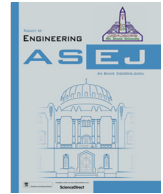




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Impacts of e-commerce on planning and designing commercial activities centers: A developed approach

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ABSTRACT

Worldwide, the uses of information and communications technology (ICT) have been evolving dramatically every day. One of the most critical applications of ICT has emerged, namely e-commerce. As e-commerce adds new dimensions to commercial activity, consumers' behavior towards traditional commercial activities inevitably changes. This review article analyzes the impact of e-commerce on traditional commercial activities. It extends to investigate the manifestation of the changes associated with the development of commercial activity based on the characteristics gained from informatics. Reviewing relevant literature yielded a newly suggested approach for the planning and the design of commercial activities. This approach ensured the integration and sustainability of e-commercial activities in virtual spaces and traditional commercial activities in urban areas to form a more suitable model for users' needs under the influence of informatics. Arguing the significant presence of this approach motivate urban planners and designers to design better commercial centers.

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1. Introduction

Commercial activities are among the most important, if not the most essential, service activities in new and existing urban settlements. Commerce helps enhance development opportunities and increase productivity [1]. They also form a substantial economic base for cities and represent the most attractive factors for the population. Due to this importance, commercial activity is heavily influenced by informatics. As a result, one of the most critical applications resulting from the use of the internet is e-commerce. Despite its prosperity and rapid development and the widespread among internet users, it is going through some obstacles that have a clear impact on its growth process.

Considering the high demand for online shopping, "e-commerce", especially with the constant support of mobile networks for these e-commerce applications, the Secretary-

General of the United Nations Conference on Trade and Development (UNCTAD) Mukhisa Kituyi explains, "the digital economy is expanding, and more businesses are affected. Therefore, it is more important that governments consider policies that can help harness e-commerce for Sustainable Development purposes" [2]. With this continued growth in e-commerce activities and its future potential [3], market analysts, media and even retailers have questioned the importance of a future presence of Brick-and-mortar stores in cities as a critical element, with some even referring to the repeated announcement of the closure of some store chains as the end of the retail Apocalypse era [4,5].

Although e-commerce has been integrated into commercial activities at such a rapid pace, other challenges remain, such as its physical impact on land use and business planning [6].

This research aims to monitor the impact of e-commerce on urbanization. The reason is that the effects of e-commerce on urbanization is relatively recent. Through a narrative literature review, this manuscript monitors the process of e-commerce on how cities should work to maintain successful urban commercial activities. This article also helped in presetting a new approach for planning and designing commercial activities centers.

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2. Literature review

The rise and circulation of the term e-commerce began in the 1990 s. However, the emergence of its initial applications dates was to the early 1970 s with the appearance of electronic data exchange among industrial entities. Electronic Data Interchange (EDI) crystallized the concept of e-commerce [7]. As a result, there was an increase of joint-stock companies from financial institutions to factories and retailers. Moreover, the telecommunications applications such as the sale and purchase of shares emerged as well. With the advent of the internet, the term e-commerce began to be used in abundance. Its applications have flourished and developed considerably. Since then, this was with the massive development of information and communication technology and the evolution of electronic computer systems.

E-commerce denotes a commercial activity carried out through the internet or any commercial activity carried out through any means of electronic communication, e.g., television, mobile or landline, and information technology such as the internet and its applications [8]. E-commerce was not limited to a universally unified definition. That's why the Organization for Economic Cooperation and Development (OECD) defined it as "business transactions accomplished through open networks" [9], the World Trade Organization (WTO) described it as "the production, distribution, marketing, sale or delivery of goods and services by electronic means" [10]. The main driver of this process lies in the hands of regulators in terms of governmental bodies, planning authorities, economic regulators [42].

Whereas the term e-commerce appeared with similar terms such as e-business, e-marketplace, social commerce and other modern concepts introduced by ICT. The similarity of these terms resulted in confusion between them and the belief that there is no difference between e-commerce and e-business. In contrast, e-commerce is the process of buying and selling using Digital Media. However, in e-business, in addition to e-commerce, it includes the applications of the Executive Office, meaning to draw the policies of the company and the applications of the company's administrative business carried out internally and not seen by anyone such as accounts services, storage and management. The E-marketplace is a virtual market for exchanging goods and services where the seller and the buyer meet online. Social Commerce is one of the applications of e-commerce in which commercial activity is carried out through social networks and applications [11].

In recent years, e-commerce has been experiencing significant growth, primarily through a massive dependence on the internet. With the development of internet users worldwide, which has exceeded 50% of the total global population [12] – e-commerce revenues are increasing significantly [13]. The statistics also prove that the volume of e-commerce is growing very considerably globally. In comparison to the importance of e-commerce during the years from 2014 to 2020, we find that the difference is enormous, adding to this the volume of e-commerce sales for 2020 that reached 4135 billion US dollars with an annual increase of about 15% [14,15].

