

2022

Sustainable Urban Quality-of-Life in Neighborhoods: Bridging the Gap between Satisfaction and Performance in Four Types of Neighborhoods in GCR - Egypt

Islam Islam Ghonimi

Follow this and additional works at: <https://digitalcommons.aaru.edu.jo/erjeng>

Recommended Citation

Islam Ghonimi, Islam (2022) "Sustainable Urban Quality-of-Life in Neighborhoods: Bridging the Gap between Satisfaction and Performance in Four Types of Neighborhoods in GCR - Egypt," *Journal of Engineering Research*: Vol. 6: Iss. 4, Article 40.

Available at: <https://digitalcommons.aaru.edu.jo/erjeng/vol6/iss4/40>

This Article is brought to you for free and open access by Arab Journals Platform. It has been accepted for inclusion in Journal of Engineering Research by an authorized editor. The journal is hosted on Digital Commons, an Elsevier platform. For more information, please contact rakan@aar.edu.jo, marah@aar.edu.jo, u.murad@aar.edu.jo.

Sustainable Urban Quality-of-Life in Neighborhoods: Bridging the Gap between Satisfaction and Performance in Four Types of Neighborhoods in GCR - Egypt

Islam Ghonimi

Associate Professor, Shoubra Faculty of Engineering, Benha University - [email:Islam.ghonimi@feng.bu.edu.eg](mailto:Islam.ghonimi@feng.bu.edu.eg)

Abstract- Urban sustainability and quality of urban life are two norms concerning the evaluation of neighborhood in term of performance and satisfaction, respectively. Urban sustainability aims to enhance economic, environmental, and social aspects for current and future generations; it depends on objective measures of performance to ensure that sustainable community perform well. On the other side, Quality-of-life aims to ensure residents satisfaction about their community in recent times. Isolating sustainability indicators from the practical context of resident's satisfaction and their aim for high quality-of-life may cause ignorance and low applicability of sustainability. On the other side, applying quality-of-life may be associated with negative impacts on sustainability. Accordingly, urban sustainability is met with public ignorance by residents and practitioners, due to people most concern for high quality-of-life. The reason is the lack of considering residents satisfaction in assessing urban sustainability. An involvement of resident's satisfaction with quality-of-life as key factor in achieving urban sustainability is required to establish an applicable social sustainable quality-of-life guideline for urban development.

The research depends on a case study of four types of neighborhoods to provide clarification of three interlocking concerns, trace how urban sustainability behavior and quality-of-life satisfaction varies across neighborhood categories, define the relation between quality-of-life satisfaction and sustainability performance and define how neighborhoods urban form can compromise to build sustainable quality-of-life. The results found that satisfaction does not emerge as an important predictor of sustainability; it failed to find significant relation between residents' satisfaction and social sustainability. It is found that both traditional and new planned NHs stands short against achieving sustainability in term of satisfaction and behavior, respectively; compared to early planned NHs that achieve optimized values of sustainable quality-of-life.

Keywords: Urban Sustainability (US), Urban Quality-Of-Life (QOL), Sustainable Urban Quality-Of-Life (SQOL), Neighborhood Design, Greater Cairo Region (GCR).

I. INTRODUCTION

Urban sustainability and quality of urban life are two interlocking norms concerning the evaluation of neighborhood in term of performance and satisfaction, respectively. In the first hand, urban sustainability aims to enhance economic, environmental, and social aspects for current and future generations; it depends on objective measures of performance to ensure that sustainable community perform well. On the other side Quality-of-life aims to ensure residents satisfaction, about their community.

Isolating sustainability indicators from the practical context of resident's satisfaction and their aim for high quality-of-life may cause ignorance and low applicability of sustainability. On the other side, applying quality-of-life, may be associated with negative impacts on sustainability (Wiesli, T. X., 2021, Porio, E. 2015, Nikoofam, M., 2020).

Sometimes quality-of-life is associated with conflict with different sustainability dimensions. In term of environmental sustainability: QoL is associated with high natural resources consumption (Wiesli,T.X.,2021). As it aims to offer its residents with required resources consumption to satisfy their preferences. Furthermore, in term of social sustainability, quality-of-life is associated with social exclusion, inequality, and resource distribution among different social groups, as they argues that quality-of-life do not really reflect the socio-economic needs of all different income groups (Porio, E. (2015), other times it can be associated with lower social interaction between diverse income groups. People are highly aiming to engage with others through the formal tools through club meeting.

On the other hand, urban sustainability may be associated with lower quality-of-life acceptance for people that could discourage people to engage with and accept to implement sustainability. Sustainable development could have positive or negative impacts on quality-of-life as some sustainable development indicators met with acceptance or neglection to members of the society (Nikoofam, M., 2020). Residents hardly accept these indicators, it does not meet their expectations in neighborhood they wish to live in, accordingly, most urban sustainability indicators lose their applicability for residents and practitioners. Consequently, it is important to know which sustainable development indicators have high or low public acceptance. As well as policymakers should give special attention to possible effects on the most important quality-of-life indicators when they design and implement sustainable development [7].

In this sense, urban sustainability is faced with reduced satisfaction accordingly faced with ignorance of applicability by residents and practitioners. On the other side, increasing quality-of-life may be associated with high resource consumption, social exclusion, economic consumption, and accordingly reduced sustainability. As a step to face such conflict, it is important to define how high quality-of-life communities can be socially, economically, and environmentally sustainable. In other words, how can sustainable communities provide high quality-of-life and

satisfaction for their residents to reach their satisfaction and become applicable.

Accordingly Sustainable quality-of-life SQOL is a new trend of urban development that is developed to bridge this gap, and to pave the way in order for sustainability to be applicable to perform well with a series of great attachment to quality-of-life to create sustainable quality-of-life in cities.

As cities continue to change, planners are facing the challenge of designing sustainable quality-of-life neighborhoods. There is a growing call for planners to make a paradigm shift in neighborhood design to meet sustainability performance as well as people quality-of-life satisfaction. An understanding of the reason that some neighborhoods provide more sustainable quality-of-life than others is important to improve and encourage its applicability for all community residents.

