



Pedestrianization through Tactic “An Approach to Livable City”

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Abstract

Many ancient cities around the world were known with their livability (Rodriguez, G.R., Brebbia, C.A. & Almorza, D., 2017). However, these cities started to lose this feature, when vehicles became prior to pedestrians who lost their sense of place (Nady, 2015), as many negative impacts came along. In return, people escaped the city's core searching for lively districts with attractive streets where the human basic activities can be performed. As a result, dead city centers were left behind (Ibrahim, 2016). The present paper work proposes an integrative literature between the pedestrianization and livability, then introduce a creative implementation approach to pedestrianization in order to achieve the following objectives: 1- a tool to break the various barriers that may face implementation, 2- a method of exploration regarding the potential of the misused asphalt, 3- a tactic to re-attract people to the city's core and its walkable environment and finally, 4- restore the city's livability thus its urban sustainable development. From this perspective, by rejuvenating the core of a city, the entire city's livability could be restored, causing an urban sustainable development, through the creative tactical urbanism. Also, the research includes an analysis of international examples, based on the criterion of tactical urbanism practices.

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Keywords

Livability; Pedestrianization; Tactical Urbanism; Urban Sustainable Development.

1. Introduction

The pedestrian movement is an ancient human activity, known with its naturally occurring simplicity that still through ages in its original form of walking. It is always considered as the most favorable type of human interaction with the urban environment (KashaniJou, 2011). And despite the challenges of rapid development within today's car oriented cities. The walkable environment regained its popularity in the last few decades, when Urban planners reconsidered the pedestrian places as a fundamental part that should be integrated with the urban planning, in order to achieve its vast benefits, that includes: environmental, cultural, economic and social (Blaga, 2013).

The pedestrianization also addressed a lot of problem and became a solution in different aspects like congestion, suburbanization, pollution, etc. Also they became recently ideal strategies for urban planners in case of city's rejuvenation. In the 1960, the pedestrian areas were the main focus of leading thinkers like Jane Jacobs, William H. Whyte and Jan Gehl, who began questioning vehicle dominance and its impact on people oriented approach. These leaders influenced their successors in the field like Donald Appleyard and others who started to link between the pedestrian oriented scheme and the street livability (ARUP, 2016).

This paper aims to assure the relation between the livability and pedestrianization, through a correlational liter-

ature, thus their effect on the urban sustainable development. Then introduce the global review of precedents approaches to pedestrianization, their aim and results, either success or failure, and clarify the failures and barriers that faced some cities in implementing the pedestrian priority scheme, based on recent researches. Finally, the paper proposes the tactical urbanism, as a creative technique to break these barriers and a beneficial tool in different pedestrianization schemes, through the analysis of practices used by various practitioners, in order to highlight the tactical urbanism theory of application and considerations accompanying the process of initiation.

2. Pedestrianization and the livable city

2.1. Pedestrianization and livability correlation

Recent studies proved that the walkability is a part of livability components in order to promote a livable space and sustainable environment (Shamsuddin, S. et al., 2012).

Also, the livable city benefits from pedestrianization, by meeting its purpose in promoting sustainable access and linkage for all its citizens within a neighborhood. Thus, the pedestrianization is an effective tool in order to increase the city's livability, by improving the accessibility, mobility, safety and environment that make the city a good quality place to its inhabitants (Soni, 2016).

Furthermore, the pedestrian street function doesn't rely only on movement, but it also functions as public space where sociability, activities and accessibility take place in integration (Jou, 2011).

As the livability identifies the quality of life; in order to evaluate a good quality place, whether a street, a playground or a plaza; Project for Public Spaces organization (PPS) developed the place diagram, as a tool to define the quality of space. The Diagram consists of four main quality criteria, which are classified as follow: Accessibility, Comfort & Image, Sociability and Uses & activities. Each criterion holds a number of quantitative and qualitative aspects that can be measured by statistics or research (PPS, 2000).