The Coronavirus pandemic has affected international decisions since its appearance at the end of 2019 [16]. It led to global measures taken by all countries worldwide to confront this pandemic – from social distancing to home isolation measures to a complete curfew in some countries and applying new conditions in the field of commerce [17–19]. E-commerce played a vital role in that period; this role was in the compatibility of the nature of e-commerce activities' work with the countries' strict procedures to face that crisis. This led to an increase in reliance on e-commerce through internet networks and electronic applications and benefit from the advantages of e-commerce in its liberation from the temporal

and spatial dimensions and the absence of the two parties to the connection to complete the commercial process [5]. Additionally, the delivery of goods and products to the doors, taking preventive measures and payment electronically is safer and less likely to transmit the virus through banknotes [20]. This crisis has also encouraged more institutions and individuals to enter the world of e-commerce in light of the unprecedented measures associated with the pandemic [21,22].

3. Data and methods

This research utilized a two-step approach. The first step is the analysis of a case study to predict the impact of e-commerce on traditional commercial activities Brick-and-mortar stores, using primary data in the first part - NAICS Indicator - and secondary data from a field study conducted by US researcher Paige Portwood of the University of Oregon in the second part. The second step is the Developing Approach to Planning and Design of Commercial Activities based on the characteristics gained from informatics.

4. Impact of E-commerce on traditional commercial Activities: Case study

Indicators show that the most developed countries in information and communication technology and their electronic applications, primarily e-commerce, are China and the United States of America, due to the largest e-commerce companies there, Amazon in the United States and Alibaba in China [23].

So, the case study was chosen for a medium-sized city in one of the two states, Eugene, Oregon, USA, near the western border with a total population of 172,600 [24]. The municipality drew up the land-use code in Eugene to regulate the use or development of the property, the protection of Natural Resources, Urban Development, the vitality, and adaptability of the neighborhood. the purpose of the land-use code is to protect and promote the general health, safety, and welfare of the public and to preserve and enhance the economic, social, and environmental qualities of the community [25].

E-commerce Impact Indicators and the change in the urban presence of commercial activities can be monitored through the analysis of NAICS indicators and field interviews.

The North American Industry Classification System indicator (NAICS) is the standard indicator used by federal statistical agencies to classify business enterprises to collect, analyze and disseminate statistical data related to the business economy in the United States [26]. The indicator contains several sectors. Hence, this research can focus on sectors NAICS44 and NAICS45, where both represent commercial activities, and focuses on most urban commercial activities, e.g., Food, home furniture, building materials, clothing, electronics, health supplies, energy, etc. As for the NAICS45 segment, it focuses on Non-Store Retailers or e-commerce and some secondary commercial activities.

A study to monitor the change in data highlighted by the NAICS44 indicator between the years 2004–2012 noticed a negative difference within the central business district (Eugene downtown) by 16% [27]. Despite the attractions enjoyed by the city center, urban commercial activities within the central business district have declined. If the movement of commercial activity is stable, but increasing at the city level, then we can say that there is a new environment in which commercial activity occurs. This premise can be validated by monitoring the NAICS45 indicator during the same period within the central trade district, which is experiencing a 28% positive change. Table 1 shows the monitoring of the indicator in different trade sectors between 2004 and 2012.

Table 1

NAICS44, NAICS45 indicators between the years 2004–2012 Source: (Karr,2018).

NAICS45			NAICS44			
% Change	2012	2004	% Change	2012	2004	
28%	23.78	18.56	–16%	40.42	48.27	Business Central Commercial
–1%	10.27	10.33	5%	10.34	9.85	Business Periphery
33%	8.03	6.05	–17%	12.6	15.18	Businesses Residential

The perceptions of the impact of e-commerce on traditional commercial activities can be predicted through a field study conducted by US researcher Paige Portwood at the University of Oregon in 2018. The effect of this study figured out e-commerce on urban commercial activities in Eugene. This current and future impact can be monitored through the field interviews, which considered the diversity of study participants to the public sector. This sector includes workers in city planning and economic development industries and regional representatives, the private sector, i.e., developers, architects, commercial real estate marketers and investors in the business, NGO workers-employees [25].

All participants in the study agreed that they used e-commerce, especially in cases of lack of time to shop or lack of availability of targeted goods in local markets. The new dimensions added by e-commerce to the shopping pattern helps the consumer reach his/her goals in much easier ways than its counterpart-traditional business. Despite the low demand for owning or renting commercial units, most participants did not directly drop this impact on e-commerce and the information age.

The study confirmed that most participants with their diversity and different patterns did not consider e-commerce. This result represents a clear threat and a real danger to traditional commercial activities. However, this effect can be characterized by the change in land use, and the participants refer to this opinion to several criteria. The fundamental standard is impossible to apply the impact of e-commerce on traditional commercial activities equally on all patterns of commercial activities.

Participants also explained that e-commerce could not be considered a permanent alternative to traditional commercial activity. There is always a societal need to practice commercial activities in their standard urban form. Participants refer to this because the user often needs to interact with the product he is looking for and test it directly. Also, the lack of time required to ship goods in the case of e-commerce, where it is sometimes necessary to complete the shopping order within hours or less. While the e-commerce-until now- needs more time to exit the goods from its stores and ship them.