A. Research Problem

Growing research agreed that traditional NHs achieve relatively high urban sustainability with limited quality-of-life. On the other hand, residents and practitioners consider new planned NHs as a place that provides high satisfaction with minimized sustainability records. Accordingly, social sustainability is met with ignorance by residents and practitioners. The reason is the lack of considering residents satisfaction as well as social behavior in assessing social sustainability. A great gap exists between theoretical objective norms that could neglect resident's satisfaction criteria. And accordingly lose the possible applicability in planners' decision in their choices in developing new cities.

B. Research aim

The research aims to give explanation of how quality of urban life and urban sustainability are correlated. It aims to give explanation of which urban sustainability indicator have high or low public acceptance. As well as it is important to give special attention to possible effects urban sustainability indicators on quality-of-life indicators when implement sustainable development dimensions to neighborhoods. In other words, it is important to consider the impacts of quality-of-life indicators to support urban sustainability implementation.

The research aims to involve resident's satisfaction with quality-of-life as key factor in giving comprehensive explanation of how urban form impact sustainability to encourage its applicability. It aims to establish an applicable sustainable quality of urban life SQOUL guidelines for development of new settlements in Egypt. This study aims to test the correlation exists between neighborhoods urban configuration and both quality-of-life and urban sustainability in term of performance and satisfaction.

C. Research argument

Previous research failed to give significant explanation of the relation between residents satisfaction and urban sustainability, residents satisfaction do not emerge as an important predictor of social sustainability; Rather achieving

a win to win situation, as to suggest that reconciling high QoL with sustainability and Quality-of-life can be achieved with sustainability is not impossible. QoL and sustainable development can be integrated into one concept.

D. Research Methodology

An inductive method using descriptive and comparative analysis are used to differentiate different case studies, with different spatial configuration. It aims to found the correlation between urban form in one hand and sustainability and satisfaction on the other hand. The research depends on two interlocking stages: first, literature review to introduce the variables of the research including neighborhood urban configuration, urban sustainability and QOL satisfaction in terms of concept, and measurable indices. Finally, the relationship between the three variables is tested in a case study of four categories of neighborhoods in GCR. The field study goes through the following three steps: measuring urban sustainability using objective measures, measuring quality-of-life using questionnaire and measuring the spatial configuration using spatial measures and finally testing the validity of their correlations.

II. URBAN SUSTAINABILITY, QUALITY-OF-LIFE, AND SUSTAINABLE QUALITY-OF-LIFE

The current debate exists between urban sustainability and urban quality-of-life call for the emergence of a new slogan of sustainable urban quality-of-life to bridge the conflict between urban sustainability performance and urban Quality-of-Life Satisfaction. This part gives clear explanation of the three slogans.

A. Urban sustainability:

Urban sustainability rests on meeting the needs of the present without compromising the ability of future generations to meet their own needs. It aims to achieve high performance for recent and for future generation in three main aspects environmental, social, and economic factors. Sustainable cities should be sustainable economically, socially, and environmentally for all present and future residents. Sustainability Performance indicators (SPIs) are required to assist countries to examine and monitor urban development to ensure its urban sustainability performance of social, environmental, and economic aspects.

Urban sustainability concerns behavior and performance of residents typical and repeated way of behaving between each other, It is an objective evaluation that concerns what residents used to act. Resident behavior is a reliable measure of social sustainability; it provides objective social sustainability indicators to assess sustainability performance of the community, regardless of any opinions or attitudes. Measuring social behavior become the interest of objective studies. They depend on ethnographic observation to observe social behavior, and human daily-life activities (Low etal. 2005). Social cohesion, social inclusion and social

participation are key factors for objective social sustainability indicators.

B. Urban Quality-of-life:

Quality-of-life is the level of satisfaction, comfort, enjoys, feeling of wellbeing, fulfillment, comfortable, and able to take part in or enjoy life events, it is an individuals' perception of their position in life in the culture's context and value systems in which they live, and in relation to their goals, expectations, standards, and concerns (WHOQOL, 1996; Hancock, 2000; Swain, 2002; Jenkinson, 2020). Quality-of-life is a subjective value, whereas one person may define quality-of-life according to wealth or satisfaction with life, but another may define it in terms of capabilities. It is a broad-ranging concept affected by the person's physical health, psychological state, personal beliefs, social relationships, and their relationship to salient features of their environment (WHOQOL, 2021).

Urban quality-of-life depends on satisfaction concerns of resident's attitudes, likes, opinions and preferences to their neighborhood, it is a subjective evaluation of the neighborhood that concerns what residents think about their neighborhood and what they think they should act. In most cases, resident satisfaction is not a reliable measure of social sustainability, it stands short to provide objective sustainability indicators. Even though, Attention should be paid for assessing resident's satisfaction with their NHs to ensure success of marketing of community investment Grogan-Kaylor et.al. (2006). Resident's satisfaction gives applicability to the process of urban development.

Resident's satisfaction mostly concerns the built environments as it becomes the interest of subjective studies. They depend on satisfaction questionnaire to assess resident's satisfaction. Residents' satisfaction mostly engaged with desirable social goods that satisfy social needs of specific small group who prefer urban form to benefit small groups regardless of its benefits for all residents of the community. Residents claimed moving from poor-quality environments with dirty, unsafe spaces high shortage urban spaces without vegetation to high-quality built environments with clean, safe, and high quantitative green public spaces, with good parks and public spaces would provide better conditions for social inclusion and interaction.

C. Sustainable Urban Quality-Of-Life

Urban sustainability and urban quality-of-life are two points of view for the shared characteristics of urban form, the first respects how such characteristics can impact the objective evaluation of people behavior, the second respects the subjective evaluation of resident's satisfaction.

Sustainable urban quality-of-life aims to respects both quality of life satisfaction with concern to the achieved sustainability behavior at the same time. Since sustainable development could affect an individual's quality-of-life positively or negatively as some sustainable development issues are acceptable and others are unacceptable to the

individual member of society. On the other hand, quality-of-life can facilitate applicability of sustainability.

