

Nile River: A Fitness Trail Promoting Physical Activity In Cairo City

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ABSTRACT: Nowadays, governments are challenged by dramatic increases in the frequency of chronic diseases, obesity and sedentary lifestyles caused majorly by physical inactivity. In order to lessen such complications, urban designers and architects strive to create open spaces and streets that encourage walking, bicycling, and other forms of active recreation. This paper aims at evaluating “Ahl Misr” Promenade created at the Nile River banks, Cairo city, Egypt, in terms of the vision guiding the design, design features, environmental aspects, promenade management, and funding channels. The study concentrates on exploring the extent to which the trail succeeded in offering venues for cycling, walking, running and stretching, as to participate in enhancing the public health in a city suffering from scarcity of open spaces. Observation of the existing activities and a physical survey are adopted. The results show that the trail is a positive stage towards the goal; nevertheless, the local authority predominating decisions and management policies are crippling the trail from fulfilling its potentials.

Keywords: Fitness Trails, Environmental Design, PlaceMaking, “Ahl Misr” Promenade

I. INTRODUCTION

Obesity and diabetes are now epidemic diseases, progressively rising, especially over the past three decades, and are major health problems around the world (Sivam et al., 2012). The increase in obesity rates is tied to the population's over-consumption of calories and under-expenditure of human energy, both of which are shaped by the built environments in which we live in. Indicators reveal that the rate of obesity in Egypt has augmented markedly over the past 30 years. Nearly 70 % of its adult population are overweight or obese (World Health Organization, 2010). According to WHO statistics, an estimated 76% of females over 15 years are overweight or obese, in comparison with approximately 64.5% of Egyptian males. Unfortunately, Obesity negatively affects not only on the community health, but also the city economy. Research links obesity with economic impacts in the form of direct medical costs, as it is accounted for 2 to 6% of total health care costs in several developed countries (Puska et al., 2003). Additionally, it is linked to indirect impacts on the production costs, and human capital costs (Hammond, R., and Levine R., 2010).

From the preceding, it is understandable that the local governments have a vital obligation to provide environments that promote opportunities for physical activity and active living. However, a vital question arises, addressing the impact of a well-designed built environment on obesity levels. Studies confirm that urban design can influence the physical activity levels and the active living in the city, as it affects where people live, how they travel to work or school, and what shops or facilities they use. Active living is a way of life that integrates physical activity into daily routines; the goal is to accumulate at least 30 minutes of exercise each day (Edwards and Tsouros, 2006). A study conducted in Atlanta, Georgia, found that each quartile increase of land-use mix in neighborhoods that encourages walking was associated with a 12 % reduction in the probability of obesity (Frank et al., 2004). Moreover, new design paradigms, such as New Urbanism, Transit Oriented Developments (TOD) and SmartGrowth seek to encourage physical activity in urban areas. These design paradigms embrace walking, bicycling, active recreation, and encourage stair climbing, transit use to sustain public health (Field, 2011). Therefore, local strategies and plans should aim at promoting physical activity among people of all ages, in all social circumstances and in all parts of cities. Fitness trails are considered one of the solutions that urban design can offer to encourage city citizens to follow a more active lifestyle. A solution that can improve health especially in a city like Cairo city where there is an absence of public spaces dedicated to exercising, as present exercising venues are restricted to private clubs (for members) or youth centers with entry fees.

II. FITNESS TRAILS IN THE CITY

A fitness trail consists of a path or course equipped with obstacles, stations or gym equipment specifically designed for outdoor use, distributed along its length for exercising the human body to promote physical fitness training. They may be located in parks or along valley lands, river corridors, adjacent to active or abandoned rail lines, hydro corridors and other linear routes that serve the needs of both recreational

and utilitarian cyclists (City of Brampton, 2002). Trails tend to connect existing playgrounds, libraries and open green space, as to achieve better exposure and encourage their use (Ocken, 2014). A successful trail facility should provide a safe and comfortable environment for the anticipated users. It is, therefore, important to identify the target group for whom the facility is being designed according to age, and skill level. Generally, it is found that walking is the primary choice among recreational users followed by cycling then jogging then in-line skating then or pushing a stroller (City of Brampton, 2002).

Many cities all over the world started exploiting their river banks to provide public trails for local communities to use. Examples of these trails are: “Cooks River Fitness Trail” located in Canterbury City, Australia [Figure 1], “Oracle Fitness Trail” located in San Francisco [Figure 2] in the United States. Moreover, “Canal Walk” stretching north through White River State Park situated in the United States [Figure 3]. The trails are for walkers, runners, bikers and sightseers. They offer outdoor, self-guided exercise system suitable for users of all age groups and abilities. The fitness equipment is based on warm-up and cool-down, stretching, strengthening and cardiovascular workouts (City of Canterbury, 2016; Visit Andy, 2016; Indiana trails, 2016). Funds are offered by the city council or private corporations.