The study participants also stressed that the shopping process practiced by residents who do not depend only on meeting the desires for commercial goods. However, resort to them in their aspiration to go out into the urban environment and walk around the city's streets. Though, meeting their marketing needs, especially the location of commercial premises, is one of the essential elements of the formation of the city. Moreover, users are always looking for social interaction even if people are attracted to the ease of online shopping. The commercial uses of restaurants and bars are great spaces to attract the public to commercial activities, which usually encourages people to enjoy wandering around different places for entertainment. This result indicates a gradual shift in the economic pattern from a primarily commercial economy to a Recreational Economy.

Suppose e-consider that the impact of e-commerce on traditional commercial activities varies due to the nature of other commercial activities. Users expected that the least affected pattern is the specialized commercial activities, contrary to the general stores that are the most vulnerable to be entirely replaced by

e-commerce in the future. Participants attributed this difference to the distinctive nature of specialized stores as well as their attraction to a specific pattern of users, which can increase the need for non-traditional development of commercial activities.

Participants also explained that e-commerce and internet services would bring change to Central Business Districts (CBD), other than the previously mentioned effect on commercial activities; there is also an impact on the administrative offices of service providers in city centers. This is because of internet services on the integration of small companies and the transition of others to provide their services through electronic platforms only, which will affect the demand for administrative activities in the city centers.

5. The importance of establishing a developed approach

The study showed that the reliance on the e-commerce system is increasing every day. This increase was demonstrated by monitoring the percentages of e-commerce users around the world. The extent of the dominance of e-commerce has also been identified by monitoring the growth of its annual profits, which confirms that e-commerce has become an integral part of our daily life system and is indispensable. Besides, the coronavirus pandemic has contributed to the increased reliance on e-commerce activities because of the government closures, which can affect users' behavior towards traditional commercial activities in the urban environment [28].

The study, therefore, presented an observation of this impact on traditional commercial activities in the case study – the city of Eugene – which showed the decline in demand for shops in the city on the one hand, and the rise in commercial electronic activities on the other hand. This rise assures the need to set a developed approach in which the planning and the design of commercial activities in both traditional and electronic forms are considered to integrate and achieve the optimal experience for users that meets their needs in the urban and virtual environment.

The proposed approach to the planning and the design of Commercial Services tries to integrate traditional commercial activities spread across the urban environment and commercial electronic activities spread across virtual spaces. Here, the researcher realizes the need to plan and design commercial activities through an updated approach that includes commercial electronic activities. This approach works on planning commercial activities in the urban and electronic environment to achieve integration and balance between them and meet the requirements of the information age considering the constant change in the behavior of users depending on Information technology.

6. The developed approach to planning and design of commercial activities

The developed approach to planning and designing commercial centers is based on considering the information age developments. In this regard, modern commercial activity combines traditional commercial activities in the urban environment and commercial electronic activities in the virtual environment. The reason is to

produce a more suitable and sustainable commercial activity and exploit the enormous potential that informatics adds to it and avoid its challenges. However, this massive change of commercial centers shall happen gradually, nevertheless, it can strike people with an urban amnesia [43].

The development in ICT is characterized by a very rapid and doubled pace over time [29], where we see technologies developed in this field continuously and the resulting applications that affect and change the ways and lifestyles of the population. Therefore, any proposed approach to the commercial activity considering this accelerated development must be flexible enough to accommodate its new and updated dimensions over time.

The best planning approach to achieve these dimensions is the Iterative Planning Process, which includes several stages, i.e., design, application, and evaluation. This approach is described as a continuous approach that can be re-applied whenever the data changes and the results of the assessment differ [30], so it is a process to adapt to developments in planning by studying the changes and suggestions resulting from the follow-up and evaluation process to reach more appropriate planning and design decisions and then repeat the framework cycle [31].

The developed approach aims to help decision-makers, policy-makers, and planners set a mechanism for the development of decision-making and planning for new and existing cities and provide technical support through the developed standards. And to achieve fairness and balance in providing commercial services in the traditional and electronic form, through technically acceptable means, gain a better quality of life for citizens. The developed approach also aims to create a mechanism that allows for the continuous development of the planning and the design approach to accommodate the permanent expansion of ICT and its usage in commercial activities.

The framework of this approach can be formulated by following a set of planning and design criteria for developed commercial activities centers that consider the emerging effects of informatics. The proposed approach is divided into three main phases: the planning and design phase of the commercial activity centers. Second, the execution and follow-up phase. Finally, the evaluation and feedback phase, in which the effects of the previous two phases are studied to make appropriate decisions to address them and to restart the work cycle (Fig. 1).