The research on sustainable urban quality-of-life witnessed a paradigm shift from the first paradigm that based on achieved sustainable behavior as main influential objective factors in assessing sustainability, to include the second paradigm that based also on satisfaction for assessing urban quality-of-life. The main difference between these two paradigms as follow.

Table 1: A comparison between Urban sustainability and Urban quality-of-life.

Urban Quality-of-life (QOL)	Urban Sustainability
Present oriented (Recent time)	Future oriented (Long term survive)
Comfort, satisfy and for current generations.	protect, preserve and conserve environment for future generations
Subjective evaluation	Objective behavior
Individual perspective	Community oriented
Satisfaction and comfort oriented	Behavior and performance oriented
Enjoying life, life satisfaction, happiness, well-being	Efficient, Performance and behavior
The ability to satisfy requirements	The ability to continue over time
Quality-of-life helps to achieve goals now.	Sustainability ensures those goals are met tomorrow as well.
Indicated by the subjective state of life satisfaction.	Indicated by objective conditions and settings of environment
Human Responses	Environmental Approaches
Characterize the well-being of certain groups of people	Objectively observable facts
People's own subjective assessment of their life	Researchers deduce objective assessment of performance
Problems with people satisfaction and perception of the environment	Problems with the physical environment
Aspects of people perceptions and experiences in living environment	Aspect of people behavior in the physical environment
Perception and evaluation	Conditions and behavior

III. SUSTAINABLE QUALITY-OF-LIFE DIMENSIONS

Based on an extensive literature review of different dimensions of urban sustainability and urban quality-of-life, the following part summarizes sustainability urban quality-of-life under four types of categories urban, functional, social, psychological, economic, and environmental.

Table 2: Urban and visual sustainable quality-of-life measures.

		Performance Measure
Urban spaces walkways and Public activities	Sufficient urban spaces	promote a well-maintained, attractive, and clean environment
		Well-connected outdoor space that is accessible to the community
	Clear and sufficient walk ways for walkability	
Activities and public arts	Activities and public arts	Signage, public art and agricultural greenbelts
		Wildlife corridors & community gardens
Diversity and choices	Diversity of building character	Presence of building with diversity of use
		Presence of buildings with diversity of Height
		Presence of integrators with diversity of interest
	Diversity of people	Diversity of people
Presence of people of diverse income race		
Presence of people of diverse interest		

A. Urban and visual Sustainable QOL measures

Urban and visually sustainable quality-of-life depends on pedestrian movement, way finding, urban diversity and choices, achieve pleasure, choices, support diversity in character, choices of activities, uses, people, building types, forms, and urban spaces create a range of meanings that may influence the variety of available options.

B. Functionally Sustainable QOL measures

Functionally sustainable quality-of-life depends on proudly themes: services efficiency, services sufficiency, urban mobility, parking requirements, and traffic cognition, as shown in table 3.

- The variable “services provision” can be measured using two sub-measures:
 - “Sufficient provision of services measure” measures the sufficiency of allowed services for daily, weekly, and monthly needs within limitations of covered circles of walking distance.
 - “Efficient provision of services measure” measures the diversity and wide range of allowed services allowed to meet the diversity of resident’s needs.
- The variable “urban mobility” can be measured:
 - “Alternative transportation options” refers to the degree to encourage potential for alternative transportation options and alternative movement systems (pedestrian, cycling, public transport).
 - “Parking requirements” measures the allowed sufficient parking lots within walking distance.

Table 3: Functionally sustainable Quality-of-Life measures

		Performance Measure
Mobility	provide alternative transportation mode choices	Number of times per day using private cars? Number of times per day using public transportation? Number of times per day using cycling? Number of times per day using walkability?
	Affordable transportation choices	Reduce transportation cost, in term of energy, Travel distance Travel time Travel frequency
	Safe travel choices	safe, reliable, accessible, and affordable
	Available Parking area (quantity and distance)	Number of owned cars Sufficient provision for parking area
Services Provision	Accessibility to services	Access to commercial services (shop, mall, banks) Access to public services (hospital, school) Access to (parks, club, sports arena)
	Sufficient services provision	Provide required services for daily, weekly, and monthly needs with in walking distance
	Efficient Services provision	Provide a wide range of diversity and choices, variety and mix of services and facilities.

C. Socially Sustainable QOL measures

Social sustainable quality-of-life depends on six proudly themes: social interaction, strength of social relations, safety and security, social inclusion, social capital, and social participation received increased attention in theory of social sustainable development in cities. It aims to the ability of a city to sustain relationship exist between its residents and make them interact, recognize, know engage and trust each other and build social ties (Forrest & Kearns, 2001; Hamiduddin, 2015). It refers to the affective bond between citizens that promotes harmony and sense of community.

These questions probe to what degree residents can engage to their neighbors, to what degree the depth of their relations, the type of interaction between them, to what degree they can help each other, they can trust each other. It refers to the degree it could become an effective place for socializing future generation, and for exchange and contact of knowledge, experiences, and information with other diverse social groups (Forrest & Kearns, 2001; Hamiduddin, 2015; Ghonimi, 2017c).

• The variable “Social Interaction” can be measured using five sub-measures:

- "Degree of Interaction" measures degree of interaction quantity (times/day) measures whether and to what degree an interaction happens between neighbors.
- "Type of interaction (Accidental, Intentional)"; measures the type residents used to meet neighbors.
- "Type of interaction (Similar-Dissimilar with Different Social Income Group's measure"; measures whether and to what degree an interaction happens between different social groups, measures type of interaction (same or diverse social groups).
- Type of interaction (integrators groups neighbors, passers).
- The variable “strength of social relation” can be measured through four sub-measures:
 - "Recognize Neighbors Measure" measures whether and to what degree residents be able to know neighbors in the same, floor, building, street, and neighborhood.
 - "Know Neighbors Measure" measures whether and to what degree residents be able to recognize neighbors in streets accidentally or intentionally.
- The variable "Social Engagement with Neighbors' Measure" measures whether and how well they know their neighbors inside the community, and the adjacent community. How many times they share them in vacations, invited them to their homes, and invited them to their neighbor's homes; these questions probe the degree to which resident engage with their neighbors.
- The variable "Depth of Social Relations" measures degree of contact with friends, family, neighbors; depth of socialization networks; perceptions of social support. The variable "Feel of Trust with neighbors Measure" measures whether residents feel trust in neighbors, thought them fair, and thought them helpful (Leyden, K. M. 2003).

