

## **Impact of Information & Communication Technologies (IcTs) On The Place Attachment in Downtown Katameya Mall**

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### **Abstract**

Nowadays, Information and Communication Technologies (ICTs) dominate many aspects of our daily life. People have more interest in ICTs than the social element. Meanwhile, the excessive use of the internet, mobile apps, and digital social networks make people prefer online communities to physical public spaces. So rapid and intense depending on technology causes problems such as the fading relation between people and their places. The study aims to discuss and identify the impact of ICTs on place attachment. It depends on a deductive method through data analysis of the information and communication technologies (ICTs) to get the ICTs attributes and deduce its impact on place attachment (PA) attributes. The main findings of the research are: the significant impacts of ICTs on PA are on people's hub, and there is no significant impact on the place's hub. A questionnaire of Likert-type scale to measure the impact of ICTs on the PA for the downtown mall has been applied to a sample of 33 persons: 16 males and 17 females, ages of the targeted sample are between 22-48 years old. The targeted sample is people who have been to the mall before. People in the targeted sample were asked 24 questions about the impact of each ICT's key performance indicator -KPIs- on attributes of PA to measure the impact of ICTs on PA. They were asked to rate the impact of each of the four ICT KPIs on the six PA attributes to measure their feelings of comfort, feel of safety, feel of the significance of the place, how ICTs make the place more identified, providing conditions to fulfill their functional needs, and supporting their behavioral goals. The data analysis of the questionnaire was constructed using descriptive statistics to convert the qualitative measuring of the Likert-type scale to numbers through getting the median, mean, and standard deviation to classify the most and least affected attributes of PA by ICTs. Comfort is almost the same for both older and younger people in the sample, so Downtown Katameya mall can be considered a place to enhance the user's feel of comfort. The eldest and youngest have a bit higher feeling of safety. Meanwhile, they strongly depend on ICTs for their safety. They also have a higher feel of the significance of the place, believe that the ICTs well identify the place, provide conditions to fulfill their functional needs, and support their behavioral goals.

**Keywords:**

ICTs, Smart cities, Place making, Place identity, Place attachment

**المستخلص**

في الوقت الحاضر، تهيمن تكنولوجيا المعلومات والاتصالات على العديد من جوانب حياتنا اليومية حيث يهتم الناس بتكنولوجيا المعلومات والاتصالات أكثر من اهتمامهم بالجانب الاجتماعي. وفي الوقت نفسه، فإن الاستخدام المفرط للشبكة العنكبوتية وتطبيقات الهاتف المحمول والشبكات الاجتماعية الرقمية يجعل الناس يفضلون المجتمعات المتكونة عبر الإنترنت عن تلك التي تتكون بالأماكن العامة للبيئة المادية. لذا الاعتماد السريع والمكثف على التكنولوجيا يسبب مشاكل مثل ضعف علاقة الارتباط بين الناس وأماكنهم. وتهدف الدراسة إلى مناقشة وتحديد تأثير تكنولوجيا المعلومات والاتصالات على الارتباط بالمكان وتعتمد على منهج استنباطي من خلال تحليل بيانات تكنولوجيا المعلومات والاتصالات للحصول على سمات تكنولوجيا المعلومات والاتصالات واستنتاج تأثيرها على مؤشرات الارتباط المكاني. تم استبانة آراء المستخدمين عن طريق مقياس ليكرت (Likert-Type) لقياس تأثير تكنولوجيا المعلومات والاتصالات على الارتباط المكاني لمركز التسوق والعينة المستهدفة هي من الأشخاص الذين زاروا المركز التجاري من قبل حيث طُلب منهم تقييم تأثير كل مؤشر من مؤشرات الأداء الرئيسية الأربعة لتكنولوجيا المعلومات والاتصالات على سمات الارتباط المكاني الست لقياس شعورهم بالراحة، والشعور بالأمان، والشعور بأهمية المكان، وكيف تجعل تكنولوجيا المعلومات والاتصالات المكان أكثر تحديداً، وتحقيق احتياجاتهم الوظيفية، ودعم أهدافهم السلوكية. تم تحليل بيانات الاستبيان باستخدام الإحصائيات الوصفية. والنتائج الرئيسية تتلخص في التأثير الواضح لتكنولوجيا المعلومات والاتصالات على أحد محاور الارتباط المكاني وهو محور الأفراد، بينما لا يوجد تأثير واضح على محور المكان. ونستخلص من البحث أن شعور الأشخاص الأكبر والأصغر سناً بالارتباط المكاني بمركز تسوق القطامية أكثر من أولئك في منتصف الثلاثينيات. والإحساس بالراحة لكل من كبار السن والشباب في العينة متقارب جداً، لذلك مركز التسوق بالقطامية يعتبر مكان لتعزيز شعور المستخدم بالراحة بشكل عام.