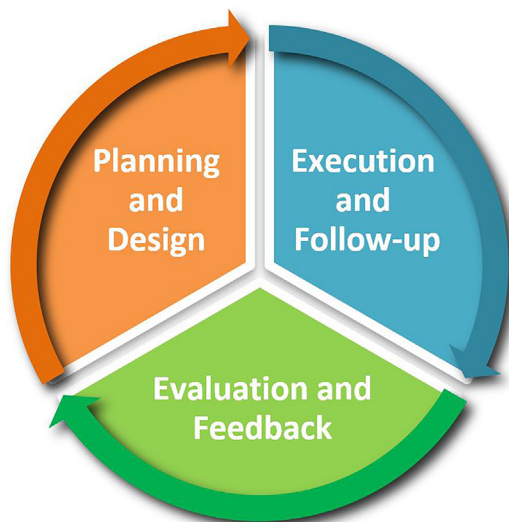


Fig. 1. The developed approach mechanism.

6.1. The planning and design phase

The planning and design process of the commercial activities centers in the proposed approach is based on developed criteria. Regarding the spatial criteria, socio-demographic criteria, economic criteria, the first is the spatial criteria (Fig. 2), which consist of eight sections as follows:

Site Selection: The selection of commercial location is divided into two parts. First, the traditional commercial activities spread in the city centers and follow the same conventional site selection criteria in terms of centrality and accessibility and some criteria that help integrate recreational activity with them. The example is given to their association with parks and areas of distinctive nature that are not available in virtual environments. Second, e-commerce activities, which require a series of warehouses and stores connected to the main traffic hubs and with low rental value, should achieve the best distribution of those stores to ensure the minimum time range for the shipment of goods to consumers to achieve the principle of Last Mile Delivery [32].

Accessibility: is of great importance in both cases traditional and electronic commercial activities, where the traffic of private cars, public transport, and the movement of pedestrians, charging and unloading places and connecting networks associated with warehouses belonging to commercial electronic activities.

Integration: Commercial activities in the information age represent the integration between traditional and electronic commerce activities in the physical and virtual environment, adding to this the fact that commercial activity planning in the information age must be done in parallel with the urban and virtual spaces together and not separately.

Consolidation: Traditional commercial activities are combined with recreational activities to represent the Recreational Economy pattern to form the main attraction for users to move to those centers and interact directly with other users (face to face), which is missed in the virtual space where e-commerce takes place.

Site Design: for traditional commercial activities in which the recreational activity plays a vital role in creating a unique natural environment, e.g., water bodies, waterfalls, fountains, and green areas. It gives the user a sense of integration with nature as a critical factor for his transition to those centers. In addition, the interior design of the commercial centers facilities must be exploited for the developed IT systems in improving their functions, such as smart electronic screens, which provide a variety of services in sales and smart measurement based on augmented reality (AR) technology and smart shopping carts that help in the electronic payment process. All these aspects can change the elements of the commercial centers and their landscapes [33].

Informatics-support: Infrastructure is one of the most critical factors for the success of information cities. It is necessary to have the smart infrastructure, which depends mainly on information and communication technology and commercial activity. It is essential to have the infrastructure that helps it to develop in the urban and virtual environments. It also connects commercial centers to informatics-support premises that control smart systems at the local level to provide them with information, support and address technical problems they may face to become competent to deal efficiently with users.

Distribution of goods: Commercial activities should have a flexible mechanism in the classification and functional distribution of goods between traditional and electronic commercial activities to achieve the optimal utilization of users in the presence of a hierarchy in the residential areas and in the standards of commercial services, i.e., neighborhood center, district center, city center and regional centers. The distribution also largely corresponds to the development of information and communication technology and

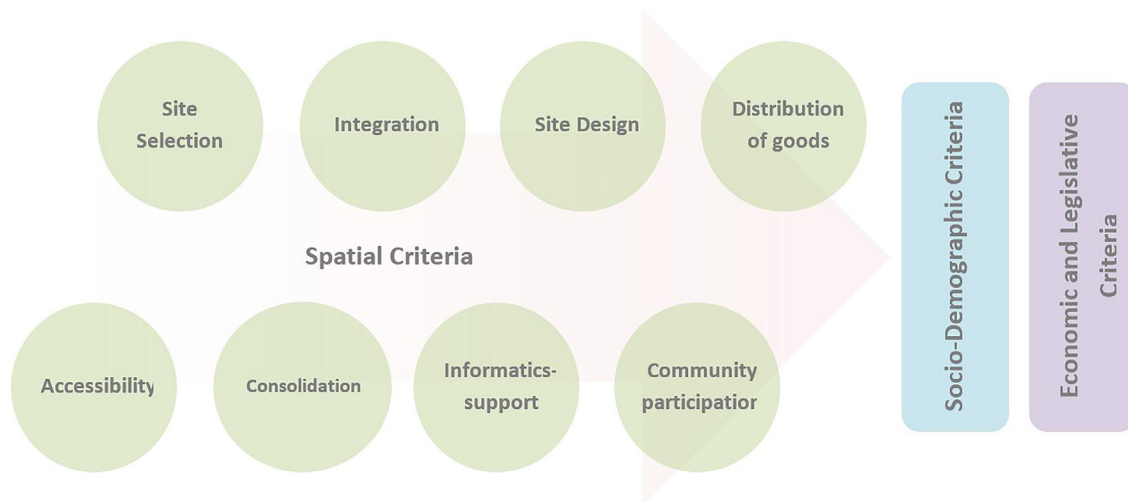


Fig. 2. Spatial criteria diagram.

its continuous applications, considering the types of goods and their degree of importance.