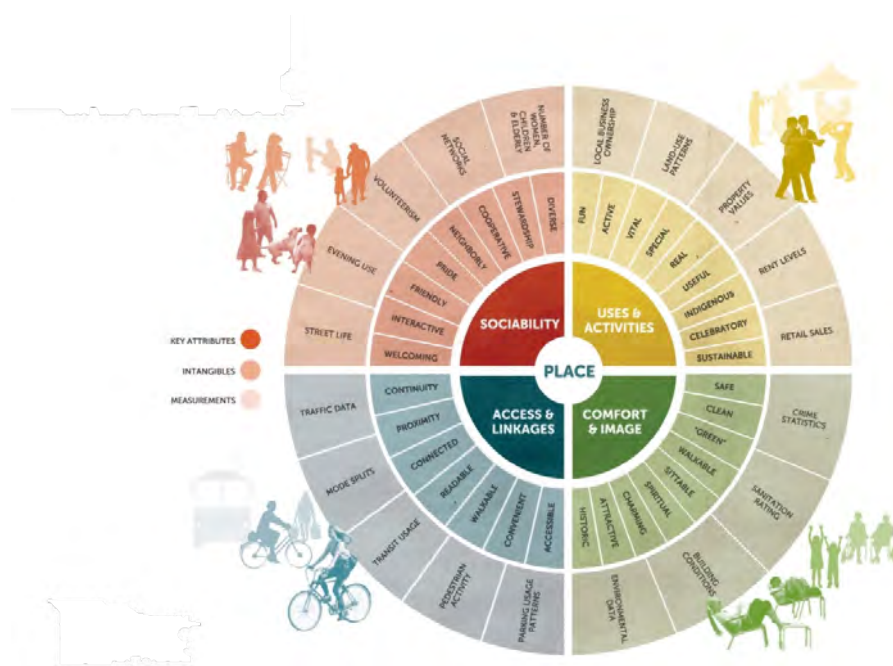


Figure 1. Shows the place diagram developed by PPS (PPS, 2000).

By applying the place diagram on street, it is clear that the pedestrian activity is one of the fundamental qualitative aspects within the access and linkage criteria. By this the pedestrianization scheme becomes a crucial indicator of a good quality space, and could be considered as a part of livability. Otherwise, some argued that having pedestrian

zones only doesn't mean that we achieved livability, and the street have to include multi-functionality, such as socialization and community interaction, in order to increase the quality of life (Kamel, B. et al., 2017).

On the other hand, the traffic volume is classified as a major threat on the quality of life (Hart, J., Parkhurst, G., 2011). And in order to prevent this threat, many cities started recently to take action in attempt to increase their livability by going car-free like Hamburg, Helsinki and Madrid, and others started low cost interventions to create pedestrian-only streets like New York and Los Angeles (ARUP, 2016).

Hence, the correlation between the livability and pedestrianization is tied spatially and functionally in diverse aspects, either aesthetical and physical or social and environmental. And by analyzing theories, it has been found that the pedestrianization form a significant part of livability.

2.2. A correlation shaping the urban sustainable development

Recently, the mobility became one of the essential factors contributing the sustainable urban development. And by analyzing the various benefits of pedestrianization, including social, economic, environmental and political, it has been proved that all constitute the principles of the sustainable urban development (ARUP, 2016) (Jou, 2011).

Also, it has been argued that the livability is part of the sustainability concept (Shamsuddin, S. et al., 2012). Furthermore, it acts as an aim and theory of the sustainable urban development. In other words the livable city is the other face of the sustainable city, as they share one focal objective: achieving the ultimate development with the least resource consumption and environmental impact to ensure the wellbeing of both humans and the earth (Tang, H. & Lee, Y., 2016).

So, as the livability is part of the sustainability. And the pedestrianization contributes the livability in different aspects as well as it constitutes the principles of sustainable urban development. By their integration, the pedestrianization and livability, citizens experience better quality of life for a long period of time. This means that the pedestrianization and livability in integration works on achieving the ultimate of sustainable urban development.

3. Approaches to pedestrianization

Many Cities around the world started to shift their mobility from car-oriented toward pedestrian friendly access, by implementing different plans and measures, depending on their aim. For example some cities, like Hamburg and Madrid, have announced plans to become car free cities partially. While others like Copenhagen, Milan and Paris, implemented car free days, invested in pedestrian and cycling infrastructure, restricted parking space and increased the provision of public transportation. All these different implementation approaches target different aims, which may include: reducing the vehicle traffic, increase the active transport and benefit public health for the short and long term (Nieuwenhuijsen, M. J. & Khreis, H., 2016). On the other hand number of cities have been facing number of barriers to pedestrianization, being political, institutional, social, technical or financial (Parajuli, A. & Pojani, D., 2017).