**الكلمات المفتاحية:**

تكنولوجيا المعلومات والاتصالات، المدن الذكية، التصميم المكاني، هوية المكان، الارتباط المكاني

**1. Introduction**

In this digital era, online social communities are now a social standard for most adolescents of the current and coming generations. Posting thoughts on Facebook, writing tweets, and uploading images to Instagram are now regular habits. These generations' life expressed in online social communities, where most of their memories lie, by sharing photos of good times and capturing many different emotionally significant moments and activities.

The city was affected by the variables of time and place, and the urban community in the city went through three main stages that had a clear impact on the formation and function of the city lives (Abdel-aziz, Abdel-salam and El-sayad, 2016). The first stage is agriculture and producing the traditional planning pattern where each place shuts itself off. The second stage was the first and second industrial revolution, which brought about scientific, economic, and social transformations with the invention of engines and the machine. The third stage was the third industrial revolution, in addition to the opening of space and time, distances also faded with the emergence of modern technologies, and the rapid development happened in an unstoppable way (Aboelwafa and Mostafa, 2020)

Cities are considered the center of social, economic, and political relations. People occupy this center deservedly because they organize all exchange processes through their availability on the transportation network and many factors that help the exchange of all kinds. Since ancient times, cities have emerged around trade routes, valleys, and places that comfort people and meet their needs. Work, comfort, and security, with modern technological development, and standards and techniques have emerged to build cities, becoming a place to attract residents and creating relations such as (social, economic, and administrative) (Rezki, 2015).

## 2. Information and Communication technologies (ICTs)

Because of the rapid and continuous growth of telecommunications technology, activities within public spaces began to decline since knowledge became readily available from home through the web. This growth also allowed the rise of electronic shopping, while the conversations and discussions had partly moved to the web-fora. The internet has described "information agora" as a new kind of public space (Abdel-aziz, Abdel-salam and El-sayad, 2016).

The era of ICTs and digitization have changed the concept of people's attachment to their places. According to Ram, people can attach to a place they have never been to or only visited via the Internet. Thus the concept of place attachment extends to include physical and non-physical areas/places (Ram, 2020). As technology is continually evolving rapidly, so are the software and services that are being used in everyone's everyday life. So, keeping in contact with colleagues, planning events, ordering things, and many day-to-day activities are now occurring via the Internet. New media and information technology influence many facets of daily life in the workplace, at home, or in the leisure sector (Abdel-aziz, Abdel-salam and El-sayad, 2016).

### 2.1.Means of involving social media elements in urban spaces

Social Media is a service that allows persons to share news, information, and opinions in multimedia format. Meanwhile, Digital Social Networks is a branch of social media like - Facebook, Google+, etc.- that enables them to link and exchange information globally within a short timeframe (Abdel-aziz, Abdel-salam and El-sayad, 2016).

**TABLE 1 BENCHMARKING OF ICTS**

ICTs	Benchmarking	Discussion
<b>Wi-Fi networks</b>	Internet access in public spaces	The Wi-Fi network can increase the rate of public participation and interaction between individuals and between individuals and spaces in public places more than spaces free of internet connectivity, provided that these places do not suffer from urban deterioration, poor design, or any other problems.
<b>Digital interactive media facades</b>	Bluetooth, RFID and GPS	In urban contexts, interacting with media screens is a new technique to promote the social communication of individuals and between individuals and their surroundings. With the integration of Bluetooth, RFID, and

		GPS into smartphones and other smart devices, this modern approach has quickly been a fact.
<b>Interactive public displays</b>	Taking full-body and performative experiences	Since several research conclusions show, considering the whole-body and interpretive experiences a characteristic of human skill is valuable. Public displays are a transition from traditional to interactive digital displays that allow different types of multimedia presentations and unique experiences.
<b>Smart mobile phones' applications in public spaces</b>	Social networking platforms	Social media networks platforms have paired with smart devices, which have made it easier for users to remain linked to the network for a range of conversations and thus encouraged to hold conferences as users often bring their smart devices with them.