Figure (1) Cooks River Fitness Trail location and design

Source: City of Canterbury, 2016



Figure (2) Oracle Fitness Trail design

Source: <https://www.yelp.at/biz/oracle-fitness-trail-redwood-city>



Figure (3) The Canal Walk fitness and recreation trail

Source: Visit Andy, 2016; Indiana trails, 2016

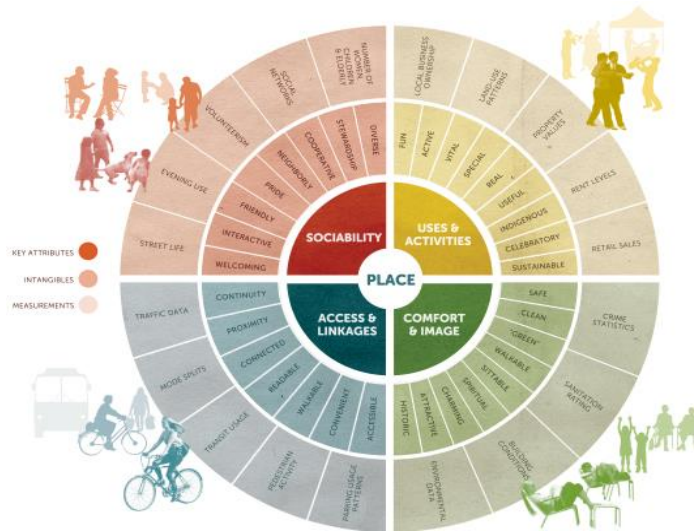


Figure (4) Place Making Model

Source: Project for Public Spaces, 2009

III. CREATING A FITNESS TRAIL AS A PLACE FOR PEOPLE

Project for Public Spaces (PPS) began consistently using the term “Placemaking” in the mid-1990s to create quality public spaces that contribute to people’s health, happiness, and wellbeing. The process is based on community participation where users of all ages, abilities and socio-economic backgrounds are the ones crafting the identity, creation, and maintenance of the project [Figure 4]. To identify the Placemaking concept, Project for public space published eleven fundamental principles devoted to creating a place, not only a design through finding the right partners; embracing creative ideas; and observing to understand how people use the space. They added developing a vision, providing innovative financing and starting small to prove that change is possible. Finally, PPS focused on the significance of ensuring efficient management plans to journey the success of the project (Project for Public Spaces, 2009). Another approach is the Inspire East Excellence Framework, which highlights eight key headings that must be addressed in sustainable communities, they are: governing, connectivity, services, environmental aspects, equity, economy, built environment and finally social and cultural environment (ATLAS, 2017).

3.1 Location and design

From the previous examples, it is clear that creating a fitness trail needs a vision that supports and encourages active living in the city. This vision should be embraced by the local governments, in order to invest in creating places to enhance the public health like fitness trails. As for the trail design a strategic level assessment is needed in the city or the community level. This initial stage of the route selection process classically implies selecting suitable spatial structures of the trail corridors, like streets or neglected areas to be transformed. It is preferred that the trail links desired destinations, including parks, community centers, schools

and commercial centers, this will encourage residents to use the trail to get where they want to go (Sivam et al., 2012). Accessibility and proximity are major issues, as the trail should be easy to reach (connected to pedestrian/public transportation network) and offers full access to all social groups (Cohen et al., 2007; Hess et al., 2001). Additionally, it is recommended to, include sunny, wind-protected areas for use in the winter and shaded zones for use in the summer. The trail may accommodate durable and ease of use exercise equipment with appropriate instructions. The equipment should provide different levels of challenge, opportunities for all levels of experience, whether the trail users are beginners or are sports athletes (Ocken, 2014). Facilities as public restrooms along the trails, access to free phones, seating, drinking fountains, wayfinding signs and other infrastructure will help to increase the frequency and duration of the trail use (Edwards and Tsouros, 2006; New York City Departments of Design and Construction et al., 2010).

3.2 Social cohesion and safety

Creating social cohesion between different socio-economic and ethnic groups is essential. The challenge is to take advantage of the various assets offered by a diverse population while respecting their diverse needs, preferences and culture. Culture, which is usually linked to ethnicity and race, often influences how specific communities will be active or inactive. The trail design should likewise consider people with disabilities, for example by constructing the path, entrances and fitness equipment to be compatible with wheelchairs. Another important aspect is safety, as it is reported that safety is the greatest concern when walking, jogging, in-line skating or cycling in the city (City of Brampton, 2002). Several studies have found that crime and fear of the offense are barriers to exercising and being physically active outdoors among adults, especially minority women, and children (Handy et al., 2002). Therefore, the trail should be designed to maximize safety and prevent injuries.