3.1. Precedent approaches & barriers to pedestrianization

In this part, approaches to pedestrianization by many cities around the world are introduced and analyzed in historical order, based on previous researches, coupled with clarifications concerning their aims, methods, results and barriers. The included cities are encompassed within diverse parts of the world including: Europe, north America, Australia , Asia and the middle east, to cover the different approaches globally, as the circumstances and situation may vary from place to another, as well as the culture may contribute.

-Europe:

Aims: In the 1940, many European cities began to pedestrianize their centers, for different reasons, including: vehicle access control, decreasing the harmful pollution effect, architectural conservation, improving environmental

aspects, creating valuable spaces and restore the city center shopping activities and trades.

Methods: Germany was one of the leading countries in implementing small scale pedestrianization scheme, by creating pedestrian malls among twenty one cities, followed by the city of Copenhagen, famous by its large scale pedestrianization movement, where banning vehicle access and prioritizing pedestrians took place along Stroget Street in 1962.

Barriers: After the Stroget street conversion some opposition by diverse groups of citizens occurred at first. That included shop owner's fear from business reduction, traffic engineer's objections because of the shifted traffic from the main axis to parallel narrow streets and the public transport fright of losing passengers.

Results: Despite the encountered opposition, Stroget scheme turned to success in both urban and commercial aspects. Also the encountering streets experienced virtual revival. After the success of German and Danish models, the concept of pedestrianization was undertaken by their European successors. And today, there are hundreds of pedestrian malls in Europe, many of which have been successful in terms of inclusive accessibility and social and commercial liveliness (Parajuli, A. & Pojani, D., 2017).

-North America:

Aims: The United States started pedestrianization scheme in aim to restore shoppers in downtowns and revive their CBDs after post-war declination.

Method: In 1959, the first pedestrian mall was introduced in Michigan, followed by more than 200 hundred cities with the same application scheme. In addition, some states made large funds for down-towns urban renewal, to accommodate these pedestrian malls.

Barriers: In the beginning, the experiment was thought as successful, but later in the 1980 the benefits of the pedestrian malls didn't meet the expected outcomes in the majority of US downtowns. Reasons behind the failure included decreased amount of shoppers, because users come only at first to celebrate the opening but rarely come back to shop. Also some malls lack safety at night and were classified as dangerous and occupied by homeless.

Results: As a result of the unexpected negative outcomes of American pedestrian malls, by the 1990, over hundred cities restored the original function of the street, and returned to be vehicular access instead of pedestrian priority. While some have remained within specific locations like touristic attractions and students occupied places (Parajuli, A. & Pojani, D., 2017).

-Australia

Aims: Australian cities laid between the North American and European schemes. Their aim was related to land use and transport patterns improvements.

Method: Closer to the North American scheme, Australia implemented its first pedestrian malls in 1970, by banning cars from the core of three cities, then the concept was spread over the rest of the cities across the continent.

Barriers: Similar to their North American counterparts, the act of banning cars was opposed by citizens of Melbourne, but they didn't face a problem with safety, so the municipality assigned the leading architect Jan Gehl to solve the case. Gehl supposed a part-time street closure during the lunch time in order to re-introduce the public space. After a decade, the Melbourne CBD received an increased average of pedestrians during the day and evening.

Results: The same technique was followed by other cities in Australia like the state of Queensland, which started a temporary pedestrian mall in 1973, after a decade it was expanded due its popularity and increased number of visitors, either locals or tourists. On the other hand some research suggested that the retailers respond negatively when a pedestrian mall is first implemented, because of their fear of increased rent and overcrowding (Parajuli, A. & Pojani, D., 2017).

-Asia

Aims: In Asia, Singapore implemented the pedestrianization scheme in order to; firstly, reduce the car dependence and increase walkers safety and comfort; secondly, to improve the economic activity.

Method: In Singapore, they implemented permanent pedestrian streets, also they created temporary schemes, where at day time it is open to vehicles and at night it is only for pedestrians, food stalls and vibrant social activities. They also followed another method of car restriction, which allow a limited number of permit holders to

access the downtown. Moreover they activated mass-transit, which is accessible by all the pedestrian areas.

