keep the space clean.
- Providing the Martyr's Square with the basic services so that users can perform their passive leisure activities; which include: public WCs, water taps, shading, benches and electrical sockets.
- Upgrading the low lighting system in the Martyr's Square area and adopting alternative sources of energy, such as using solar panels to provide light or electrical energy for simple user utilizations.
- Increase of greenery and planted trees in the Martyr's Square area in order to enhance and beautify the space, improve the atmosphere and provide more shade in addition to air pollution and noise reduction, especially, in the north and south edges of the square.
- Installation of signs and posters for guidance and increasing awareness of the importance of preserving the environment and maintaining the cleanliness of the square, with penalties for offenders.
- Conducting of periodic inspection tours of the Martyr's Square for the purpose of regular maintenance and repair.

The 2nd preliminary proposal of the Martyr's Square, in addition to the aforementioned suggestions, implies a greater consideration of the status quo by: firstly, maintaining a permanent access of vehicles to the shops in the square area especially the south west section, since the eastern section – the shopping mall – is already served via the two adjacent streets as well as the elevators that connect the upper floors with the parking/ taxi complex floors which are reached for through the tunnel. See Figure 92. Secondly, retaining the mosque in the Martyr's Square as a symbolic land mark while organizing and relocating the booths in one zone. See Figure 93.