The variable “Feel of Safety and Security” measures to what degree residents feel safe for moving in streets, parks and facilities, feel safe in homes, feel safe for properties, feel safe for wife and kids and all age group people, feel safe during day hours, during night hours, till late night. These questions probe the degree to which resident's perception and sense of safety and security, how they well feel safe and secure for their families, children and wives to move freely in the community, and for their properties. How they can define neighbors and accordingly distinguishes who are strangers in the community. It enables collective involvement efficiency to define strangers and especially offenders and to face their criminal acts. This criterion rests on some questions: to what degree it allows clear sight line? minimize isolation? And increase resident's ability to know and define neighbors, strangers, and criminals.

The variable “social inclusion measure” measures the ability of a society to ensure the welfare of all its members, minimizing disparities and avoiding polarization, segregation, and exclusion (CDCS). Social inclusion refers to social justice and equitable access and affordability to the community for all community members (Agyeman, 2005; Harvey, 2010; Fainstein, 2010; Dempsey et al., 2012). It refers to having equal opportunities of access to services and facilities and affordable housing. It refers to achieve social equity and equal opportunities in the distribution and sharing of development benefits and costs. It depends on economic growth with ensuring social equity in distribution of land uses and housing types and equity of access to all facilities and services. It refers to equity in decision and participation. It refers to how the neighborhood is willing to provide accessibility wright for all community members (Agyeman, 2005; Harvey, 2010; Fainstein, 2010; Dempsey et al., 2012; Ghonimi, 2017c). a recorded indicator can be summarized as follow:

- The variable "Inclusion for diverse accommodation (affordability)" measures to what degree neighborhood allows for all community members with different ethnic groups (age, income levels, ...) to accommodate in neighborhoods.
- The variable “Inclusion for non-residents Integration (accessibility)” measures to what degree neighborhood allows for integration of adjacent community members to be included and give access for services, facilities and urban spaces.
- The variable “Social Capital measure” measures the degree residents can influence their community. It refers to two forms of social bonds and networks, the subjective cognitive social capital, and the objective formal social capital or both types. The first refers to shared values, norms, and identity. The second refers to features of social organization such as networks, norms and trust that facilitate co-ordination/co-operation for mutual benefit (Putnam R. 1995, 2000). In addition, it is a fundamental component of many social institutions which influence the governance and collective decision-making of an organization. It refers to social networks

that assure the correlation, cooperation, and contraction between neighborhoods. Two forms of social capital can be measured the formal and informal organizations and the cognitive social capital (Putnam R. 1995, 2000):

- The variable “Cognitive Social Capital” measures residents feeling of Stewardship, Responsibility, Involvement, Contraction, and Civic Participation measures membership, influence, integration and fulfillment of needs, and shared emotional connections (McMillan an Chavis 1986), in addition it refers to shared values, norms, and identity. It also measures resident's perception of ability to influence local affairs, and the confidence in civic institutions.
- The variable “Structured Social Capital” measures formal and informal social network It also measures no. of civil societies in the area, ability for collecting actions. just like community associations, number of cultural, leisure; social groups belonged to, involvement with voluntary organizations, religious activity with exploration of frequency and intensity of involvement.
- The variable “Social participation measure” it measures the degree residents influence their community and be involved in decisions regarding their community. It refers to three forms of social participation that represents resident's freedom in their community (Forrest and Kearns 2001; Griessler and Littig 2005; Dempsey et al. 2011).
- The variable “free to impact on decision making” measures to what degree residents can singly or collectively impact decision making regarding their environment.
- The variable "Involvement, and Participation Measure" measures people equal opportunities to participate in a democratic society on mutually agreeable terms in influencing choices for development and in decision-making. (Scull, Putnam, 2000).
- The variable “free of action” measures to what degree residents can partially or totally change their community to express themselves and achieve their needs. It includes the type of adopted regulation that could give them limit in their action.
- The variable “free of movement” measures to what degree residents can partially or totally change their community to express themselves and achieve their needs.

All are shown in table 4.

D. Psychologically Sustainable QOL measures

Psychologically sustainable quality-of-life depends on four proudly themes: The variable “Sense of Identity, Belonging, and Community Measure” measures the unique quality of a place that gives its character (Lynch, 1981), and give a clear perceptual identity, one space should not feel like many others, difference, variety, and change between different places (Southworth, 1990), as shown in table 5.

Table 4: Socially sustainable quality-of-life measures

		Sustainability Performance Measure
Interaction	Intended interaction	How many times per day you intentionally interact with neighbors? How many times per day you interact with varies integrators (neighbors, targeters, passers), How many times per day they interact with same – diverse social groups?
	Causal social counter	How many times per day you accidentally interact with neighbors?
Strength of social ties	Recognize your neighbors	Able to recognize neighbors in streets? Able to recognize neighbors
	Know your neighbors	Number of neighbors you know in the same floor? Number of neighbors you know in the same building? Know neighbors in the same street? Know neighbors in the same community?
	Engage with neighbors	How many times you share neighbors in vacations? How many times you invited neighbors to your homes? How many times you visit neighbor in their homes?
	Depth of social relations with neighbors	Fell trust in neighbors? Can support and help neighbors? Think neighbors are helpful?
	Strangers' familiarity, Tolerance.	Fell trust with strangers? Can support and help strangers? Think strangers are helpful?
	Affordability	Initial cost
Running cost		Maintenance cost Communing cost
Provide variety types of housing		Provide wide range of unit area Provide wide range of housing for different income groups Provide housing for wide range of age
Accessibility	Physical accessibility	Existing physical barriers Travel time, distance, and cost
	Visual accessibility	Clear sight line to urban spaces Clear sight line to the entrances
Formal social capital	Formal networks	Number of formal networks you are sharing
	Civil society organization	Number of civil societies in the neighborhood
	Informal networks	Number of informal networks
	Political participation	Willing to attending meetings? Speaking to local politicians and NH leaders?
	Influence decision making	Desire to fight for enhancing the place?
	Participate in owners union	I care to be one of the owner's union?
Cognitive social capital	Shared values	What the community sees as acceptable and unacceptable behavior
	Participation, to common good of NH	Effort to solve problems
		Money to solve problems
Time to solve problems		
Safety and security	Feel Safe Measure	Feel safe for movement in streets, and parks? safe in homes, for properties, wife and kids? During day hours, night hours, till late night?
	Natural Surveillance	Degree streets are inspected by residents?
	Target Hardening	Degree to use active tools like alarms, camera, and security guards?
	Recognize Strangers	Recognize neighbors, strangers, and criminals in streets?