SOURCE: BY THE AUTHOR

## 2.2.Smart Cities

The reflection of technological development on the design and planning of cities has become clear, as these implications have caused many changes in terms of canceling some existing activities and creating new ones. Also, technological development has produced smart and green cities, and had an impact on the urban, economic, social and administrative dimension of the city (Aboelwafa and Mostafa, 2020).

Technological development has affected all aspects of life inside the city. Thus it has become a trend towards sustainability affected by technological development and its applications (Aboelwafa and Mostafa, 2020). Meanwhile, it is worth mentioning, one of the key ideas emerging from a conference organized by the UN-Habitat Egypt Office is that cities must be both sustainable and inclusive to be smart (Unic-eg, 2019).

A smart city is defined as the city in which modern systems and technologies are used for the operation of some of its parts or elements, whether buildings of all kinds, services, roads, facilities, infrastructure networks, or all of that (Hassan, 2002,P.2). Consequently, the author discusses that the above definition is not accurate. Does the meaning of using one modern technology to operate a part or component of the city's parts make it a smart city, or should a set of governing criteria be available that classifies the city as a smart or non-smart city? Consequently, it is necessary to develop a set of standards that define this or to what extent the city is smart by studying the standards in each of the application fields of smart cities.

### 2.3. Building the smart city & Application fields

The smart city is focused on citizens, government, and telecom suppliers. Citizens as the primary users, the government is responsible for security and administration, suppliers of communications and information technology and infrastructure, planners and developers.

Smart government, economy, environment, living, mobility, and people are the core strategic action fields advanced by Bee smart city (beesmart.city, 2020).

There are various fields in which modern technologies are used to increase the efficiency of the city, improve it and develop it to keep pace with the times, and these fields are:

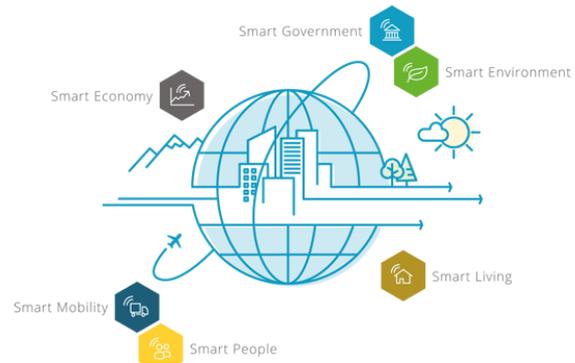


FIGURE 1 THE SIX FIELDS OF ACTION OF BEE SMART CITY

SOURCE: (BEESMART.CITY, 2020)

TABLE 2 FIELDS OF INFORMATION TECHNOLOGY AND ITS CONTRIBUTION IN SMART CITY CREATION

Field	Contribution of information systems in smart city creation	
	(Aboelwafa and Mostafa, 2020)	(beesmart.city, 2020)
<b>Administrative system</b>	Where information systems are used to operate, process and store information in electronic form, and the information system processes data and presents it to users through their - that is, users - operating the outputs of the information systems themselves via the computer.	Describes how a municipal government manages the built and natural environment to improve livability for citizens and visitors.
<b>Learning &amp; Smart People</b>	The existence of private educational centers linked to electronic portals to obtain scientific information at the global level and to spread that information wirelessly in specific locations. Lectures, whether local or international, directly are (Online) via local wireless networks and the World Wide Web. Having electronic libraries in special places and linking them to central libraries for easy access.	Info or service supply - with persons or firms from the public and commercial sectors, aims to change the way residents are connected.
<b>Transportation</b>	Connect traffic centers to networks to exchange important information to facilitate traffic movement and transmit	Increasing the efficiency and service quality of urban transportation to improve