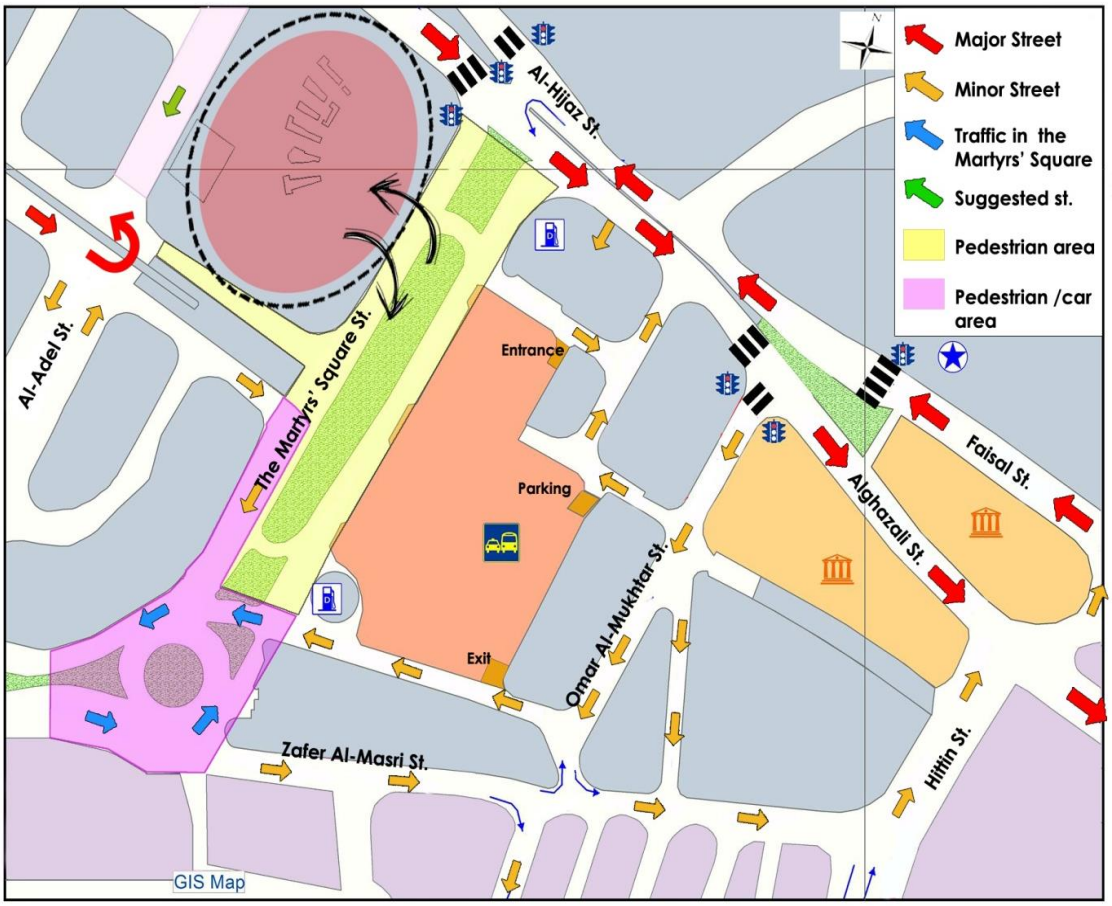


Figure 92: 2nd Preliminary visualization of the Martyr's Square

Source: the researcher

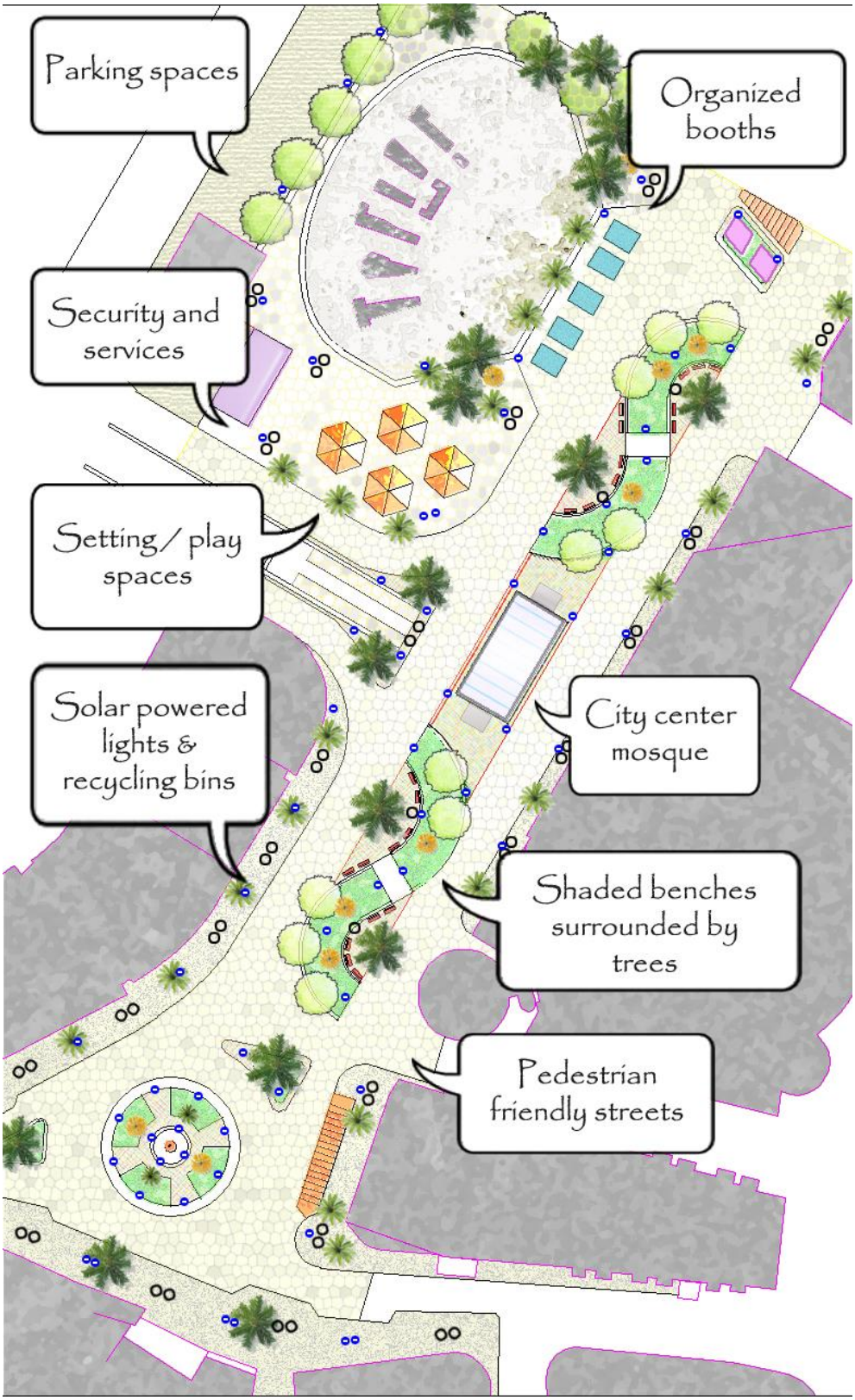


Figure 93: 2nd Preliminary proposal of the Martyr's Square

Source: the researcher

In the following few creative examples are presented for: garbage bins, public libraries, renewable energy appliances, basic services, environmental awareness & social participation boards.