Table 5: psychologically sustainable quality-of-life measures

		Sustainability Performance Measure
Distinctiveness	Sense of identity	Are you proud of living in this neighborhood? NH Fits lifestyle? Have unique physical character?
	Sense of belonging	How long time do you live in this NH? You intend to leave NH at nearest future?
	Sense of community	
Tigger actions	love of place	
	Sense of place	Have strong ties to your neighborhood
	Civic pride	
	Public well-being	
Attractiveness		Attractive place to live
		Attractive place to visit
		Attractive place to invest
		Attractive place to work

E. Environmentally Sustainable QOL measures

Environmental sustainability depends on proudly themes of reducing environment pollution, reducing resource consumption, and supporting environmental quality to perform better activities.

- Efficient Consumption of resources; which includes energy, water, land, and material resources; this includes the use, reuse, store, recycle, reserve, and gathering of resources.
- Environmental Protection, which includes low emission of pollution, and keep nature.
- Protecting occupant health and increasing their productivity by enhancing the indoor environmental quality, which includes thermal comfort, illumination, acoustics, air quality and ventilation; this includes the regulation and control of their impacts on the built environment.

All are shown in table 6.

Table 6: Environmentally sustainable quality-of-life measures

		Sustainability Performance Measure
Environmental pollution	Air pollution	Higher walking and biking Lowers vehicle miles travelled Tree and Green area planting
	Water pollution	
	Noise pollution	Traffic cognition Crowded urban environment
Conserve Resources consumption	Reduce resource consumption	Transportation option Commute cost Trip frequency Trip distance Electricity pill
	Depend on Renewable energy	
Enhance environment quality	Thermal comfort	
	Illumination	
	Acoustic	

F. Economic Sustainable QOL measures

Economic sustainable quality-of-life depends on proudly themes of: equitable and affordable housing, reducing living cost, enhance economic competitiveness, received increased attention in theory of economic sustainable development in cities.

IV. THE CASE STUDY OF FOUR CATEGORIES OF NEIGHBORHOODS IN GREATER CAIRO REGION

The objective of this research is to trace any significant differences and conflicts in responses to both urban sustainability and quality-of-life satisfaction across different categories of neighborhoods. The case study based on four categories of neighborhoods in different development stage in Cairo. The relationship between neighborhood design and sustainable quality-of-life will be examined to develop design guidelines. Figure 1 includes a representation of the selected research concerns of four types of neighborhoods to present different design pattern in Greater Cairo Region, the central early developed, the early planned, the flourish of new settlements to the west and the east, and the private gated communities.

A. Case Study Selection

Four types of neighborhoods were selected to present different categories of neighborhoods in Egypt, Figure 2. Two neighborhoods are selected to present each neighborhood type in Cairo development:

- Shubra and Abassia are selected to present early developed districts that informally grow over green land, and initially

developed with mixed use, high density, mixed housing income and grid street network pattern.

- Heliopolis and Nasr City are selected to present early planned districts that have developed at the end of 19th and the early 20th century. Those are initiated and planned based on garden city style and transformed over time into traditional one based on different process of intensification and change in land use types. Heliopolis is developed and planned by private developers in the end-18th and the early-19th century; Nasr City is developed and planned by government in the mid-19th century.

1st district, and Jasmin in New Cairo, are selected to present the new-planned districts that are developed in Egyptian settlements surrounding Cairo, that are based on the modern theories of residential district with segregating land use patterns, of pure residential clusters, with separate use services concentrated in centers, low density, separate housing income and hierarchical street network pattern.

- Group 113, Group 22 in Mdinaty, are selected to present the contemporary planned districts that are developed by private sector as simulation of suburban design. that are based on the modern theories of residential district with segregating land use patterns, of pure residential clusters, with separate use services concentrated in centers away from residential buildings, low density, separate housing income and hierarchical street pattern.




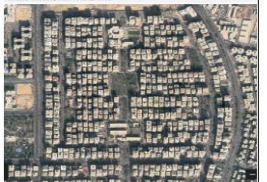




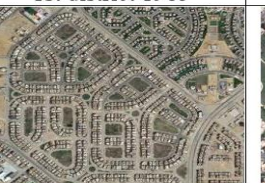





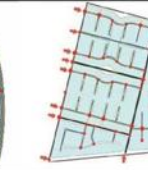
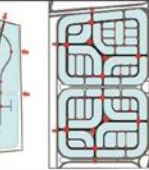

	Early Developed	Early Planned	New Planned	Contemporary Planned
Low & mid Income	 Abasia 1850	 Nasr City 1960	 1st district 1985	 Madinaty G113
Mid & high Income	 Shoubra 1850	 Heliopolis 1900	 Jasmin 2000	 Madinaty G22

Figure 1: Selected case study

Table 7: Data analysis of physical urban form in different case studies

	(Early Development)		(Early planned)		(New Planned)		(contemporary planned)	
	Abassia	Khalafawy	Heliopolis	Nasr City	1st District (New Cairo)	Jasmin (New Cairo)	Madinaty G113	Madinaty G22
								