3.3 Funds, maintenance and management

Funding the trail could be executed through the public sector funding, taxation initiatives, planning and development opportunities, income-generating opportunities, endowments from pharmaceutical companies, finally voluntary sector involvement (CABE Space, 2006). Management should be planned and organized to meet users' needs. Nevertheless, users themselves should be able to feel responsible for the public spaces they use. Managing the space is preserving its attractiveness (treating damage, graffiti, etc.), and keeping it clean and safe. Moreover, managing the activities taking place in the space is rather significant to prohibit conflict or unwanted behaviors and to ensure the vitality of the trail.

IV. CASE STUDY: TRANSFORMING SECTORS OF THE NILE RIVER TO FITNESS TRAILS

Although Cairo city is blessed by the Nile River penetrating its districts, the public space was underused for a long time. This fact promoted the launch of "Ahl Misr" Promenade, a national project seeking to connect the crowded Egyptian cities to the river banks and provide outdoor spaces for recreation, exercise and socialization while preserving the river and upgrading the city's visual image. The project targets different cities; one of them is Cairo city. In Cairo, the project had witnessed the collaboration of the Ministry of Water Resources and Irrigation, Nile Research Institute, Cairo Governorate, Specialized Gardens Project, Cairo General Authority For Cleanness & Beautification, Al Ahly Bank, and ECG as an engineering consulting firm. The development project comprises five phases; the first and second phases are completed. The first phase starts from Kasr El Nile bridge to 6 October Bridge (0.6km), while the second phase from 6 October Bridge to 15 May bridge (1 km) costing 17 million E.P. The rest of the project is postponed due to financial obstacles [Figure 5].



Figure (5) The phases of the Nile development project

Source: Researcher

4.1 Methods

The main purpose of this research is to evaluate the outcome of "Ahl Misr" Promenade (pros and cons), using indices from Place Making Model and Inspire East Excellence Framework. The study analyses the vision

guiding the design, design features, environmental aspects, promenade management, and funding channels. It compares between the original designs and the implemented version. Furthermore, the study concentrates on exploring the extent to which the trail has succeeded in offering venues for cycling, walking, running and stretching for public use. To fulfil such goals, two methods are adopted:

1-Observation of the existing activities performed in the promenade, with particular attention to exercising. Observation included recording activity types, visitor characteristics (gender, age, groups), time of use and duration.

2-Survey the Nile bank and sidewalks, recording the trail width, current vegetation, hardscape materials, furniture, bank design and utilization, and surrounding uses. Secondary data are collected from reports and previous researches related to the Nile waterfront.

V. RESULTS AND RECOMMENDATIONS

5.1 Vision And Accessibility

Table 1: Local institution vision and accessibility evaluation

Source: Researcher

Factors	Positives	Negatives
Vision and implementation	-Political support -The collaboration between different ministers and private institutions - Starting with vital sectors in the city -The proposed vision supported the active lifestyle -Removing violations on the banks (Anchorages)	-The local government did not commit to the proposed vision, for example, they omitted the cycle track, vegetation, indirect lighting fixtures, steps and handicap ramps [Figure 6]. -Community stakeholders did not have the chance to participate - The consultant had no authority in the implementation phase - No clear vision for the rest of the Nile banks, especially dealing with violations as parking lots and restaurants
Accessibility	-High accessibility -Connected to public transportation	-No parking lots -No safe pedestrian crossing zones, creating a weak connection to neighborhoods - Restricted handicap access



Consultant Proposal



Implemented

Figure (6) Proposed design for the second sector

Source: (ECG, 2016 and researchers)

Recommendations:

- Consider in the development vision of the next phases, the multi-uses that can be accommodated in the promenade (recreation, fitness, education, etc).
- Create a vision for all the river banks, including a fitness trail for each sector [Figure 8], length and design will depend on the specific features of the sector.
- Allow the local community to participate and oblige the implementing authority to comply with certified designs.
- Select the fitness trail location to overlook views and vistas of prominent landmarks, and open spaces, to enhance the visual experience while exercising.
- Design safe pedestrian, cycling crossing zones to connect the trail with perpendicular paths [Figure7].
- Provide parking lots for users arriving by private cars.