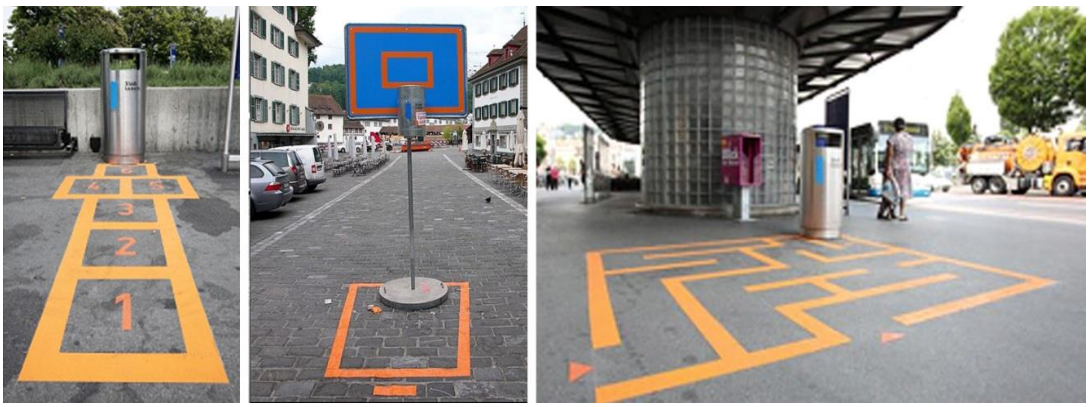


Figure 94: Creative campaign in Switzerland to take action against littering

Source: after (Luzerner Zeitung, 2011)

Figure 95: creative recycling bins

Source: after (Wybone, 2017)

Figure 96: creative ideas to reduce littering

Source: after (Murano, 2015)

Figure 97: sustainable furniture ideas

Source: after (Google, 2017)

Figure 98: Free public libraries

Source: after (Pinterest, 2017)

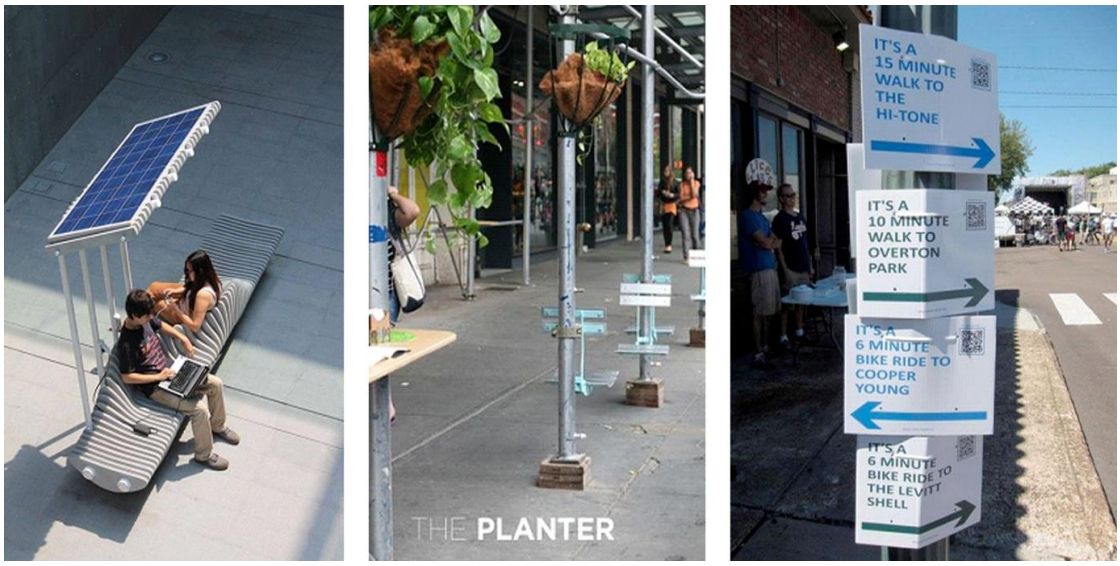


Figure 99: Environment friendly ideas in public spaces

Source: after (Rogers, 2017), (Pinterest, 2017)