	<p>it to people through the wireless or cellular network.</p> <hr/> <p>The ability to obtain specific maps and specific locations by using satellite images and transmit them to traffic centers and to the public.</p> <hr/> <p>Traffic monitoring by linking cameras distributed in various roads and traffic intersections to obtain appropriate information to regulate traffic and reduce congestion points.</p> <hr/> <p>Ease and speed of obtaining various information related to traffic services.</p>	<p>the use and selection of different transit choices.</p> <p>Meanwhile, increasing people's mobility through efficient mobility management and targeted infrastructure investments.</p>
	<p>Connecting hospitals to networks to exchange information necessary to increase their efficiency in treating patients.</p> <hr/> <p>Linking pharmacies to exchange medicines easily and quickly to raise the efficiency of treatment delivery to patients.</p> <hr/> <p>The presence of special wireless points to enable access to emergency departments easily and quickly, with the ability to speak with them in audio and video in special cases.</p> <hr/> <p>Connecting hospitals to the homes of patients with special cases to monitor their health status and warn them - i.e. hospitals - in the event of a patient's health deterioration in an automatic way.</p>	<p>x</p>
<b>Health-care</b>		
	<p>Linking public security centers to their various departments in order to exchange the necessary information.</p> <hr/> <p>A network of cameras deployed in various parts of the city to monitor the security situation.</p> <hr/> <p>Setting up special points in sensitive areas and connecting them with security centers to monitor the security situation.</p>	<p>x</p>
<b>Security</b>		

<b>Social &amp; Economical field</b>	Connecting food centers and widespread markets through wireless networks.	Aims to enhance the quality of life for homeowners and guests by following an inclusive strategic approach – across all age groups and demographics.
	Setting hot spots in public facilities and connecting them to networks to reach restaurants and entertainment centers.	
	Place hotspots in public and open areas such as parks, to talk and communicate.	
	Create a virtual reality for some important areas.	
<b>Environment &amp; Energy use</b>	Installing sensors to monitor energy losses in infrastructure networks, in addition to creating grid systems that allow managing electrical supplies and monitoring people's energy consumption.	Illustrates how a local authority operates the constructed and organic/natural surroundings to enhance livability for both residents and guests.
	Installing sensors to monitor energy losses in infrastructure networks, in addition to creating grid systems that allow managing electrical supplies and monitoring people's energy consumption.	

SOURCE: BY THE AUTHOR

#### 2.4. Advantages and disadvantages of smart cities

Smart cities have many advantages in a lot of aspects such as competencies, Transit & Mobility, Economic, Security, and technology use. Meanwhile, they have many disadvantages too, most of them focus on healthcare and social aspects. This advantages and disadvantage could be summarized as follows:

**TABLE 3 ADVANTAGES AND DISADVANTAGE OF SMART CITIES**

Aspects	Disadvantages	Advantages
<b>Competencies</b>	Excessive dependence on technology may reduce opportunities for the elderly, uneducated, and handicaps.	Building human energies and competencies that keep pace with the technological development and improving electronic services.
<b>Transit &amp; Mobility</b>	Increasing dependence on technology because of wayfinding may lead to an	Improving transportation services and effectively managing peak traffic hours.

		increase in the rates of road accidents.	
<b>Economic</b>	Investment	May reduce investment opportunities for the elderly and the uneducated who do not use technology to hunt for job opportunities or marketing.	Providing an environment that stimulates economic growth, attracts foreign investment, and provides job opportunities.
	Energy Use		Rationalizing energy consumption by using smart materials, and monitoring energy consumption to enhance city efficiency.
<b>Security</b>		Using mobile Apps to arrange a transportation journey and riding with strangers may increase the danger of theft and other accidents.	Improving security and lowering crime rates by connecting to police stations and installing a camera monitoring system.
<b>Technology use</b>		Excessive reliance on technology can lead to laziness and full reliance on the machine, resulting in poor concentration and lack of interest.	Supporting growth and innovation and preparing to keep pace with any expected future developments, such as relying on robots.
<b>Social Aspect</b>	From direct to indirect social real	The use of technical devices is addicting, and it is becoming more and more difficult to disengage from their technology. For example, the average adult in the United States spends about half of the day in the online community, Doreen Dudgen Maggie writes in the Washington Post. As a psychologist, she sheds light on the excessive use of technology that must be considered a diagnosable addiction.	High levels of community participation due to improved means of communication with government agencies and the expression of opinions and suggestions.
	Low direct communication skills	An extra social competence that technology promotes stamp out is the ability of young people to understand body expression and the nuances of personal contact.	