Community participation: At the planning and the design stage of the commercial activity, the involvement of the development parties in the study area should be required. This participation is essential to identify their needs, which vary cohabitants' ordering to the geographical location and culture inhabitants, so that the decision-maker may choose the design that meets the actual needs of the inhabitants. This choice leads to more interaction of the inhabitants with the commercial activity and consequently their success. Such participation can also help solve local problems and identify the accurate assessment of the success of the commercial activity in the third phase of the proposed approach.

Regarding the second criteria of the planning and design phase, which is the socio-demographic criteria (Fig. 3), that consist of four sections as follows:

Population: The number of inhabitants is a very significant criterion in the city. It is essential to determine the number of inhabitants as an influential factor in estimating the required goods. Informatics contributes unlimited possibilities in dealing with data, processing, collecting, analyzing and extracting its results to reach the best results, and the Geographic Information System (GIS), which can be used to distribute traditional and electronic commercial activities according to the distribution of the population.

Social Groups: Artificial intelligence is one of the most critical factors to identify and classify social groups into homogeneous groups according to income level, considering social, cultural and environmental aspects [34], and studying the needs, interests and purchasing habits of consumers. These classifications help consumers reach their commercial requirements more efficiently than traditional methods of searching for desired goods.

Types of goods: The importance of every kind of goods is determined according to the target groups. The proportion of annual expenditure on these goods is an essential point that directly impacts the selection of commercial shopping patterns in the urban or electronic center.

Communication desire: is one of the essential social criteria encouraging users to move to commercial centers. This communication is divided into two parts: First, the desire to connect users with others through social interaction [35]. Second, Perception and communication with the urban spaces, as human nature cannot fully coexist within the virtual spaces, it is necessary to interact and communicate with the metropolitan area [36].

Concerning the third criteria of the Planning and Design Phase which is the economic and legislative criteria (Fig. 4), that consist of five sections as follows:

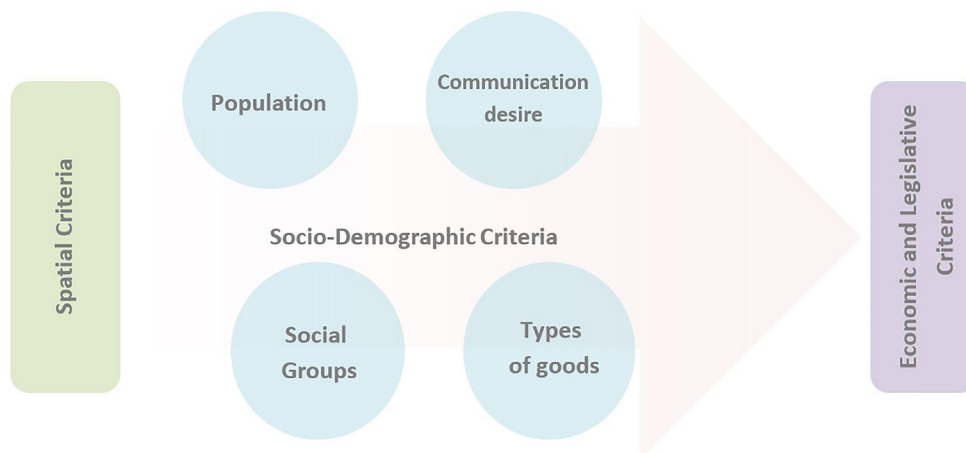


Fig. 3. Socio-Demographic Criteria diagram.

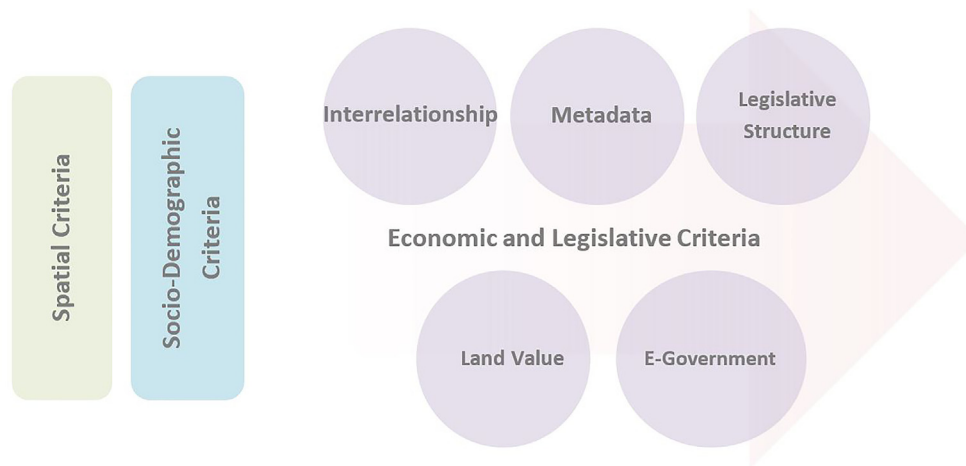


Fig. 4. Economic and Legislative Criteria diagram.