Figure 100: users' collaboration boards

Source: after (candychang, 2017)

Figure 101: examples of creative planters, seats, and water supply

Source: after (Cosafina, 2017), (copy e paste, 2011), (Pinterest, 2017)

5.3. Recommendations

- It is recommended to test and implement one of the researcher suggested proposals of the Martyr's Square after being thoroughly discussed with the competent authorities concerned such as; Nablus municipality, chamber of Commerce, Drivers Syndicate, traffic organizers and specialized experts.
- Some topics were briefly went through in the assessment process of the Martyr's Square as they were out of the research scope, and need to be studied in depth through separate research in the future such as: the soundscape in the Martyr's Square, and the air pollution in the city center of Nablus city.
- On the level of the Palestinian public spaces in general, it is recommended that - with analogy of the Palestinian green building guidelines - research institutes should develop standards for the Palestinian public spaces that take into account the multiple aspects of sustainability that need to be fulfilled.

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Appendices

Appendix 1

An-Najah National University

Faculty of Graduate Studies

This consultation comes in the context of a master's thesis of architecture titled:

Urban sustainability as a tool of assessment and development of public spaces in Palestine

Case study: Martyr's Square in Nablus city

Submitted by:

Sahar Wasfi Muhammad

2017

Dear participants,

The following is a group of indicators developed within a research by David Barth with consensus of a group of experts for identifying the high performance public space (HPPS) which refers to a publicly accessible space that generates economic, environmental, and social sustainability benefits for their local community.

Please rank the following indicators according to how relevant they are to the existing public spaces in Palestinian cities:

Economic indicators	Rank Least related				most related
The space creates and facilitates revenue - generating opportunities for the public/ private sectors.	1	2	3	4	5
The space creates meaningful and desirable employment.	1	2	3	4	5
The space indirectly creates or sustains good, living wage jobs.	1	2	3	4	5
The space sustains or increases property values.	1	2	3	4	5
The space catalyzes infill development and/or the re-use of obsolete or under-used buildings or spaces.	1	2	3	4	5

The space attracts new residents.	1	2	3	4	5
The space attracts new businesses.	1	2	3	4	5
The space generates increased business and tax revenues.	1	2	3	4	5
The space optimizes operations and maintenance costs (compared to other similar spaces).	1	2	3	4	5

Notes:

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Environmental indicators	Rank Least related most related				
The space uses energy, water, and material resources efficiently.	1	2	3	4	5
The space improves water quality of both surface and ground water.	1	2	3	4	5

The space serves as a net carbon sink.	1	2	3	4	5
The space enhances, preserves, promotes, or contributes to biological diversity.	1	2	3	4	5
Hardscape materials are selected based on longevity of service, social/ cultural/ historical sustainability, regional availability, low carbon footprint and/or other related criteria.	1	2	3	4	5
The space provides opportunities to enhance environmental awareness and knowledge.	1	2	3	4	5
The space serves as an interconnected node within larger scale ecological corridors and natural habitat.	1	2	3	4	5

Notes:

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Social indicators	Rank Least related				most related
The space improves the neighborhood.	1	2	3	4	5
The space improves social and physical mobility through multi-modal connectivity – auto, transit, bike, and pedestrian.	1	2	3	4	5
The space encourages the health and fitness of residents and visitors.	1	2	3	4	5
The space provides relief from urban congestion and stressors such as social confrontation, noise pollution, and air pollution.	1	2	3	4	5
The space provides places for formal and informal social gathering, art, performances, and community or civic events.	1	2	3	4	5
The space provides opportunities for individual, group, passive and active recreation.	1	2	3	4	5

The space facilitates shared experiences among different groups of people.”	1	2	3	4	5
The space attracts diverse populations.	1	2	3	4	5
The space promotes creative and constructive social interaction.	1	2	3	4	5

Notes:

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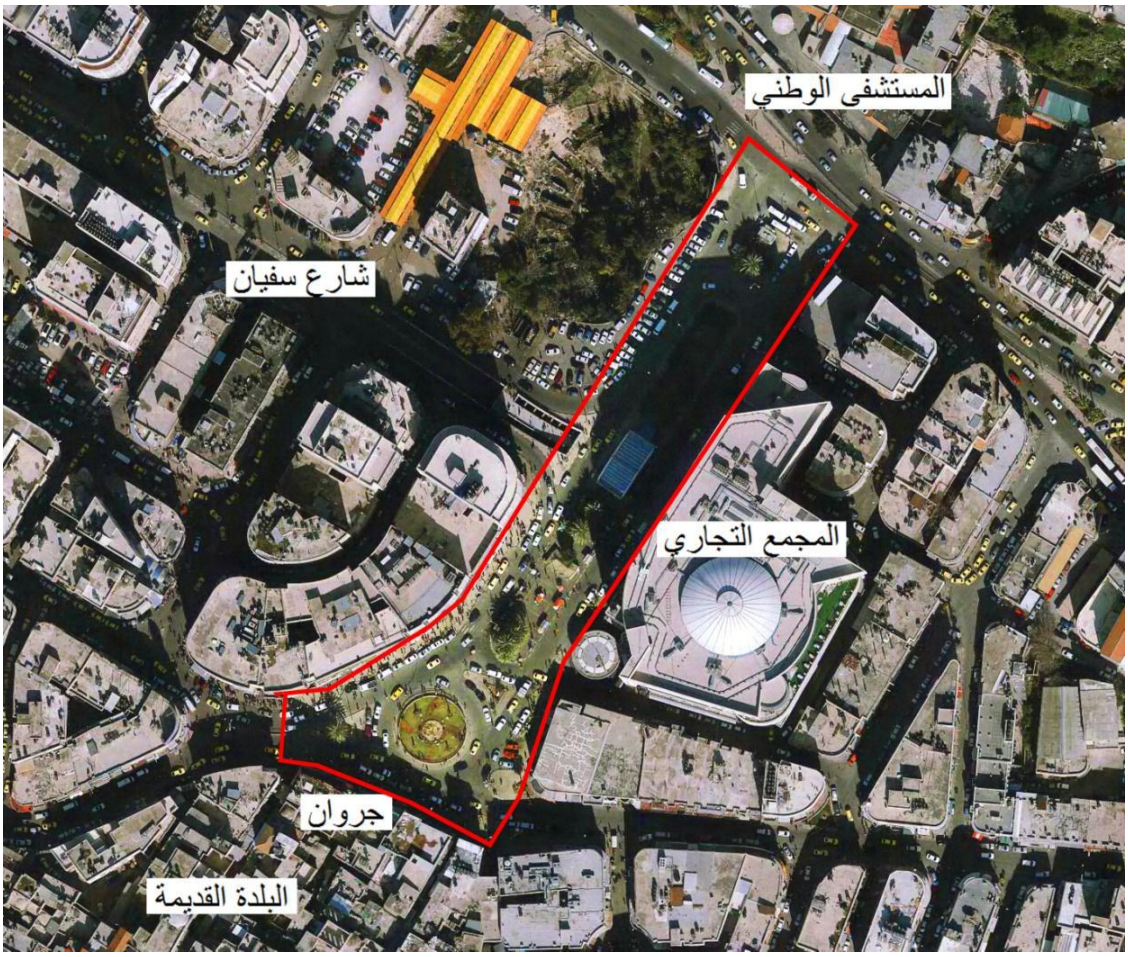
Appendix 2

دراسة تقييمية لمنطقة الدوار في مدينة نابلس وفقا لمعايير الاستدامة في الفراغات العامة

يأتي هذا الاستبيان في سياق العمل على رسالة ماجستير في الهندسة المعمارية حول" الاستدامة الحضرية في الأماكن العامة "حيث تم اختيار" منطقة الدوار في مدينة نابلس "كحالة دراسية، و عليه فإن الهدف من هذا الاستبيان هو دراسة و تقييم الجوانب الاقتصادية و البيئية و الاجتماعية في منطقة الدوار من وجهة نظر المستخدمين للمنطقة سواء كانو من مدينة نابلس أو خارجها.

