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The Importance of Pedestrian Ways in Universities Campuses Design

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Abstract— Walking is the first way of displacement, which has been reduced considerably due to motorized transportation. The communications inside every university are of great importance on university campuses, especially in major universities that have various buildings and departments with different applications (laboratory, library, restaurants, etc.). This subject is considered from various aspects. When the university area is not appropriate for pedestrians, the need for motorized transportation increases, which has some consequences as noise, visual, and air pollution. Moreover, the roads specialized for automobiles require and occupy much space. On the contrary, pedestrian-oriented developments have great effects on positive environmental and psychological parameters such as social interactions, scientific conversations, creating a lively environment. Apart from these factors, walking is crucial for health and the environment. All these factors cause that pedestrian-oriented developments included in designing educational spaces. The present paper studies the importance and a review of this subject's literature, then the benefits of pedestrian-oriented areas and walking are discussed, and the significance of this issue is considered in designing the universities. Finally, some environmental factors affecting increasing pedestrian-oriented developments are reviewed. The research methodology is library research.

Keywords — Pedestrian-oriented, Walking Paths, University Campus Designing, Sustainable Development

I. Introduction

The university campuses and universities are considered as the main part of promoting science and information development. Students spend so much time during their education in these areas, and considering the rapid increase of the number of students and universities, the issue is more significant. Many universities have been established on large grounds. Unfortunately, the large size of these grounds led to the development of various buildings without planning and without considering urban design issues, so that the need for automobile and public transportations in universities is now required. In contrast, the need for motorized transportation could be reduced by focusing on walkways and locating the buildings properly.
Studies demonstrated that the proper design could increase the quality and quantity of walking considerably [1]. Many urban designers have emphasized Pedestrian-oriented developments. It has many benefits such as supporting the environment, creating sustainable areas, increasing interaction among students, etc.

II. Definitions

a) Pedestrian-oriented (Pedestrianism)

There are various interpretations of the concept of Pedestrianism. The simplest of them is to eliminate the traffic of vehicles from the streets. The Hong Kong transportation department defines this issue as "restricting the accessibility of vehicles to a street or an area for exclusive usage of pedestrians."

Pedestrian-oriented developments now have become increasingly important in many countries, specially developed countries. The reason is the increasing dominance of vehicles in the cities and subsequently decreasing pedestrians' presence in urban areas. [2]

b) Sustainable Development

Walking is one of the most sustainable methods of displacement which utilizes from body energy and has an insignificant impact on the environment. According to the Brundtland Commission, a sustainable development is defined in the report as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs. "The concept of need in this

The definition is related to the basic needs of people, especially from the worlds poor people. Sustainable development is based on the following three main components:

1- Economic growth
2- Social justice
3- Environmental protection

III. Research Methodology

The research methodology of the present paper is applied research and different library resources has been utilized.

IV. Importance of Walking ways (sidewalk)

a) **Significance of the Study**

The subject of walking and pedestrian-oriented developments are very important regarding its extensiveness in different areas and the sciences.

In recent years, some international charters have been developed, for instance the International Charter for Walking in Australia and Toronto, which has emphasized on various benefits of walking such as health, sustainability, safety and access. Walking is one of the most sustainable methods of displacement which utilizes from body energy and has an insignificant impact on the environment [4].

b) **Physical and Mental Health**

The fact that lack of body activity could be a dangerous factor for cardiovascular diseases has been widely confirmed [5]. The related studies carried in European countries demonstrated that walking is the first activity in many countries, except for Denmark, Germany and Netherlands in which cycling and gardening carried on more than any other physical activities [6].

Regarding the significance of walking, it could be referred to the study done by Dunn. In this study, individuals asked to incorporate 30-minutes of any additional physical activity every day; they added 19-20 minutes walking to their daily activity on average. In other words, walking could be considered as a preferred activity by sedentary individuals [7]. Today, people, especially students, don't have enough time for gym and stadiums, so walking could be one of their chances for more activity. Walking has significant impact on increasing the level of community health, especially for the majority of sedentary individuals.

c) Air Pollution

Greenhouse gas emissions due to transportation in Europe show that more than 90% of emission gases are related to road transportations.