Access point	27	27	13	12	10	10	13	10
Road Length	12344.9434	12344.9434	11467.1854	57610.8395	13623.6725	8070.7919		
Type	Grid	Grid	Treed	Treed	Hierarchical (Loops)	Hierarchical (Loops)	Hierarchical (cul-de-sac)	Hierarchical (cul-de-sac)
Orientation	outward oriented	outward oriented	inward oriented	inward oriented	inward oriented	inward oriented	inward oriented	inward oriented
No. of intersections	140	107	55	49	49	16	0	0
L. of grid	High	High	Mid	Low	Low	Low	Very low	Very low
L. of grid	16166.5529	16166.5529	14736.7059	58309.2754	613.5728	0	0	0
L. of loops	0	0	0	0	1878.2703	6958.8716	0	0
L. of cul-de-sacs	0	0	0	0	7739.3594	High		
No. of blocks	180	180	63	45	10	20	1	1
Road percentage	High	High	Mid	Low	Low	Low	Very low	Very low
	40%	40%	30%	30%	20%	20%	10%	10%
	(A): Fine grained public Transit oriented Development with high no. Of intersections, egress points, and street length.		(B): Fine grained public urban form Transit oriented Development Fine grained street network		(C): Super block public Treed inward oriented Super block with low intersection density, egress points, and street length.		(D): Super block public Treed inward oriented Super block with low intersection density, egress points, and street length.	
Density Index	107	107	52	52	14	14	5	5
Cycle Network Index	53	53	12	12	1	1	1	1
Relative Continuity Index	72	72	17	17	4	4	1	1
Relative Depth Index	53	53	12	12	1	1	1	1
Permeability Index	98%	98%	48%	48%	13%	13%	3%	3%
Accessibility Index	98%	98%	28%	28%	5%	5%	5%	5%

B. Data collection and classification

The purpose is to measure the impact of neighborhood design on social sustainability dimensions in term of satisfaction and behavior. Two forms of data collection were used – the first to measure urban form patterns based on spatial data, and the second to measure social sustainability in terms of behavior and satisfaction data represented in the social interaction (intentional and accidental), (Between different housing groups, similar housing groups), safety and security in their neighborhood, based on questioner. Finally, Analyzing and discussing the results, these measures are used to investigate the variations between eight case studies in achieving sustainable behavior and satisfaction, and deduce the correlation between urban form and social sustainability in terms of satisfaction and behavior.

1- Measurements of Neighborhood urban patterns

This part proposes to measure urban form patterns represented in street network pattern, housing income pattern, and land use pattern. It starts with used measuring tools for each variable and ends with collected data. Urban form data were collected using surveying maps, observation, satellite maps, photographic images to document and explore neighborhoods urban configuration patterns including land-use pattern, housing income pattern, street network pattern as follow:

Street network pattern can be classified under three headings:

- Street network categorize (type) grid, loop, and tree patterns.

- Linear feet of streets, No. of blocks, No. of intersections, No. of access point, No. of cul-de-sacs, Percentage of streets area.
- Depth index, cycle index, permeability index, accessibility index

Land use pattern can be classified under three headings:

- Land use type variation: measured by the diversity factor between different land use types. It represents the degree of diversity of land use types.
- Land use type variation: measured by the length of (dividing vs. connecting) line between different land-use types, it represents the degree of mixed vs. separation of land use.
- Land use density: measured by the ratio of nonresidential use to residential use, it represents the density of land use.

Housing pattern can be classified under four headings:

- Housing type variation: measured by the diversity factor between different housing types. It represents the degree of diversity of housing types.
- Housing type mix: measured by the length of (dividing vs. connecting) line between different housing types. It represents the degree of inclusion vs. segregation of housing types.
- Housing Density ranges between low density (60-120 Person/ Acre), soft density (300-500 Person/ Acre) and hard density (800-1000 Person/Acre)
- Community size ranged between small, medium, and large community size.

The urban configuration data for each case study is gathered, measured and scored in Table 2,3. Recorded urban form data is categorized starting from the traditional

type ending with the modern type and the scored result is converted into percentage, with keeping traditional pattern as higher percentage value than modern patterns.

2- Measurements of Sustainability Performance

Urban sustainability in terms of behavior concerns residents typical and repeated way of behaving between each other, it concerns what residents more likely to act. Social behavior is an objective variable that requires different investigation tools, the research depends on three types of behavior survey measure, first: spatial analysis, second: observation, and third: questionnaires to give clear conclusion for measuring social behavior:

- Spatial Analysis is used to deduce social behavior depending on walk, transit and accessibility score.
- Observation: A tool is used to double check the reported scores by spatial analysis.
- Questionnaire administered to district residents: Sample selection: 40 residents are randomly selected in each case study area that represents different gender, age, education, and income. The questionnaire measured the key factors of social sustainability indicators in the eight cases. Likert scale was used and has been converted into percentage scale.

All previous measures are used to create a variable called “social sustainability behavior measure” which is an additive index. It has been gathered, measured, and scored in percentage in Table 4.

3- Measurements of quality-of-life satisfaction

Satisfaction concerns resident's attitudes, likes, opinions and preferences to their neighborhood. It depends on closed ended Preference questions using 5 Likert scale that focus on social motivating factors of moving to or from their neighborhood, and the level of social satisfaction of living in their neighborhoods.

- Satisfaction regarding social cohesion (satisfaction to interaction with neighbors, integrators, different social income, sense of safety and security).

- Satisfaction regarding social inclusion aspects (accessibility, diversity, affordability).
- Satisfaction regarding social capital aspects (structured social capital, cognitive social capital)
- Satisfaction regarding social participation.

All previous measures are used to create a variable called “social sustainability satisfaction measure” which is an additive index of all variables. It has been gathered, measured, and scored in percentage in Table 5.

V. RESULTS AND DISCUSSION

This part aims to discuss two interlocking issues, the first regarding the social sustainability conflict in term of objective behavior and subjective satisfaction in each neighborhood model. The second, regarding the correlation between urban form pattern and social sustainability in term of behavior and satisfaction.

A. Urban and visual actors:

Fig. 3 shows a graphical representation of the conflict between social sustainability performance as measured and satisfaction of quality-of-life as preferred by residents.

Visual and urban sustainability, recorded reduced values with moving from traditional to modern neighborhoods as a diversity of activities, building types, heights and urban spaces are required to be more attractive for residents, and streets become full of life. It defined identity and character in each region of the neighborhood that enhance legibility of orientation; you always know where you are.