فضلا لا أمرا، إذا كنت من مستخدمي منطقة الدوار في نابلس فأرجو أن تقوم بتعبئة هذا الاستبيان و لن يستغرق من وقتك أكثر من خمس دقائق و لك جزيل الشكر و التقدير.

ملاحظة : منطقة الدوار المقصودة في هذه الدراسة هي المنطقة المحددة باللون الأحمر في الصورة.



معلومات شخصية

- **الجنس:** ذكر أنثى
- **العمر:** 20-16 30-20 40-30 50-40 60-50 +60
- **مكان الإقامة:** مدينة نابلس قضاء نابلس المخيمات محافظات أخرى الداخل المحتل خارج فلسطين
- **العمل:** بلدية نابلس قطاع عام قطاع خاص بلا عمل
- **معدل زيارتك لمنطقة الدوار:** يوميا أسبوعيا شهريا أقل من ذلك

.....

الجانب الاقتصادي

- **إذا كنت تدير مشروعا في منطقة الدوار فهل تعتقد أن هذا الموقع يساهم في زيادة عدد الزبائن لمشروعك؟**

نعم لا

- **كيف تصف أسعار العقارات في محيط منطقة الدوار مقارنة مع المناطق الأخرى في مدينة نابلس؟**

مرتفعة متقاربة منخفضة

- **هل تعتقد أن هناك أثر لمنطقة الدوار في رفع قيمة العقارات المحيطة بها بشكل عام؟**

نعم لا

- **هل تفضل السكن في محيط منطقة الدوار؟**

نعم لا

- **إذا أتيحت لك فرصة البدء بمشروع تجاري خاص بك في مدينة نابلس فهل تفضل أن يكون موقع المشروع في محيط منطقة الدوار؟**

نعم لا

.....

الجانب البيئي

- **كيف تصف مستوى الإضاءة في منطقة الدوار ليلا؟**

زائد مناسب ضعيف

- **إلى أي درجة تلاحظ وجود هدر في استخدام المياه في منطقة الدوار؟(على سبيل المثال أثناء الري أو التنظيف أوالصيانة)**

متكرر طبيعي نادر

- **بشكل عام، كيف تصف حالة الشوارع و الأرصفة في منطقة الدوار؟**

جيدة جدا متوسطة سيئة

- **هل تحظى الشوارع و الأرصفة في منطقة الدوار بأعمال الصيانة الكافية للحفاظ عليها؟**

نعم لا لا أعلم

- **إلى أي درجة يتكرر حدوث الأعطال في الشوارع و الأرصفة ضمن منطقة الدوار بحيث تستوجب تجديد المواد**

المستخدمة؟

متكرر طبيعي نادر

- **ما هو تقييمك لمستوى الصيانة و المدة الزمنية لإنهائها في منطقة الدوار؟**

سريع متوسط بطيء

- **أي المصادر التالية للمياه تؤيد استخدامها في منطقة الدوار؟(ري /تنظيف /تشغيل النافورة)**

مياه صالحة للشرب مياه معالجة يعاد استخدامها لا فرق

- **أي الطرق التالية تؤيد استخدامها في التخلص من النفايات المتراكمة في منطقة الدوار؟**

تجميعها و حرقها فصلها و تدويرها لإعادة استخدامها لا فرق

- **أي مصادر الطاقة التالية تؤيد استخدامها في إنارة و تشغيل منطقة الدوار؟**

طاقة كهربائية طاقة متجددة(مثل الطاقة الشمسية) لا فرق

.....

- **هل تجد في منطقة الدوار ما يذكرك بأهمية البيئة و الحفاظ على مواردها؟(ملصقات /إشارات / تجهيزات)**

نعم لا

- **هل تقام أية أنشطة أو حملات في منطقة الدوار تهدف إلى زيادة الوعي المجتمعي بأهمية البيئة و الحفاظ عليها؟**

نعم لا لم ألاحظ

- **ما هو رأيك في عدد و توزيع حاويات القمامة في منطقة الدوار؟**

كاف متوسط قليل

- **هل تحمل حاويات القمامة في منطقة الدوار أية رسائل بيئية مثل فصل النفايات أو إعادة التدوير؟**

نعم لا لم ألاحظ

- **إذا كانت لديك أية أفكار بسيطة و عملية يمكن تنفيذها في منطقة الدوار للمساهمة في الحفاظ على البيئة فاذكر واحدة منها:** .....