Interrelationship: The virtual environments offered by ICT represent flexible alternatives to dealing with goods and with the interrelationship between commercial activities that are in a state of continuous and frequent interaction, characterized by one of the five relationships, i.e., auxiliary – integrative – juxtaposition – competitive – dissonance, especially with the use of technological applications such as virtual reality (VR) and augmented reality (AR). On the other hand, in the urban environment, a developed model of commercial activities combined with recreational activities to create a competitive environment for its electronic counterpart appears, relying on direct interaction between face-to-face users and the enjoyment of the natural environment.

Land value: Increasing users' reliance on electronic devices is the main window for e-commerce activity through websites and applications and the spatial liberalization of e-commerce. This system of e-commerce reduces the burden of presence in current centers with high rental value. It replaces it with a group of commodity warehouses for e-commerce scattered in locations with less land value.

Metadata: Information and communication technologies help in the spatial and temporal freedom, dealing with massive data, and the emergence of new patterns of targeted marketing for specific categories, which qualify e-commerce to achieve high profits and higher economic revenue than its traditional counterpart, which indicates its continual widespread [37].

Legislative Structure: The availability of the legislative and legal structure of virtual communities in general and electronic commerce, in particular, are necessary, in addition to the implementation of the procedures and law transparently and the fight against cybercrime to reduce them, especially in matters related to systems hacking and systems destruction, financial crimes and cyber spying.

E-Government: The availability of a governmental umbrella to support the push in the direction towards electronic development through an integrated project of a comprehensive electronic government (e-government) [38,28]. This availability requires permanent investment in the development of the information infrastructure. The example is given to wired, such as fiber optics, and wireless, such as 5G networks, of the state. The reason is to become more suited to the requirements of continuous information and communication technology and invest in the development of administrative and technical human resources to support electronic development [39].

6.2. Execution and Follow-up phase

The second phase of the developed approach to the planning and designing commercial activities centers is the execution and follow-up process. This phase includes traditional commercial activities in the urban space and commercial electronic activities in the virtual space. It represents the primary goal of that phase: to ensure the operating methods that achieve the maximum benefit of the first phase criteria to ensure its effectiveness. This guarantees the continuity and sustainability of the commercial activity and the process of execution and follow-up. This issue depends on several factors:

Developers manage commercial activities, whether traditional or electronic networks, that achieve integration between them, which was planned in the previous stage to ensure competitiveness and prevent monopoly.

Relying on artificial intelligence in operation and exploiting these technologies in collecting information significantly contributes to the development of commercial activities. This development also requires studying individuals' needs identifying their requirements, which results in targeted and more effective marketing plans. Artificial intelligence can also be developed after gathering sufficient information in developing and offering practical solutions to the problems facing commercial activities and can predict future problems and avoid them before they occur, which saves the state, investor, and consumer a lot of losses. Still, there is a dilemma between "Not everything can become virtual" vs "Technology determines spatial reconfiguration", which could be more expounded on the social innovation of people with existing places [41].

Relying on administrative premises to support information and communication technology can manage electronic activities. These activities include e-commerce operations, such as premises that provide permanent support to investors in all electronic activities. Similarly, the exercises offer continuous support to consumers in various obstacles they face in electronic activities. The premises also represent one of the essential pillars of information cities, spread on several levels with a hierarchy to form a local network of information activities.

This experiment has been tested in many countries, including the Malaysian investigation of Cyberjaya city, which relied on the City Command Center (CCC) building, where it conducts supervision and follow-up operations of all facilities and services in the city electronically. This center is also one of the most critical fac-

tors in the success of relying on technological development. The most essential functions of informatics-support premises are:

- Management Traditional and Information Infrastructure.
- Management of means of transportation intelligently based on Geolocation technologies [(Global Positioning System (GPS)) and follow-up of movement, densities and transfers through Closed-Circuit Television CCTV monitoring and follow-up systems.
- Management of city facilities and services through Intelligent Building Management System (IBMS).
- Management of City Asset through Asset Management System (AMS), Financial Information System (FIS), Human Resource System (HRS) and Document Management System (DMS) [40].
- Management of means of communication, Information Technology and city servers and protection from electronic hacking.
- Management of the city's metadata and studying its exploitation to provide services to residents and investors [37].
- Provision of electronic and technical support operations to both investors and residents in all services, primarily commercial services, through its management of information channels.
- They are linking of local information to regional and international levels and using artificial intelligence to predict positive and negative indicators at the level of services and problems expected to occur, as well as working on how to avoid them before they occur and how to avoid losses to the state, investor or citizen.