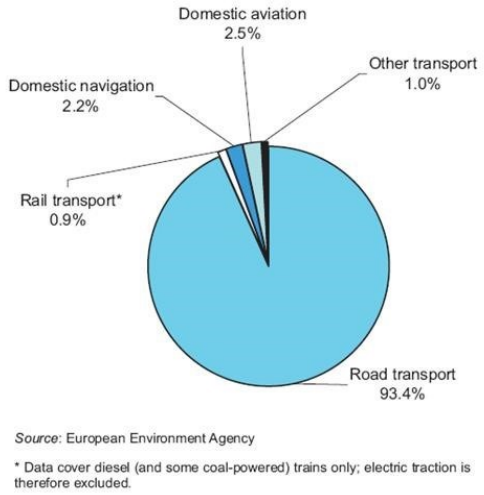

Figure 1. The amount of emission greenhouse gas in Europe, 2013 [8]

V. The History of pedestrian paths

In 1858, the first attempt in the world has been carried out in order to separation of vehicles from pedestrians by American landscape architect Frederick Law Olmsted. He established a bridge made of stones on the vehicle roads in designing Central Park of New York City. After the Second World War, in the United States of America, such pedestrian paths were formed and named "Mall" which was mainly consistent with commercial purposes in the center of the cities with the aim of creating desirable environments for shopping and leisure in the cities. In Europe, pedestrian paths were first established in late 1940 after the Second World War during reconstruction processes. The main reason of it, was overcrowding of vehicles. In the late 50s, personal automobiles pushed out of central and historical areas of European cities. So that until 1975, all the important and historical cities of Europe have restricted the entrance of automobile to main districts of the city and established some commercial historical walkways in them [3 &9].

VI. Communications Inside University Campuses

In university areas, there are three communication systems with interaction, including service vehicles, access and car parking, pedestrian movements. Many university areas suffer from the dominance of vehicle ways which leads to leaving pedestrian ways and make the area as a place for struggling between stopping vehicles and service areas. The areas which are designed properly, give priority to pedestrians and make some wide public areas for walkers and allocate a minimum area for vehicles in order to service support of the area. Unfortunately, most of the main policies of the universities (directors, professors and so on) prefer their vehicle access to the entrance of their offices which lead to the development and continuity of vehicle ways into the center of the university area [10].

It is necessary to equip the communication system regarding disabled persons access, transportation access in emergency situations and daily service to properties and lands of the university. Generally, such equipment is possible via creating common areas for vehicles and pedestrians [11].

VII. Environmental Impacts

Aesthetics could not be measured quantitatively but could be judged indirectly through its impacts. Walkings in an attractive environment seems shorter. The attractiveness of each walking is associated with how much it seems shorter and if the travelers have some positive motivation, that seems more noticeable. This positive motivation could be created artificially through designing the surroundings (12). The walking traveler is exposed to climate changes and it should be considered as a factor in designing, tree planning could moderate the local climate. A questionary which performed in Munich city shows that two-thirds of the subjects studied tend to see plants, fountains, benches, public facilities, electric vehicles, and rental lockers [12].

VIII. Facilities Required for Pedestrians

a) Health Services
b) Health services are essential in areas with high traffic.
c) Fountains

In addition to affecting on the temperature and humidity, fountains also make the feeling of visual freshness for pedestrians.

d) Furnitures

Establishing some benches and designing some areas for rest and stop in walkingways seems necessary, especially for the elderly and children, which are the main group of people which enjoy the public spaces.

Especial Boxes for the Pedestrian's Baggages Establishing some boxes in the main streets, cinemas, restaurants and etc. are necessary for pedestrians temporarily is required [13]. Also, security and police forces are essential in such areas.

e) Canopy

The canopy is designed to protect against sun and creating a proper place for pedestrians. Also, some schedule should be considered for creating a canopy for benches.

f) Lighting

Walkingways should have enough light which provides a feeling of secure moreover the light required for walking, this would lead to an increase of the hours of walkings.

IX. Conclusion

Architects, environmental designers and urban designers attend to design the environment with the aim of providing some opportunities for personal communications. If the social and administrative systems support the use of such areas, it is more likely that the predicted capabilities of the environment to be properly applied. In case of lack of such support, the probability of using these services would be declined [14]. If the ways which facilitate walkings be properly established and the facilities required to be provided, it is obvious that people would have more tendency to walk.