.....

.....

الجانب الاجتماعي

- **أي وسائل النقل التالية يمكن استخدامها في منطقة الدوار؟(يمكن أكثر من إجابة)**

مواصلات عامة سيارات خاصة دراجات سيرا على الأقدام

- **أي وسائل النقل التالية تفضل استخدامها في منطقة الدوار في وضعه الحالي؟**

مواصلات عامة سيارات خاصة دراجات سيرا على الأقدام

- **هل وجودك في منطقة الدوار يسهل عليك استقلال المواصلات العامة /سيارات الأجرة؟**

نعم لا

- **في طريقك إلى المناطق المختلفة من مدينة نابلس، أي الخيارات التالية هي الأقرب لك بالنسبة للمرور من منطقةالدوار؟**

أفضل المرور من منطقة الدوار بشكل عام

أفضل المرور من منطقة الدوار ما عدا وقت الذروة (الازدحام)

لا أفضل المرور من منطقة الدوار و لكني مضطر لذلك

أتجنب المرور من منطقة الدوار بشكل عام

.....

- **ما هو انطباعك عن منطقة الدوار من حيث الازدحام؟**

مزدحمة بالسيارات مزدحمة بالمشاة مزدحمة بالسيارات و المشاة غير مزدحمة

- **بشكل عام، هل تشعر بالإزعاج في منطقة الدوار؟**

غالبا نادرا

- **ما هو سبب الازعاج في منطقة الدوار (إن وجد) من وجهة نظرك؟ (يمكن أكثر من إجابة)**

السيارات المحلات التجارية الباعة المتجولين المشاة أعمال الصيانة

- **هل تشعر بالأمان في منطقة الدوار؟**

غالبا نادرا

- **ما هو سبب الشعور بالقلق و عدم الأمان في منطقة الدوار(إن وجد) من وجهة نظرك؟ (يمكن أكثر من إجابة)**

السيارات الأضاءة غير كافية ليلا مضايقات الآخرين وقوع شجارات متكررة قلة النظافة المنطقة غير مجهزة لذوي الاحتياجات الخاصة

- **هل تجد الهواء نقيا في منطقة الدوار؟**

غالبا نادرا

- **ما هو سبب تلوث الهواء في منطقة الدوار(إن وجد) من وجهة نظرك؟ (يمكن أكثر من إجابة)**

دخان السيارات الغبار و الأتربة الروائح الكريهة

.....

- **أي الفعاليات التالية تقام في منطقة الدوار؟(يمكن أكثر من إجابة)**

أنشطة اجتماعية عروض فنية/ مسرحية احتجاجات احتفالات و مهرجانات معارض تأبين الشهداء

- **هل تسبب إقامة الأنشطة و الفعاليات إعاقة لحركة السيارات؟**

نعم لا

- **هل تسبب إقامة الأنشطة و الفعاليات إعاقة لحركة المشاة؟**

نعم لا

.....

- **أي الأنشطة التالية يمكنك القيام بها في منطقة الدوار؟(يمكن أكثر من إجابة)**

المشي الجري ركوب الدراجة القراءة اللعب الرسم تناول الطعام الجلوس و الاستراحة تأمل النباتات التصوير العزف أنشطة أخرى

- **هل تجد أن منطقة الدوار مجهزة بما يكفي من الخدمات و المرافق التي تمكنك من ممارسة الأنشطة المختلفة الواردة في السؤال السابق؟**

نعم لا

- **أي المرافق التالية تفتقر لها منطقة الدوار أو تحتاج للتحسين من أجل تحقيق الاستفادة الأمثل من المنطقة؟**

المقاعد الأرصفة حاويات القمامة المزروعات الحمامات العامة المظلات المشارب / صنابير مياه مقابس كهرباء إضاءة

.....