6.3. Evaluation and feedback phase

The third phase of the developed approach to the planning and design of commercial activities centers is the evaluation and feedback process, which aims to ensure the continuity of the development process of the system of commercial activities at the traditional and electronic levels through several factors applied as follows:

Reliance on community participation to identify emerging problems and use strength, weakness, opportunity, and threat analysis (SWOT) to develop the best solutions for application in the first phase of the iterative planning process.

The development of Information Technology and telecommunications is a continuous development, resulting in applications that will constantly change the behavior of the population and the form of living, so it is necessary to realize and keep pace with this development by including it again in the planning and design process [28].

Identification of deficiencies and problems in the approach includes the first stages and the second stage, through assessment and survey processes, which can measure the success of the application of the approach and identify its problems.

7. Results and concluded remarks

The result of the study provides a developed approach that can deal with the planning and design of commercial activities based on the characteristics gained from informatics (Fig. 5). The approach includes three phases. The first phase is the planning and design of the retail activity centers. The second phase is the execution and follow-up process. The third phase is the evaluation and feedback process. The implementation of the approach is based on iterative planning, which can re-apply the approach whenever the results of the evaluation phase – Phase III – show a need for it.

The study of the three phases of the approach can be considered as follows: The first phase, planning, design of commercial activity

centers, is the variable phase of the developed approach mechanism, while the second and third phases are considered as fixed stages that rely on the exact mechanism of the application every time you apply the approach.

The first phase of the approach, is based on a set of developed criteria that can continue to evolve and transform as the surrounding factors differ, such as:

- The development of communication and Information Technology and its applications in virtual environments.
- Different behavior of users towards ICT applications and commercial activities due to different cultures and the extent to which they are affected by other factors, especially informatics.
- The state adopted economic and legislative conditions in dealing with activities directly or indirectly related to commercial activities.
- Digital transformation of government helps to stimulate and encourage investment in electronic activities in general and e-commerce.

The first phase is the variable phase of the approach as a result of changing the criteria adopted, and these criteria can be accurately identified by studying the target demographics of new urban communities; as for the existing urban communities, these standards can be determined through field surveying, which will identify the current situation and study the needs of the population and identify the optimal method in developing the standards of the first phase to achieve the maximum benefit for the inhabitants and commercial activity, whether traditional or electronic.

Next comes the second stage, the execution and follow-up process and then the third stage evaluation and feedback process, which depends on a fixed mechanism in applying the proposed approach by following the steps described above. This mechanism ensures the management of commercial activities in the urban and virtual communities to achieve commercial activity integration and sustainability. This achievement can happen by exploiting the most critical components of those activities and their information applications. Also, users in those urban communities where the approach is applied also achieve a better quality of life by meeting their needs according to the criteria inferred by studying the demographics and their influences on their culture.

This approach motivates urban planners and designers to design better commercial centers. It helps to distribute commercial activities on a fair, comprehensive, and equal basis at all planning levels. It is updated with the cognitive and technological development in commercial planning, considering global and local stories in line with current and future realities.

8. Conclusion

The paper addresses the impact of e-commerce as one of the applications of the ICT revolution on urban spaces, where e-commerce has provided new opportunities for users through virtual environments and electronic applications, which will change the way users interact with traditional commercial activities in the urban environment. The study also confirms an increase in reliance on e-commerce activities and can be monitored by the increase in e-commerce volume, as well as the role played by the COVID-19 pandemic in increasing support on e-commerce applications because they achieve safety standards during periods of isolation and social distancing.

The purpose of the current study is to monitor the impact of e-commerce on urbanization based on a global case study, the city of Eugene, United States of America. The study used two methods to monitor that effect through, first, an analysis of the NAICS indica-