<b>Healthcare</b>	Physical health	<p>Frequent use of devices such as phones, computers, and tablets is not physically or psychologically healthy. Organically, it causes problems such as smart devices slouch. Desk sag. Neck texting.</p>	<p>Easy and quick connections to hospitals emergency departments, and pharmacies throughout networks.</p>
	Psychological health	<p>Psychologically, it causes low self-esteem, a bad mood, low achievement, and behavior to remember annoying memories, according to an article in The New York Times (Greenwood, 2019).</p>	<p>Those who have no communication skills may discover that using ICTs provides an alternative or a chance to begin communicating with others.</p>
	Eye Health	<p>Intensive use of the new devices can tire the eyes and drive the eyes for strain; mentioned by (the Mayo Clinic), and may begin reactions like headache, bad concentrating, tearing, dehydration, itching, burning, soreness, or fatigue. Excessive use can further lead to blurred or dual vision and a sensitive reaction towards the light.</p>	×
	Insomnia	<p>According to The National Sleep Foundation, Insomnia is an extra symptom of newly developed devices, especially when used before bedtime. Furthermore, this occurs due to those shorter wavelengths, and the unnatural blue glare emitted by the developed devices' light, which changes your body's internal clock and circadian rhythm and inhibits the secretion of melatonin, the sleep hormone.</p>	×

SOURCE: BY THE AUTHOR

### 3. Place making/framing

According to (Davine, Lawhon and Pierce, 2017), places and the framing of places are governance entry points for digging further into conflicts and more other complex socio-spatial cumulative stages to which they contribute. Conflicts can arise over land use or perceptions of areas (the character, sense, and users' experience in spaces), and they can vary from micro-scale locations (a single location/site) –urban spaces- to macro-scale (City planning).

Through micro scale, conflicts may arise between people and the physical urban space or between people and each other's because of races, ethnicity, ages, gender, nationalism, religion, class(Conflicts, 2021).

Although not all disputes are directly about the place, in the beginning, people frequently express their impressions or have their opinions about their perception of such a space/area due to space use experience or their guessed ideal model of a space/area. Such ideological building of spaces/areas is based on users' usual activities and walking tendency (place making/framing), in which groups of participants from transient decision-making organizations are formed based on shared interests within/of a space/area(Martin, 2003).

As the spatial Articulation of urban areas and cities is significantly affected by physical and non-physical forces. The non-physical forces -social, political, cultural, and economic- represent the governance networks that form and frame places in a cumulative inseparable way(Magdi, 2020). So relational paradigm to place-framing/making that directly concentrates toward "the affiliations and co-constituencies among space/area, complex forces, and policies" is required for the co-formation of the enframing process of space/area and groups of multiply-jobs participants (Pierce, Martin and Murphy, 2011).

#### 3.1.Place identity

Place identity is the distinction of emotions/thoughts and passion to a specific space/area and the unique features of the space/area where user-place bond relation arises. Place identity is related to people's meanings and perceptions of their environment (Ujang, 2010). Place identity also can be described as a component of a space/area users' character. It is a process in which people who belong to a specific place emerge through interaction with places (Hernández et al., 2007).

Lynch argued that Legible places -Legibility- allows users to have a definite and detailed perception of urban areas that helps users move by their formed mental map and influenced by the following five items: (landmarks, edges, districts, nodes, and paths) (Lynch, 1960). The author considers this image of the place, the character of the urban space, or the physical part of identity. Sustaining and preserving the messages and identity/character of the urban components is a vital and critical issue because they help in forming users-identity, individual and collective sense, and sense of place (Hull IV, Lam and Vigo, 1994).