- **هل ساعد استخدامك لمنطقة الدوار (للتسوق أو أي نشاط آخر) في التعرف على أشخاص جدد؟**

نعم لا

- **بشكل عام، هل تجد أن الأنشطة المقامة في منطقة الدوار تساهم في خلق التفاعل و تبادل الخبرات و الأفكار بين المستخدمين؟**

نعم لا

- **إذا كان لديك زائر من دولة أو مدينة أخرى فهل ستصطحبه إلى منطقة الدوار خلال جولة التعرف على مدينة نابلس؟**

نعم لا

جامعة النجاح الوطنية

كلية الدراسات العليا

الاستدامة الحضرية كأداة تقييم و تطوير للفراغات العامة في فلسطين
حالة دراسية: ميدان الشهداء في مدينة نابلس

إعداد

سحر وصفي محمد

إشراف

د. خالد قمحية

د. هيثم الرطروط

قدمت هذه الأطروحة استكمالا لمتطلبات الحصول على درجة الماجستير في الهندسة المعمارية بكلية الدراسات العليا في جامعة النجاح الوطنية

2018

الاستدامة الحضرية كأداة تقييم و تطوير للفراغات العامة في فلسطين
حالة دراسية: ميدان الشهداء في مدينة نابلس

إعداد
سحر وصفي محمد
إشراف
د. خالد قمحية
د. هيثم الرطروط

الملخص

تلعب الفراغات العامة دورا بارزا في تحقيق الاستدامة الحضرية على مستوى المجتمع و المدينة، لا سيما في المدن ذات الكثافة السكانية العالية كما في المدن الفلسطينية حيث قلة المناطق الخضراء و الساحات العامة بما في ذلك الأرصفة و أثاث الشوارع، و بشكل خاص في مراكز المدن؛ التي أدى ازدحامها بالمركبات و ما يرتبط بها من حوادث و ضجيج و ملوثات الى التأثير سلبا على التواصل الإنساني في الفراغ. هذه الأسباب إلى جانب وجود الاحتلال الإسرائيلي و ما يفرضه من قيود، تتطلب السعي باتجاه النهج المستدام في تقييم الفراغات العامة الفلسطينية كخطوة أولى في تطوير و تنمية هذه الفراغات.

في هذا البحث تم اختيار ميدان الشهداء، الميدان الرئيسي وسط مدينة نابلس، كحالة دراسية يتم تقييمها وفقا لمعايير الاستدامة الحضرية في الفراغات العامة، حيث اتبعت منهجية (DELPHI) في تنقيح المعايير المختارة (HPPS) لتتلاءم مع خصوصية الفراغات العامة الفلسطينية، و التي أظهرت نتائجها تغليب الدور الاجتماعي المنوط بهذه الفراغات بواقعها الحالي، يليه الدور الاقتصادي ثم الدور البيئي على الترتيب.

واشتملت عملية تطبيق تلك المعايير في ميدان الشهداء على الشق الموضوعي الى جانب الشق الشخصي المتمثل في الاستبيان الذي استهدف كلا من مستخدمي الفراغ و موظفي بلدية نابلس لأغراض المقارنة. و أظهرت نتائج العملية تفوق الفراغ المذكور في المستوى الاقتصادي مقارنة بالمستويين الاجتماعي والبيئي، كما أظهرت مجموعة من الأسباب الكامنة وراء تراجعه على الصعيدين الاجتماعي والبيئي، والتي يمكن تصنيفها الى عناصر أساسية و تضم: الازدحام المروري، تدني مستوى النظافة، نقص الخدمات الأساسية، وعدم توفر مساحة مخصصة للتجمع لممارسة

الأنشطة الاجتماعية. و أخرى فرعية و تضم: الضجيج، تلوث الهواء، نقص المتابعة و الصيانة الدورية، و افتقار الفراغ لمظاهر العناية بالبيئة و نشر الوعي البيئي لدى المستخدمين.

على صعيد آخر، أظهرت الدراسة مجموعة من الإمكانيات التي يمكن استثمارها فيما يتعلق بدعم المستخدمين للأفكار الصديقة للبيئة، و التوافق الكبير بين توجهات المستخدمين و موظفي بلدية نابلس الذي يؤهلهم لتمثيل المستخدمين و احتياجاتهم. و بناء على تلك النتائج تم طرح مجموعة من التصورات و المقترحات للمنطقة لمعالجة المشاكل القائمة و التقليل من آثارها.