The communications inside the university campuses should be considered as a network composed of walking movements which its major and minor nodes are placed in the functional focus points. The rhythm of movements in university campus reflects the deployment plan of main buildings and the time schedule of lectures or courses. Regarding modern sectional plannings, the time of walking from one class to another one indicates the configuration of the area. According to the usual time schedule of England universities and considering 10 minutes distance between two classes, so the distance between the two sides of the area could not be more than 500 m. The displacement of pedestrians indicates the size of the area, but leads to creating a lively mood in that. Walking in the university campus is the most efficient method of displacement for professors and students. The paths should be direct, secure, understandable, enjoyable in using and impressive on the people's spirit [10].

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Relationship between Knowledge Sharing and Innovation

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Abstract

Knowledge sharing is one of the main factors of the knowledge management. This paper aims to show how knowledge sharing can affect innovation. Extant research highlighted technological innovation and administrative innovation. Knowledge sharing can be measures by knowledge collecting and knowledge donating. The proposed framework of this study links both dimensions of knowledge sharing with two types of innovation

Keywords: Knowledge sharing; Innovation; Technological innovation; Administrative innovation; Knowledge collecting; Knowledge donating

I. INTRODUCTION

Impact of innovation on firm's performance has been point of interest for policy makers and economist for decades (hashi & Stojci 2013). According to (OECD/Eurostat, 2004) the innovation can transform countries by increasing production volumes in a higher value and boosting their growth rate.

According to (Hashi and Stojci, 2013; Manafi and Subramaniam, 2015), innovation is a combination of activity that involve technological, scientific, financial, commercial, and organizational components with aims to produce new products and scientifically improve it. Innovative ideas can motivate by a new thought, and action of an economic agent. Innovative idea can increase organization's efficiency that leads to firm's production and cost efficient in compare to its competitors. Also, it can help to expand market by introducing new product to consumers. Researchers consider innovation as an important factor for companies, to be ahead in the market (Hu, 2012).

Several features such as organizational learning, organizational commitment and job satisfaction can contribute to innovation performance of an organization (García-Morales et al., 2007; Jiménez-Jiménez and Sanz-Valle, 2011) (Low and Mohammed 2005; Morrow et al., 2012). Despite the consent on mentioned feature, some industry, such as electronic is more rely on knowledge than innovation. Paper (Zohoori et al. (2013)), (Asgharian et al. (2013)) and (manafi and Subramaniam (2015)) introduced knowledge as the main features for innovation in electronic industry. Based on their finding in-house knowledge sharing can increase innovation of organizations.

Their finding about the importance of knowledge sharing for innovation is based on previous researches (Dimitris et al., 2007; Wang et al., 2009; Chiang & Hung, 2010; Wang and Wang, 2012). Although these studies focus on mechanism of knowledge sharing and try to find how it can affect innovation, it is necessary to know about measurement of knowledge sharing and innovation.

II. LITERATURE REVIEW

A. Knowledge Sharing and Innovation

Set of particular behavioral practice and beliefs that are associated with expansion of learning among individuals or group can form knowledge sharing in an organization (Moorman and Miner, 1998). Paper (Shao et al. 2012) define knowledge into two dimensions, namely explicit knowledge and tacit knowledge sharing.

Papers (Kogut and Zander, 1992; Henderson and Cockburn, 1994; Szulanski, 1996; Tsai and Ghoshal, 1998; Dyer and Nobeoka, 2000; Tsai, 2002; Chen and Huang 2009) believes that effectiveness of knowledge sharing is due to an improvement in level of innovation withing organizations. Also, they mentioned that knowledge sharing had been defined as new integration of knowledge that exist on its own which would possibly end up in new products or process improvements (Tsai and Ghoshal, 1998; as cited in Chen and Huang 2009).