Visual and urban quality-of-life satisfaction, with moving from traditional to modern neighborhoods prefer similar building character of Hight, use, and form, they prefer high quality open spaces, reduce dense concentration of people accordingly provide calmness, and provide greenery streets and urban spaces, that promotes movement behavior and walkability and bicycle. They escape from the dense concentration of people and low spaces, low green areas and low urban beautification; we miss our right for high standards of open green spaces.

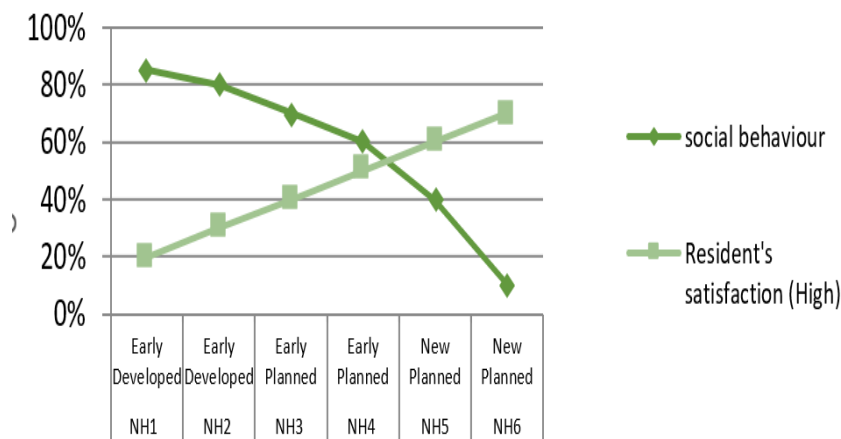


Figure 3: The variation of visual indicators in different case studies

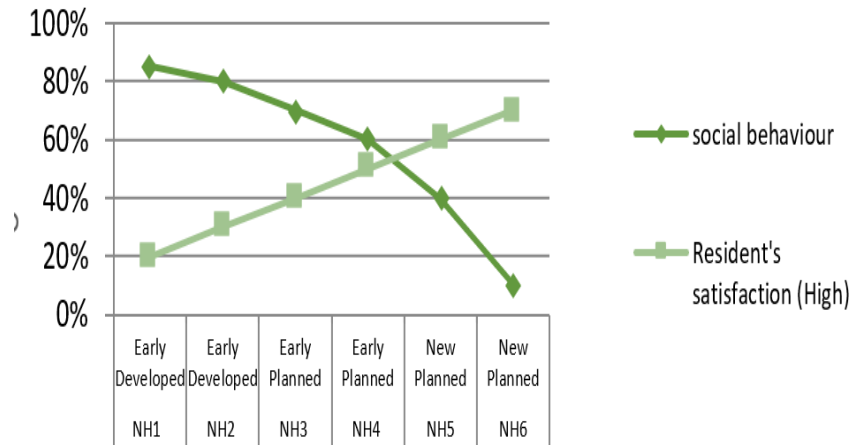


Figure 4: The variation of functional indicators in different case studies.

We miss similar unified character for our residential buildings with excluding the crowded visual pollution of commercial advertising changing color images".

B. Functional Aspects:

Fig. 4 shows a graphical representation of the conflict between social sustainability performance as measured and quality-of-life as preferred by residents with moving from traditional to modern neighborhoods.

In term of functional sustainability, recorded reduced values with moving from traditional to modern neighborhoods it should encourage sufficient, efficient provision of services in term of travel distance and cost. all services, especially daily one within walking distance and avoid longer distances and consumption of more time to reach where they wish. It encourages public transportation and discourage private car dependency. Also, it provides secure streets full of life that encourages walkability at any time of the day.

In term of satisfaction of quality-of-life, it is acceptable for some people, for others it is forbidden as they avoid intrusions or passengers who can share them in the parking area, and cause crowded traffic. To be sure they will have sufficient car parking lots and efficient streets with lower traffic and efficient movement behavior.

C. Urban mobility:

Fig. 5 shows a graphical representation of the conflict between social sustainability performance as measured and quality-of-life as preferred by residents with moving from traditional to modern neighborhoods.

In term of sustainable urban mobility, all services, especially daily one, should be provided within walking distance and avoid longer distances and consumption of more time to reach where they wish. drivers may well have to drive less.

In term of quality-of-life, driving a car is more attractive than other modes of transport, because of its convenience, independence, flexibility, comfort, speed, perceived safety, and privacy; the car also provides more status and pleasure than other modes of transport; it is a means of self-expression, and enables one to control a powerful machine.

D. Social Cohesion:

Fig. 6 analysis the variation of social cohesion indicators across the four categories of neighborhoods. It compares the intensity and type of interaction in each case study, it illustrates the following.

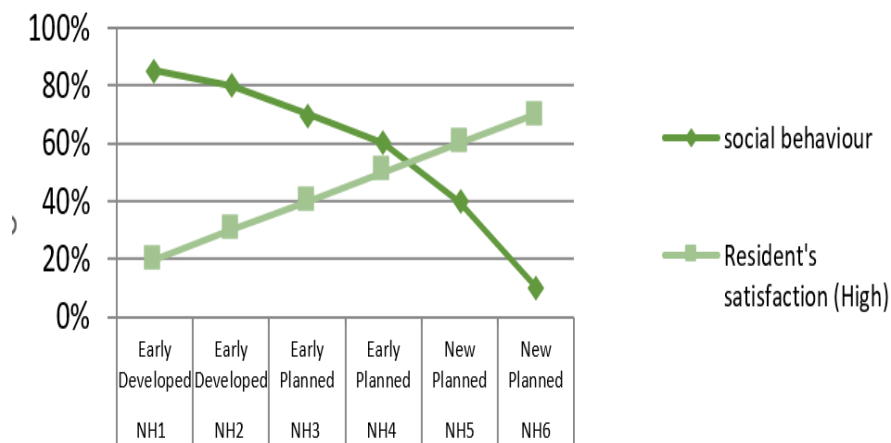


Figure 5. The variation of urban mobility indicators in different case studies.