#### 3.2.Social media platforms and place attachment

Public spaces become less regarded and desirable to users; as a result, social interaction and ties decline; and the sense of place is also diminishing. Activities and spending leisure time in the built environment are reduced as social interaction can easily be accomplished by remote connections in social networks. Facebook, and other similar platforms, could be considered the

online social communities where users are linked and grouped into social organizations which fit into an online community (Abdel-aziz, Abdel-salam and El-sayad, 2016).

People's connections to places are changing in the era of globalization and digitization. ICTs separated individuals from physical and distinct locations. Furthermore, provide various networking platforms that create a bond to other physical and non-physical spaces/areas. Meanwhile, through using ICTs, users may be connected/bonded to spaces/areas they have never been to or only visited via the Internet or existing in virtual spaces (Ram, 2020).

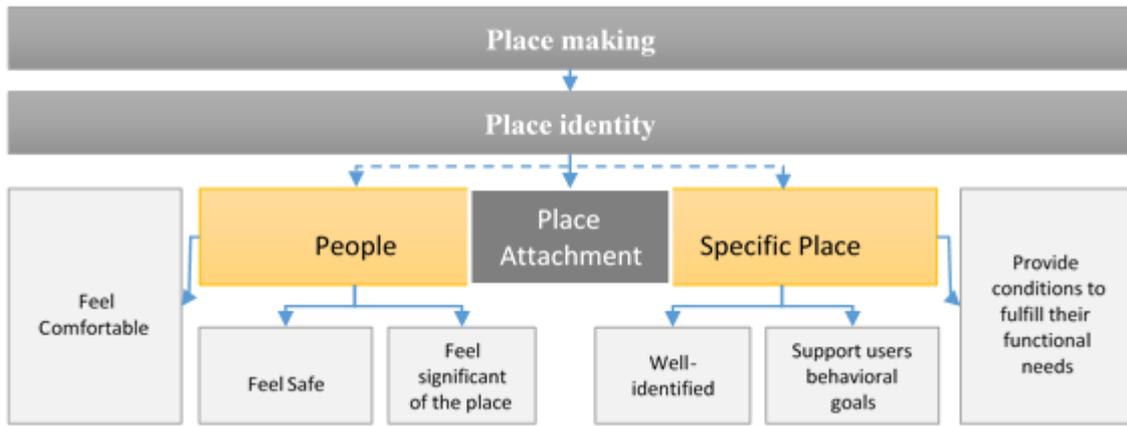
### **3.3.Place Attachment/bonding**

Place attachment (PA) is the arisen distinct connection or tie linking users or individuals and distinguished spaces/areas (Hidalgo and Hernández, 2001). It also can be defined as the vital connection that users build up with specific spaces where they like to stay and enjoy comfort/satisfaction and safety (Hernández et al., 2007). It is the relation between the self and the Place. Meanwhile, it is made up of sensitive/mental, social, and subjective components. It is the physical and non-physical construction that leads/drive to the passion of being at home. Furthermore, it also can afford a sense of confidence/protection and possibly foster environmental tendencies and habits (Ram, 2020).

Place attachment is expressed through interaction between effects and emotions, knowledge, beliefs, behavior, and actions (Proshansky, Fabian and Kaminoff, 1983). It is also expressed in the functional bonding between people and places known as place dependence (Stokols and Shumaker, 1981). It arises when a space/area is singular and considered distinct by the users and makes them able to provide conditions to satisfy their functional needs and promote their behavioral goals easier than other options (Williams Daniel, Roggenbuck, 1994). The individuality/character of PA components and space attributes could be used as assessment indicators for the intended upgrading of distinct space/areas (Ujang, 2010).

A distinct passion of attachment to a singular/specific place is affected by race, ethnicity, or community sense of identity (Rose, 1995). Consequently, the link to a space/area is expressed based on the agreement of general collective users' wellbeing/satisfaction because of their vital participation, character, and identity (Ujang, 2010).