Results: The Singaporean leading scheme of pedestrianization (either permanent or temporary), in integration with an efficient public transportation system, became a model for the rest of leading Asian countries including Hong Kong, which followed Singapore by implementing a similar scheme. Moreover retailers became supporters to the pedestrianization, in favor of vibrancy and the increased retail activity (Parajuli, A. & Pojani, D., 2017).

-Middle East

Aims: In the Middle East, Egypt is one of the countries which proposed a pedestrianization strategy, in order to revitalize and conserve the urban fabric of its historic old city (the Fatimid Cairo).

Method: In 1990, the implementation of a pedestrian spine took place in the historic Fatimid Cairo, where cars were banned from this street, except emergency vehicles. In addition to the renovation of historical features, in the context of architecture and urban planning, and the establishing of roads to adopt the shifted vehicular traffic and garages, in order to receive the visitor's vehicles.

Barriers: In 2008, the scheme became official, and faced some opposition, especially from local residents and retailers. They didn't only oppose the idea of banning car accessibility but the resident feared the gentrification, and local businesses were concerned about their local client, who would be discouraged to revisit.

Results: This project was controversial; it meets the government's desired aims and became a touristic attraction and vibrant center, but is still opposed by local residents and retailers (Parajuli, A. & Pojani, D., 2017).

After analyzing the precedent examples, each city had its own aims, including controlling vehicular access, decrease the greenhouse effect, conservation of heritage and urban fabric revitalization, and increase the retail activities and economic revival. Based on each's aims a different pedestrianization scheme was followed, either permanent or temporary, coupled with general improvements to support the approach and attain specific desired outcomes. As a result some cities implementation approach was successful and attained the objectives especially the temporary scheme, while others faced some barriers while implementing or failure after implementation. These barriers included: opposition apart from local residents, riders or retailers, cost recovery, service and delivery vehicles accessibility, planning for the shifted traffic circulation and infrastructure, application procedure and the lack of institutional and political support (Parajuli, A. & Pojani, D., 2017). This research represents an approach which could break these barriers to pedestrianization, through low cost, temporary and scalable interventions and policies. This approach is called the tactical Urbanism, and has been clarified through the following section.

4. The tactical urbanism as an approach

In the last few decades and the beginning of the twenty-first century, many cities worldwide suffered from diverse challenges that included: the shifted population, unstable economic situation, the rapid growth of technology and citizens dissatisfaction. All these confrontations led to the rise of quick, low cost, temporary, community based, scalable and creative interventions in attempt to improve the condition of cities, within both short and long term, all of which the concept of Tactical Urbanism has been shaped (Lydon, M. & Garcia, A., 2015).

4.1. Definition and meaning

Cambridge dictionary defines Tactical as "relating to tactics or done in order to achieve something". Meriam-Webster added "of or relating to small-scale actions serving a larger purpose" or "adroit in planning or maneuvering to accomplish a purpose" (Lydon, M. & Garcia, A., 2015).

In the context of Cities, The tactical Urbanism is defined, by Mike Lydon and Anthony Garcia in the second volume of their book *Tactical Urbanism: short-term Action for long-term Change*, as "an approach to neighborhood building and activation using short-term, low-cost, and scalable interventions and policies." They added that these "interventions include illegal, unsanctioned, bottom-up initiatives as well as formal, city-led programs and policies. "In other words, the tactical urbanism can be used by diverse actors, or tacticians, ranging from the governmental and institutional, Top Down, to the individual or group of citizens, Bottom Up, and everything in between , in

order to improve the existing situation or even initiate new ones (Lydon, M. & Garcia, A., 2015). So the tactical Urbanism is the tool, which could bridge the gap between the Bottom-up and top-down, by creating a positive setting for both actors.

4.2. Benefits of tactical urbanism

The temporary use of space, at different scales, in a light and feasible way are the three prominent qualities that shaped the expression of Tactical Urbanism, and are considered as the last responses of basic human needs, in attempt to improve the livability, economy and social capital (Lydon, M. & Garcia, A., 2015).