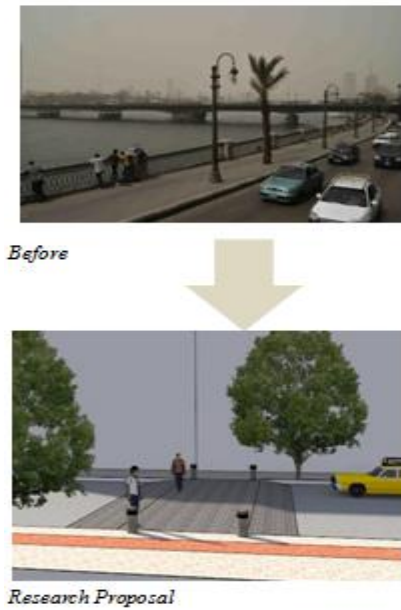


Figure (7) The proposed safe crossing to access the trail

Source: Researcher



Figure (8) The proposed sectors to provide fitness trail in Cairo city

Source: Researcher

Table 2: Design, social inclusion and the environment evaluation

Source: Researcher

Factors	Positives	Negatives
Implemented Design	<ul style="list-style-type: none"> -The trail can be used for commuting, recreation and walking -The design enhanced the visual image[Figure 9] -The project used anti-vandalism materials and furniture [Figure 12] 	<ul style="list-style-type: none"> - Omitting cycle lanes -Hard to reach deep sectors of the trail due to many stairs -Special treatment is needed under bridges -Lack of facilities as water fountains and toilets -Lack of refreshment kiosks -Few seats -No access for handicap and vendors in most of the sectors [Figure 10] -The new promenade is not shaded - The use of expensive hardscape and furniture
Safety	<ul style="list-style-type: none"> -The trail is separated from the vehicular traffic - The trail is lighted 	<ul style="list-style-type: none"> - Lack of natural surveillance due to the low level of the trail -No safe pedestrian crossing areas -No control over female harassment -Existence of stray dogs
Social inclusion	<ul style="list-style-type: none"> -No restriction on using the river banks -Low and medium income population use the trail for recreation 	<ul style="list-style-type: none"> -High-income users restrict their utilization in restaurants and cafes - Hidden levels of the pathway are used exclusively by couples
Environment	<ul style="list-style-type: none"> -The participation of the Ministry of Water Resources and Irrigation -Removing debris from the river banks -Preserving existing shade trees 	<ul style="list-style-type: none"> -The dominance of riprap over vegetation, as most of the proposed trees in the design are cancelled -There will be a challenge in dealing with the existence of natural vegetation on the banks, especially in the Maadi sector [Figure 11]



Figure (9) Proposed design for the second sector

Source: (ECG, 2016)



Figure (10) The difference between original designs and the implementation

Source: (ECG, 2016 and researcher)



Figure (11) Natural vegetation in undeveloped banks

Source: researcher



Figure (12) (Left) old seats, (right): new granite anti-vandalism seats

Source: Researcher

Recommendations:

- Redesign the walking trail to include ramps for handicap and vendor carts
- Preserve the existing trees and protect as much as possible vegetation in banks, with increasing new trees for shade.
- New designs should emphasis on natural surveillance (the trail should be exposed), avoid creating hidden zones that prohibit natural surveillance.
- Use local durable materials.
- Select sections to be transformed into a fitness trail:
 - ✓ Add a cycling lane and separate it from the walking lane and vehicular traffic by planting or elevated levels.
 - ✓ Add workout stations for stretching exercises. Choose durable materials to tolerate weather conditions, and vandalism [Figure 13].
 - ✓ Place complicated exercise equipment in local parks adjacent to the trail to ensure maintenance and supervision. Assure that fitness structures meet the safety and durability standards. Exercise stations should concentrate on cardio.
 - ✓ Provide toilets, drinking fountains, refreshment kiosks, trash cans, information signing, and bicycle parking facilities. Toilets should not obstruct the Nile view [Figure 13].
 - ✓ Add paint marks every 200m to help to determine the travelled distance, additionally add signs to educate users about the use of the fitness equipment and the importance of exercising.