So it could be deduced that: Place attachment is a non-physical sense of a space/area that can be a vital/critical non-physical element of securing or shaping physical place identity. Meanwhile, it is worth mentioning that identity makes people attach to their places, and this attachment gives them the power to participate in improving their urban spaces/areas.



**Figure 2 Place Attachment Attributes  
Constructed By The Author**

#### 4. The case study (Downtown Katameya)

Downtown Katameya mall is home to more than 200 stores, restaurants, services, and prime offices in Business Park. This place has been selected as a case study because it is located in the heart of New Cairo and introduced as a place that brings an outdoor relaxing feel with tree-lined walkways, green areas, lakes. Meanwhile, Downtown Katameya is a complex business office market; where users can find retail shops and restaurants, so visitors' bond to the place can be measured (Katameya, 2021).



**FIGURE 2 DOWNTOWN KATAMEYA MALL OPEN AIR  
SOURCE: (TRIPADVISOR, 2021)**

The place engaged to ICTs. It has a website and uses social media like Facebook, Instagram, etc. These tools are considered communication tools with the online community so, it's one of the suitable places in Cairo where the impact of ICTs on the PA can be measured. The author will test the impact of the following ICTs attributes -WI-Fi networks, Digital interactive media façade, Interactive public displays, and Smart mobile phones apps in public spaces- on the PA using a questionnaire.

### 5. Measurement of the impact of ICTs on the PA

A questionnaire of Likert-type scale to measure the impact of ICTs on the PA for the downtown mall has been applied to a sample of 33 persons: 16 males and 17 females, ages of the targeted sample are between 22-48 years old. The targeted sample is people who have been to the mall before. People in the targeted sample were asked 24 questions about the impact of each ICT's key performance indicator -KPIs- on of attribute of PA to measure the impact of ICTs on PA.

They were asked to rate the impact of each of the four ICT KPIs on the six PA attributes to measure their feelings of comfort, feel of safety, feel of the significance of the place, how ICTs make the place more identified, providing conditions to fulfill their functional needs, and Supporting their behavioral goals.



FIGURE 3 THE USE OF ICTS DISPLAYS IN THE PLACE

SOURCE: BY THE AUTHOR

### 6. Results of the questionnaire analysis

The data analysis of the questionnaire was constructed using descriptive statistics to convert the qualitative measuring of the Likert-type scale to numbers through getting the median, mean, and standard deviation to classify the most and least affected attributes of PA by ICTs, and the following are the results:

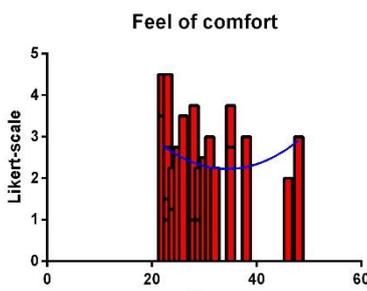
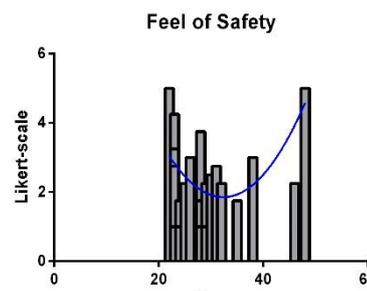
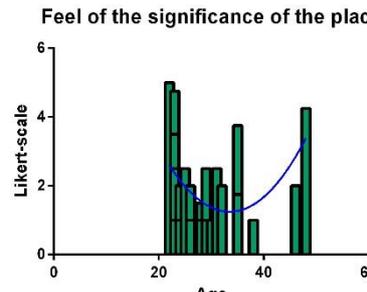
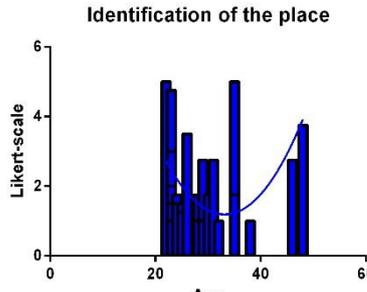
TABLE 4 DESCRIPTIVE STATISTICS OF THE QUESTIONNAIRE