-In terms of scalability

From a blank wall to overly wide street, the opportunity to apply tactics is readily available (Lydon, M. & Garcia, A., 2015). The actions of tactic vary in scale from the micro to macro, and can even reach the scale of a city planning. Grids, streets, and buildings present the macro scale approach of tactical urbanism within a city, which could affect positively the development of the built environment, by applying different tactical activities. In case that the micro-scale tactics, like retail, arts and recreation, respond to the urban street needs through more focused activities (Abd Elrahman, 2015). The tactical urbanism can also serve the city scale planning, for example, the open streets initiatives had a great impact on the city and district level, which assisted in the development of many cities later (Silva, 2016), in terms of planning, as a respond to citizen preference. So, even if the Tactical Urbanism focuses primary on local level, like streets and blocks, it plays a significant role in terms of macro-scale level and the city's evolution. Also it doesn't offer a typical solution for all scales, but flexible and willful responses (Lydon, M. & Garcia, A., 2015).

-In terms of Durability

Temporary Urbanism can be considered as a synonym to the approach of tactical Urbanism. And the short-term interventions have been proved as an effective tool of implementation. The tactical urbanism presents short term interventions in the form of testing for an idea in real time, within a city which acts like a laboratory (Lydon, M. & Garcia, A., 2015). In other words, it promotes a prototype in human scale, where the opportunity to test and report can be made easily and accurately, while they are being implemented (Silva, 2016). It gives the chance to imagine and create different new concepts and aid in decision making before implementing large-scale, costly, and long-dated developments, that may not ensure its success or meet the desired outcomes after its coexistence (Abd Elrahman, 2015), for example the public officials used to implement rather than test, but in this case the target may be undetermined and the idea of testing would play a significant role in the process if applied.

Despite it has a defined time-scale, in order to get immediate results, sometimes the short-term intervention becomes permanent or cyclical, where the unsanctioned becomes sanctioned, due to its outstanding results. For Example: the open street initiative that made people use to the space in its new function, as social space where activities take place, became a cyclical event that repeats in a specific day, either within a week, month or year (Silva, 2016).

-In terms of Savings

Tactical Urbanism relies on implementing new spaces or regenerate existing ones. Based on the coexistence of these places, this approach focus on the concept and process of an existing urban design, where the user define the needed quality, and participate in urban design solutions, also citizens usually give hands on implementing these new spaces, instead of hiring workers, and the used materials are often preexisted objects that are subject to reuse (Silva, 2016). All these provide a lot of savings in planning and implementing through the creative tactic that generates the low-cost interventions.



Figure 2. Shows the spectrum of tactical urbanism activities transformation from the unsanctioned to sanctioned (Lydon, M. & Garcia, A., 2015).

4.3. Practices and Practitioners of Tactical Urbanism

When it comes to equity, The Tactical urbanism is an open for all opportunity, which allow all people to participate in the process of decision making. The only required qualification that gives them the right to practice tactic are: their must to be educated, concerned about the civic problems and able to share their spare-time in participation. These people range from individuals, groups of citizens, planners and developers to the organizational levels and city government (Lydon, M. & Garcia, A., 2015). The three common practices of tactic have been classified, based on their practitioners, as follow:

-Citizens are the initiator

There are always reasons behind citizens' tendency to tactic. These reasons may include: the typical municipal regulations that takes a long time in processing, obsolete regulations or simply unsatisfying situation. It is as Mike Lydon said "citizens exercising their right to the city. "For Example: The international movement of "Chair Bombing", this famous type of tactical intervention initiated by citizens, works on reusing shipping pallets into fabricating chairs. These chairs have been placed as street furniture, due to lack of seating within the urban fabric of a city, and served the community by allowing anyone to use it, thus became a global movement and of international trend since 2011 (Lydon, M. & Garcia, A., 2015).

-City government and Developers' tool for public involvement

Some official agencies like city planning, are realizing the potentials of the tactical urbanism in linking the citizens and developers with the city within the process of urban development, in order to handle the fear of change issued by citizens, through the introduction of sanctioned but temporary projects. for example: In Massachusetts, USA, the city were developing streetscape plan which was always offended by neighborhood stakeholders, so the city decided to practice the tactical urbanism with citizens, by bringing the planning concepts to citizens practically instead of discussing, through the developing of neighborhood design temporarily, so citizens realize the opportunity. This intervention made better decision making because of the participation of diverse groups of people (Lydon, M. & Garcia, A., 2015).