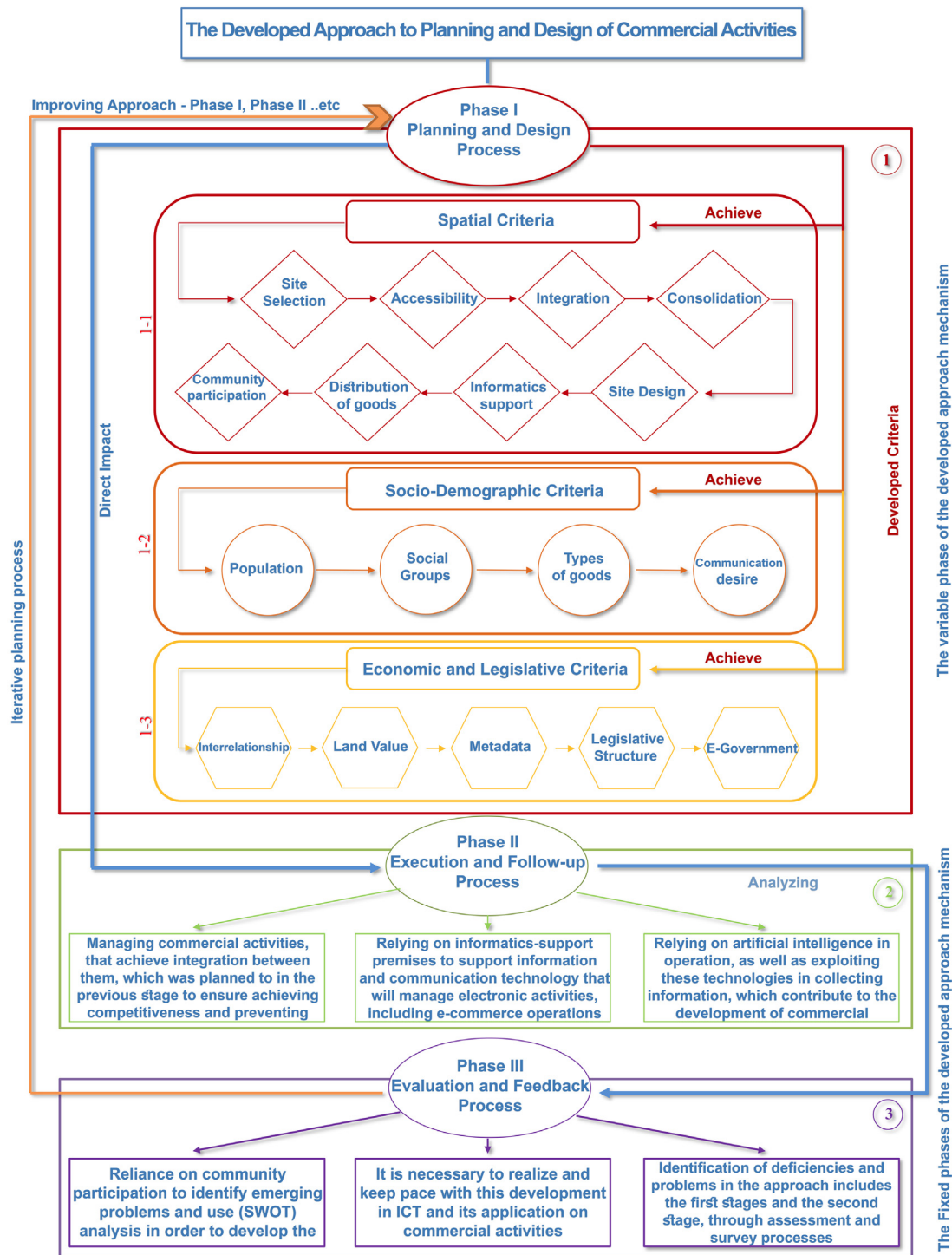


Fig. 5. The Developed Approach to Planning and Design of Commercial Activities.

tors – the North American Industry Classification System, the standard used by federal statistical agencies to classify businesses related to the commercial economy in the United States, which confirmed a decrease in urban commercial activities within the central business district, while increased reliance on non - Store Retailers, most notably e-commerce.

Based on the findings of the present case study, e-commerce has a clear impact on the demand rate of traditional commercial and administrative activities within the Central Business District C.B.D, and the effect of e-commerce on conventional commercial

activities cannot be applied equally to all types of commercial activities, The least affected commercial activity types are the specialized commercial activities, other than local general stores that are highly affected and are expected to be replaced with e-commerce in the future. Besides, e-commerce cannot be considered a permanent alternative to traditional commercial activity, as there is always a societal need to practice commercial activities in its standard urban form. Shopping practices depend not only on meeting the desires of retail goods but also the population resorts to them in their desire to go out into the urban environment and

enjoy wandering in different places for entertainment, which indicates a gradual shift in the economic pattern from a commercial economy in the first place to a Recreational Economy.

On this basis, this paper concluded -through monitoring the impact of e-commerce on traditional commercial activities- that there is a need to develop a new approach to the planning and design of commercial activities in light of the impact of ICT in general and e-commerce in particular. This approach aims to plan commercial activity in both the urban and electronic environment side by side. The link and integration between them continue to achieve the commercial activity's sustainability and provide a model that meets users' needs. The approach works according to the iterative planning process, ensuring the continuity of the absorption of all the developments in Information Technology and its application to both traditional and e-commerce.

The developed approach is designed in three stages. The first stage - variable mechanism - where the development is based on three sets of criteria, i.e., spatial, socio-demographic and economic criteria. The results of these criteria may change by changing the issues surrounding the development of information and communication technology, the change in the culture and behavior of users, the evolution of economic and legislative and the digital transformation of governments or e-governments. These criteria can be identified by specifying target groups in the planning and design of commercial centers in new urban communities or by field survey in the case of planning and development of commercial activities centers in existing urban neighborhoods. The second and third stages rely on a fixed mechanism in the application that ensures parallelism between operation and management of commercial activities among both the urban and the electronic environment to achieve its planning and design objectives, as well as the evaluation and feedback process, which represents the reflection of the change in the requirements and needs of users as a result of the difference in the surrounding factors to return the course of the approach to its first stage and then its development.

Finally, this research recommends that planners and designers of the commercial activities centers should think more carefully about the impact of e-commerce on traditional commercial activities - Brick-and-mortar stores - and how the very rapid and continuous development of ICT applications can affect consumers' behavior that can be reflected on the urban land-use.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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