	Feel of comfort	Feel of Safety	Feel of the significance of the place	Identification of the place	Support users behavioral goals	Provide conditions to fulfill Users functional needs
<b>Number of Samples</b>	33	33	33	33	33	33
<b>Minimum</b>	1	1	1	1	1	1
<b>25% Percentile</b>	2	1.75	1.125	1.375	1.75	1.375
<b>Median</b>	2.75	2.25	2	1.75	2.25	2
<b>75% Percentile</b>	3.5	3.125	3.125	3.25	3.125	2.875
<b>Maximum</b>	4.5	5	5	5	5	5

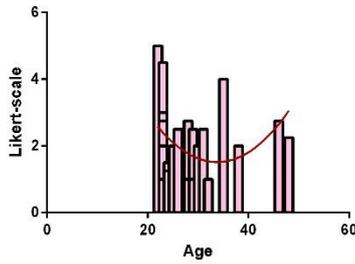
<b>Mean</b>	2.606	2.598	2.311	2.379	2.576	2.386
<b>Std. Deviation</b>	0.9743	1.171	1.252	1.302	1.23	1.202
<b>Std. Error of Mean</b>	0.1696	0.2038	0.2179	0.2267	0.2142	0.2093
<b>Lower 95% CI of mean</b>	2.261	2.183	1.867	1.917	2.14	1.96
<b>Upper 95% CI of mean</b>	2.952	3.014	2.754	2.841	3.012	2.813
<b>Sum</b>	86	85.75	76.25	78.5	85	78.75

SOURCE: BY THE AUTHOR

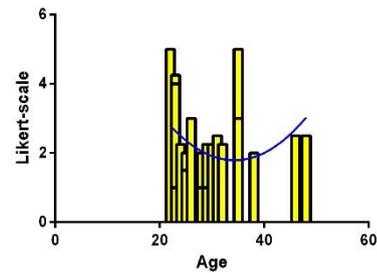
TABLE 5 THE EFFECT OF ICTS ON PA ATTRIBUTES

	
<p>ICTs showed a significant impact on this attribute as it's the most affected one by ICTs.</p>	<p>The ranking of this attribute is the second in terms of being affected by the ICTs.</p>
	
<p>The ranking of this attribute is the sixth in terms of being affected by the ICTs.</p>	<p>The ranking of this attribute is the fifth in terms of being affected by the ICTs.</p>

Provide conditions to fulfill Users functional needs



Support users behavioral goals



The ranking of this attribute is the fourth in terms of being affected by the ICTs.

The ranking of this attribute is the third in terms of being affected by the ICTs.

SOURCE: BY THE AUTHOR

### 7. Conclusion

The most effective impacts of ICTs on the place attachment attributes are on people’s hub, and there is no significant impact on the place’s hub. The eldest and youngest have a better sense of attachment to Downtown Katameya mall than those in their mid-thirties. The ranking of the affected place attachment attributes by information and communication technologies is as follows in the table (6):

TABLE 6 CONCLUSION OF THE RESULTS

Ranking of the impact of ICTs on the PA	Conclusion
<p>Data 1</p> <ul style="list-style-type: none"> <li>■ Feel of comfort</li> <li>■ Feel of Safety</li> <li>■ Feel of the significance of the place</li> <li>■ Identification of the place</li> <li>■ Support users behavioral goals</li> <li>■ Provide conditions to fulfill Users functional needs</li> </ul>	<p>The ranking of the affected PA attributes</p> <ol style="list-style-type: none"> <li>1. Feel of comfort</li> <li>2. Feel of Safety</li> <li>3. Support users behavioral goals</li> <li>4. Provide conditions to fulfill Users functional needs</li> <li>5. Identification of the place</li> <li>6. Feel of the significance of the place</li> </ol>

SOURCE: BY THE AUTHOR

Comfort is almost the same for both older and younger people in the sample, so Downtown Katameya can be chosen as a place to enhance the user’s feel of comfort. The eldest and youngest have a bit higher feeling of safety. Meanwhile, they strongly depend on ICTs for their safety. They also have a higher feel of the significance of the place, believe that the ICTs well identify the place, provide conditions to fulfill their functional needs, and support their behavioral goals.

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