-Implementation of "phase 0"

When the planners and citizens collaborate with the city, by following the formal procedure of planning, the rewarding future outcomes are assured. This type holds a lot of benefits including, grant or Funding, organizational

support and delivery process. It always starts temporarily, using temporary installations, and often brings immediate benefits. These outcomes help in the processes of planning for the permanent initiation of the project, especially for new projects. In case these outcomes didn't meet the desired objectives, the project can be redesigned or terminated without any losses related to capital budget. But this type always works in favor of transforming the temporary projects to sanctioned ones. For example, In New York city, the department of transportation collaborated with local organizations, in order to transform underused asphalt into temporary plazas for pedestrians, some of which became recently permanent (Lydon, M. & Garcia, A., 2015).

The mentioned three practices are depending on each other's, where the first drive the second, and the second drive the third respectively in sort of process (Lydon, M. & Garcia, A., 2015).

4.4. How tactical urbanism could break barriers of pedestrianization?

Based on previous research, it has been argued that the car banning process would resist, and could take a period of time to be implemented, Also it would require tactics similar to the one used in tobacco industry. Both hold negative impacts toward the public health. For the tobacco industry, when tactics were used based on public health significance, banning smoking within certain areas became accepted, and significant overall health improvements have been experienced. Also the same could be applied to pedestrianization, regarding its significance in increasing the livability and the overall city improvements (Douglas, M.J. et al., 2011).

As discussed earlier, the barriers that faced some cities; either before, during or after implementation procedure; included: opposition apart from local residents, riders or retailers, cost recovery, service and delivery vehicles accessibility, planning for the shifted traffic circulation and infrastructure, application procedure and the lack of institutional and political support (Parajuli, A. & Pojani, D., 2017).

Then, the tactical urbanism has been proposed as a creative action that offers a quick and low cost solution to those facing obstacles. These solutions could be clarified as follow,

-Citizen opposition

As different groups of citizens may oppose the shifted mobility from car oriented to pedestrian priority, on which has been implemented by the government or official municipalities. The tactical urbanism works on linking the citizens and developers with the city within the process of urban development, in order to handle the fear of change issued by citizens, through the introduction of sanctioned but temporary projects. So the tactical urbanism works on solving the conflict that may occur between the top-down and bottom-up approach, by creating understanding and harmony in between. Moreover, tactics give the citizens the space to practice their right to the city by playing the role of initiators themselves, in order to convert a current unpleasant situation into a desirable one.

-Cost recovery

Some projects didn't meet the desired outcomes like the American pedestrian malls, where over hundred cities restored their streets original functionality, and returned to be vehicular access instead of pedestrian priority, that caused a lot of losses and costs burden.

Tactical urbanism approach focus on the concept and process of an existing urban design, where the user define the needed quality, and participate in urban design solutions, also citizens usually give hands on implementing these new spaces, instead of hiring workers, and the used materials are often preexisted objects that are subject to reuse (Silva, 2016). All these provide a lot of savings in planning and implementing through the creative tactic, which generates the low-cost interventions and reduces the probability of failure.

Moreover, the idea of short-term intervention using temporary and low cost materials can be beneficial, in case the projects outcomes didn't meet the desired objectives, from which it can be redesigned or terminated without any losses related to capital budget.

-Planning & Accessibility

In terms of providing specialized service accessibility; the tactical urbanism presents short term interventions in the form of testing for an idea in real time, within a city, through the use of Flexible and temporary materials.

These temporary and flexible materials makes the project easily accessible, where adaptation and connectivity can be easily settled, based on diverse entities and public needs and immediate results. Also it doesn't offer a typical solution for all scales, but flexible and willful responses (Lydon, M. & Garcia, A., 2015).

These responses also help in the process of planning for the permanent initiation of the project. So when it comes to planning new or existing roads, The tactical urbanism offers the temporary test and results phase at first place before the initial implementation procedure, to assure its outcomes, based on data, which may be either rewarding to initiate permanently or negative that should be determined after the short-term. So it helps in decision making, planning and implementing with insurance over the short and long-term.

-Lack of governmental support

Despite that the public officials used to implement strategically rather than testing, it has been recommended that the governments should work more tactically, as the citizens have to perceive strategically, because both strategy and tactic are of similar significance and should be used in accordance to each other. So the tactic don't only promote the governmental support but it also encourages the government in using this approach, because of its guaranteed success, as previously discussed within the third practice of "Phase 0". From which the planners and citizens collaborate with the city to achieve the assured rewarding future outcomes, by following the formal procedure of planning. Also, its dependence on the test and results process, aids the planning municipalities with their future sanctioned projects initiation, based on the quick results of temporary interventions, so that improvements and avoiding of possible failures can be easily applied while implementing the permanent project.