Add water fountains near fitness stations



Add sufficient light



Add location signs



Welcomes skaters, runners, and security personnel

Figure (13) Research Proposal to integrate a fitness trail in the development plan

Source: Researcher

5.3 Fund and management

Table 3: Fund, management and maintenance evaluation

Source: Researcher

Factors	Positives	Negatives
Fund	-The private sector participated in funding (Al AhlyBank)	-No sustainable source for financing the future sectors
Management Security /	-Vendors provide services for users -The possibility of outsourcing private cooperation	-Vendors invasion -The failure of the assigned private company (specialized in maintenance and security) to control vendors -Female Harassment -Noisy traffic and music from boats -No security, personnel or cameras
Maintenance	-The possibility of outsourcing private cooperation -Assigning the Specialized Gardens Project to maintain the promenade	-The failure of the governmental and private sector in managing and controlling vendors



Figure (14). Vendors occupying the Nile banks

Source: Researcher

Recommendations:

- Establish a new department responsible for managing the trial; the new department should comprise representatives from the Cairo Governorate, donors, specialized management consultants, and NGO's to manage and maintain the trail.
- Hire a security team or assign law enforcement personnel to establish a sense of safety.
- Encourage the private sector participation (hotels, banks) and NGO's in funding the trail construction and maintenance.
- Exercise stations situated in the parks can generate income if fees are imposed.
- Offer advertising panels as a way of generating income (especially pharmaceutical companies).
- Encourage hosting health awareness campaigns or public health events.
- Organize the vendors as they represent a cultural icon in the area, and they offer services with reasonable prices.
- Add high-quality services to lure high-income users to the place.
- Enhance the soundscape in the trial by restricting loud music.



Figure (15) Research proposal for outdoor gym located in parks and vendors in the trail
Source: Researcher

VI. CONCLUSION

In light of the mounting scientific evidence demonstrating the impact of active design on physical activity, this research seeks to investigate reclaiming the Nile river banks as venues where Cairo city dwellers can recreate and exercise. The research reviewed the current situation of the river bank and the ongoing river development project “Ahl Misr” Promenade. The study evaluated the first and second phases implemented. The results confirm that the central dilemma is the vision and absolute authority of the Cairo governorate, which is the decision maker and the implementing institute. This vision needs to be altered to embrace creative designs and accept the involvement of other stakeholders in the decision-making process. A national strategy is required to acknowledge the importance of active lifestyle and the significance of integrating the notion into urban development plans in Cairo city. Therefore, it is recommended to extend the collaboration to the General Organization of Physical Planning, Health Ministry and interested private sector to establish a cohesive vision that incorporates fitness trails all along the river bank, and to evaluate their impact on the city land use, economy and health. While the private sector aided in funding the second stage, there is still a problem in providing sustainable funding plans to ensure the continuity of the project. More research is needed to identify the reasons behind the gap between designs and end products, as to minimize eliminating design components in the implementation phase. Last of all, the political support which the development project receives is a valuable opportunity not to be missed, now is the time to revive the Nile banks to create designs that boost the quality of life and health in the city.

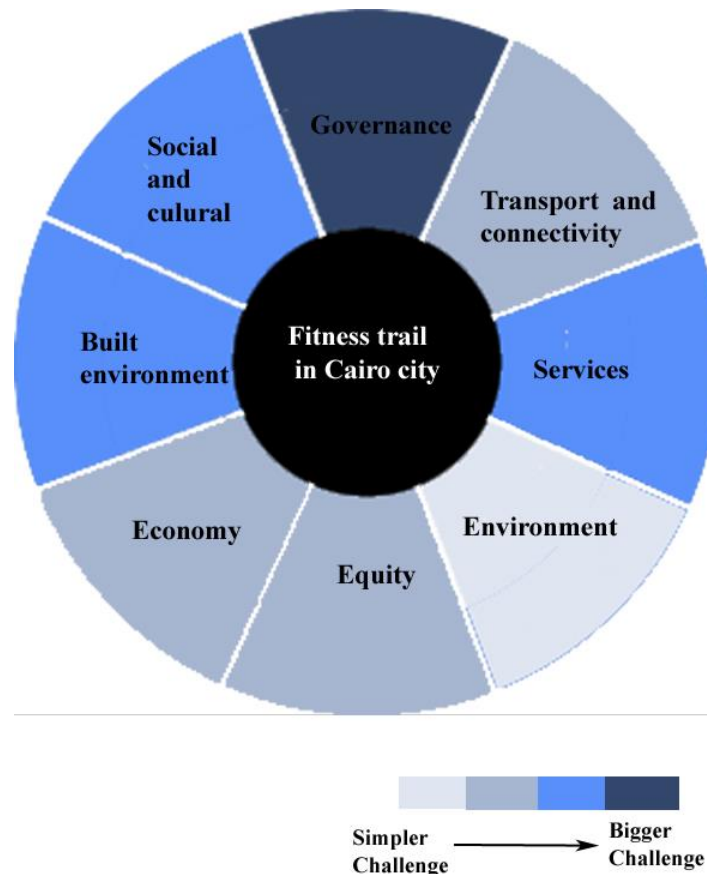


Figure (16) Obstacles facing creating fitness trails in Cairo city

Source: Researcher

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