Given that, tacit knowledge is with employees and departments of the firm, it is necessary to share this knowledge for a new set up of mental models and practices (Nonaka and Takeuchi, 1995; Galunic and Rodan, 1998; Chen and Huang 2009; Manafi and Subramaniam, 2015). Innovations are apparent when staff use their technical skill to transform their tacit knowledge to explicit knowledge and produce new product (Nonaka and Konno, 1998; Chen and Huang 2009). Hence it is more likely to be innovated company if the organization share their knowledge effectively with each other (Chen and Huang 2009; Manafi and Subramaniam, 2015).

In a recent study in 2013 by (Asgharian et al), individual factors introduced as main reason of weakness in knowledge sharing in electronic industry of Iran. Manafi and Subramaniam, 2015 applied two dimensions defined by Van Den Hoof and De Ridder (2004). They defined two facets; collecting/receiving and donating/disseminating. Knowledge donating is defined as "communication based upon and individual's own wish to transfer intellectual capital". Knowledge collecting is "attempting to persuade others to share what they know".

Along to this, Lin (2007) introduces these dimensions as measurement for knowledge sharing behaviors.

B. *Type of Innovation*

Innovation is consisting of two steps: (i) developing a plan and fittingly actualizing them and (ii) conclusions which are the final comes about of execution. The procedure can be ways that the ideas will get into action, while outcomes are end point of any procedure that literally is result of any service or manufacturing firm.

There are two primary inputs. First the staff must be capable to setup imaginative plans, then in second step; they should choose which thoughts are applicable worthy (Skarzynski & Gibson, 2008). Hurmelinna-Laukkanen, et al., (2008) believe that it is a necessity for organization to be familiar with innovation methods, they argue that each organization need to know how to treat and respond with any type of innovation and creativity. According to Kim, Kumar, and Kumar (2012) there are too many types of innovation but three more highlighted are: "incremental versus radical innovation; technological versus administrative innovation; and product versus process innovation (Zhao, 2005)."

a. Technological innovation versus administrative innovation

Adopting new technologies into process or product is called technological innovation (Damanpour, 1988). The promise for this type of innovation is long term success in competitive advantages and so, in the market (Grover, Purvis, & Segars, 2007). While managerial improvement alludes to the usage of new plans enhance organizational methodologies, schedules, structures, or frameworks (Elenkov, Judge, & Wright, 2005). Sustainable development is result of inner methods supporting the conveyance of an administration or item.

b. Product Innovation versus Process Innovation

Technological innovation consists of two dimensions: product innovation and procedure innovation. If there is a boost in quality of a product or service, or equally an innovation in creating a new good or product, it is called product innovation (Burgelman, Wheelwright, & Christensen, 2009). Process innovation is the name for innovative procedures created to enhance effectiveness of production (Tarafdar & Gordon, 2007).

c. Radical Innovation versus Incremental Innovation

Radical innovation is a new kind of innovations. It is totally different from other innovations (Golder, Shacham, & Mitra, 2009). Radical innovations are different from other innovation or it should have an effect on the feature innovations. The more they are new and exceptionally different from others to the world, the more they are radical. While Incremental improvements include corrections or changes to existing items or administrations (Burgelman, et al., 2009). they made by adding new factors to the service or product. They may alter or enhance customer satisfaction.

III. PROPOSED FRAMEWORK

Followed by above discussion, there are enough evidence to support the relationship between knowledge sharing and innovation (See Fig1)

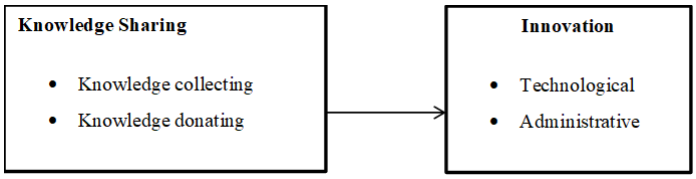

Fig 1.Relationship between knowledge sharing and innovation

This framework shows that knowledge sharing can be measured by two factors knowledge collecting and knowledge donating. Both dimensions have potential affect technical innovation and administrative innovation.

IV. CONCLUSION

Knowledge sharing is one of the main factors of the knowledge management. This paper tried to show how knowledge sharing can affect innovation. Extant research highlighted technological innovation and administrative innovation. Knowledge sharing can be measures by knowledge collecting and knowledge donating. The proposed framework of this study links both dimensions of knowledge sharing with two types of innovation.

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