Table 1. Shows the tactical qualifications and practices potentials in breaking barriers of pedestrianization (Researcher, 2018)

Barriers Tactical Solutions	Tactic					
	Qualifications			Practices		
	Low Cost	Temporary	Scalable	Citizens	Government	Phase 0
Opposition from citizens		•		•	•	
linking the citizens and developers with the city Citizens can play the role of initiator						
Problem with cost recovery	•	•	•	•		•
Regenerate existing spaces the reuse of preexisted materials Grants or Funding may be offered						
Specialized service accessibility & planning roads for shifted traffic		•	•		•	•
Temporary Flexible materials Short term interventions, bringing immediate results						

Continued on next page

Table 1 continued

Lack of institutional & governmental support	•	•			•	•
Citizen-Planners-Government Collaboration A recommended tool for government and city planning						

From this, based on the qualifications and practices criterion of tactical urbanism, barriers toward pedestrianization could be creatively solved either in terms of citizens' acceptance, initiation cost, current and future planning or the support of government. So the tactical urbanism presents a desirable approach to pedestrianization in all cases.

4.5. Precedent examples of pedestrianization using tactics

Despite, the approach of applying tactical urbanism in pedestrianization seems modernistic; however it has been used successfully since long time ago until today. In this part, precedent three examples of pedestrianization through tactic, including old and new, are introduced and analyzed, based on the criterion of tactical qualifications and practices, as follows:

-The Woonerf

The Dutch Woonerf, or living yard, is one of the earliest citizen-led tactical interventions that worked on transforming traffic-calming and prioritizing streets for the pedestrian use.

It made its first appearance, when citizens of the city of Delft became frustrated because of pollution, congestion, and safety related problems, all of which resulted from traffic that corrupted the walkable environment of their city. Due to the municipality ignorance regarding the citizens' frustration, Citizens started to place temporary obstacles in the middle of night, including: movable trees, bollards, etc., so the cars slow down their speed while maneuvering around the placed barriers.

This bottom-up intervention presented a different street experience to the rest of the city, where the social activity took and residents enjoyed walking and playing around their traffic-calmed neighborhood.

As a result, at the beginning of initiation, the formal municipalities didn't give concern to the Woonerf initiative. But in 1976, the parliament issued laws, which stated the provision of the Woonerf into the city standards of urban design. Then, it has been applied nationally and internationally as a traffic-calming tool used by formal municipalities and professional practitioners worldwide. This successful application proved that a typical unsanctioned activity can be transformed into a sanctioned practice over time (Lydon, M. & Garcia, A., 2015).

-Car-free Days / Cyclovias

The Car-free Days or Cyclovias refer to the closure of city streets for certain hours in a specific settled day, in attempt to encourage people to use the various active mode transports, like on foot or bicycle, and experience the social activity and recreation within their city. While banning vehicles from the streets, the different recreational activities including the cultural, educational and physical take place. Many governments use this type of pedestrianization scheme as an efficient tool in achieving the economic, social and public health benefits.

The Cyclovias began in 1974 in Bogotá, the capital of Columbia, whom pioneered this scheme. Its development began in 1974 but its implementation took place in 1982, when the Mayor released the act of street closure to vehicles on Sundays in favor to make the city for people. Since then the Cyclovias event grew in Bogota until they reached the world's largest car-free day event and covered the entire city, and became an annual event based on citizens' preferences in October 2000, the municipal government mainly with some additional private sponsorship revenues adopted its fundings (McKibbin, 2014).

(Torres, 2012) stated that the cyclovia brought a lot of environmental, health, economic and social benefits. By promoting walking and cycling the negative effects of vehicles, like pollution, noise and congestion, are reduced while the overall citizens' health is enhanced. Also the social interaction between individual was significant, that resulted in increased sense of place and equity among the different classes of public realm. Also a lot of economic benefits are obtained due to program investments and medical cost savings.

-Green light for Midtown

Before 2009 traffic congestion in New York City, USA, became critical, CBD became unfriendly to walk through, and the environment was full of toxic fumes and other vehicle related impacts that dominated the city. These negative conditions, led a major initiative called “Green Light for Midtown” to bring a tactical solution in order to improve the mobility and safety situation. The tactic constituted of the pedestrianization of two public plazas in Times Square and Herald Square, with other improvements related to safety along the Broadway corridor.

The intervention began within a temporary scheme of six month pilot project, where movable furniture and materials were placed in plazas, and different programs were activated within the space. The project experienced a significant public participation, where people dominated streets and started to socialize, walk and interact. While the department of transportation started to measure the outcomes through different types of measurement techniques, the outcomes were rewarding, which included a drop in pedestrian and vehicles injuries, increase in foot traffic, thus an increase in retail turn-over.

The success of this intervention made the project to turn from temporary to permanent. It became a model approach citywide and has been applied on a number of pedestrian plazas (Lydon & Garcia, 2015).

Table 2. Represents a comparative analysis of three practices of tactical urbanism in pedestrianization (Researcher, 2018)

	Woonerf	Car-free Days / Cyclovia	Green light for Midtown
City/Country	Delft, Netherlands	Bogota, Columbia	New York, USA
Year	1970s	1974-1982	2007
Causes	Car dominance and citizens frustration	Making city for people	Traffic congestion-related problems
Approach	Tactical Urbanism	Tactical Urbanism	Tactical Urbanism
Practice	Citizen-led	Government's tool	Phase 0
Durability	Part-time daily	One day weekly	Six months
Initial Scale	Neighborhood	City Streets	CBD
Initial Fund	Public	Mainly public with additional private	Public & Private
Outcomes	a traffic calming tool worldwide	an annual event based on citizens' preferences	model approach citywide
Results	Sanctioned	Sanctioned	Sanctioned

According to the comparative analysis between the three precedent examples, each city followed a different practice of tactical urbanism, based on each's cause of initiation, the first was citizen-led, the second was initiated by municipality and the third presented the “Phase 0” approach. Also the durability changed from one day to a period of months. Furthermore, the scale varied from micro to macro, where the implementation started in a specific area, like streets, neighborhood or CBD, but rapidly reached the citywide and even worldwide. The fund depended on the type of practice and varied between the private and public or both. Despite all these mentioned variations, all the projects achieved the desired outcomes and remained successful, and all the practices were turned from unsanctioned to permanent due to its outstanding results. From this, the tactical urbanism approach proved its efficiency as a beneficial tool for pedestrianization, which can remain successful and sustainable, whatever type of tactic is applied and no matter the variations differed.

5. Conclusion

This paper worked on proofing the correlation between the pedestrianization and the livability, based on a theoretical literature, thus their effect on the urban sustainable development. Hence the pedestrianization formed a fundamental part of the livability, and each's positively fulfilled the requirements of urban sustainable development, moreover their correlation led to reach the ultimate of sustainable outcomes. Based on this discussion, the various approaches to pedestrianization were introduced, in historical order, in attempt to analyze their used scheme, aims, outcomes and results. From this analysis, the outcomes showed success, failures and barriers to the implementation of pedestrianization scheme. These barriers were listed, according to the analysis of diverse examples, which were clearly stated in form of specific constraints. The research proposed the tactical urbanism as a creative approach in the implementation of pedestrianization, by listing its qualifications and practices. Based on the mentioned tactical theories, the Tactical Urbanism proved its competence in breaking any kind of barrier or challenge that may face the implementation scheme of pedestrianization. Then a comparative analysis between three different examples were analyzed, where each applied the approach of tactical urbanism in pedestrianization using various technique, and despite the variable factors, it showed an outstanding results, all of which led to sanctioned results and sustainable urban development.

Accordingly, the paper shows the tactical urbanism as beneficial tool in pedestrianization, which could be applied under different circumstances. And always led to the desired outcomes and sanctioned results. It represents a practical tool for all parties whether public, private or governmental. Furthermore it can be applied at any scale, which may include street, neighborhood, district and even city scale. The tactic is highly recommended in city planning due to its guaranteed outcomes and benefits, including the solving of traffic problems, converting car-zones into public spaces, develop the underused asphalt into social and cultural programs where the livability could be achieved. Also, it allows the public to participate and visualize the streets creatively, and decide to whether be kept or determined. Also it revitalizes old CBD's and works on improving the different aspects of pedestrian priority street, which include the economic, social, cultural, environmental and political. All of which lead to sanctioned ensured implementing approach in attempt to rejuvenate the cities and achieve the urban sustainable development.

6. References

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