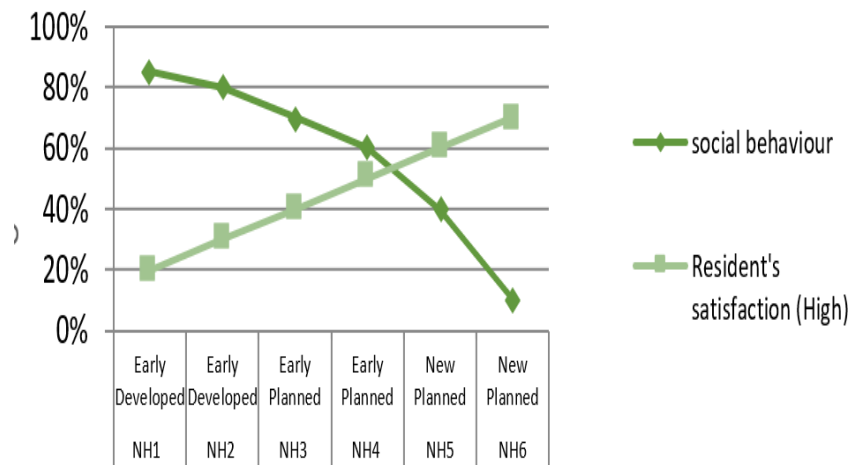


Figure 6: The variation of social cohesion indicators in different case studies.

In term of socially sustainability, it should promote interaction since they walk more so they meet neighbors in services area. Accordingly, increase the chances for meeting each other, they feel more connected to their community, accordingly, they are more likely to know their neighbors, are more likely to trust or have faith in other people and enhance the trust and reciprocity between residents and accordingly enhance interaction between residents. It should encourage interaction between different social income groups.

In term of sustainability recorded reduced values with moving from traditional to modern neighborhoods, high level of interaction that more likely happens both intentionally and accidentally. To modern neighborhood where Residents hardly know their neighbors in park, in building and even in the same floor, high variety of integrator interaction levels, where wide range of social groups have chance to interact with each other and with all types of integrators. High dissimilarity interaction levels, where wide range of social groups have chance to interact with each other. Lower accidental interaction level, rather social interaction is more likely occur by invitation, not by chance encounter. Low interest in visiting neighbors or inviting them to home or sharing them a vacation.

In term of satisfaction of quality-of-life, for some people this is acceptable, for others it is not acceptable since they prefer rather than know neighbors from streets and urban spaces, to know them in community social club where they can meet and socialize their young children with similar socioeconomic level. Where they can encourage some kind of contraction, involvement and participation in micro community. to ensure that their children will act social interaction is more likely occur between similar social groups.

E. Safety and security:

Fig. 7 shows a graphical representation of the conflict between social sustainability performance as measured and quality-of-life as preferred by residents with moving from traditional to modern neighborhoods.

In term of sustainable safe urban spaces, streets are livable abundant of life, has a continuous eye on the streets all day and night; residents know each other they also recognize strangers. The interaction and relationship between residents, mutual relationship with reciprocity, achieve safety inside streets.

In term of quality-of-life, for some people this is acceptable, for others it is not acceptable since they prefer quieter and safer streets and urban spaces, where children can play with minimal fear of fast moving traffic. It provides a sense of safety against intrusion and unfamiliar persons, and reduce the crime opportunities, they found safety through excluding the others. They fair of intrusions, unwanted, unfamiliar, and fair of crowded traffics for their children. They thought that this causes a lack of safety and increase crime opportunities. Have external money paid force to have private security, they can feel safe all day and night.

F. Economic aspects:

Fig. 8 shows a graphical representation of the conflict between social sustainability performance as measured and quality-of-life as preferred by residents with moving from traditional to modern neighborhoods.

In term of economic Sustainable neighborhoods requires low initial and living cost, where residents do not need to consume high commuting costs, time and effort, especially the private transportation are not ergant where the public transportation is affordable, and the walkability is practical solution. Reduced value of car ownership, reduced trips, short distance trips, and reduced parking requirements.

In term of quality-of-life, for some people this is acceptable, for others it is not since they do not worry to afford higher living cost of commute by using private cars they will shop from hypermarket and will teach their children in international schools; according to their priorities, they can pay to have urban, functional, social expectations. External money paid force that eliminate from their own perception the negative impacts.

G. Environmental factors:

Fig. 9 shows a graphical representation of the conflict between social sustainability performance as measured and quality-of-life as preferred by residents with moving from traditional to modern neighborhoods.

In term of Environmentally Sustainable neighborhoods pedestrian oriented, that reduce car dependency, traffic cognition in all day and night times by high frequent trips by private mobility. Accordingly reduce crowdedness, noise pollution, air pollution, co2 emission, air pollution, increase fuel energy consumption.

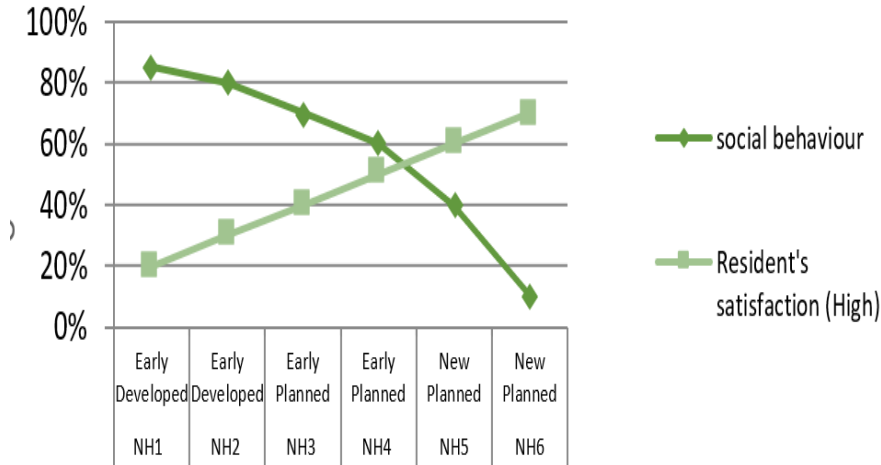


Figure 7: The variation of safety and security indicators in different cases.

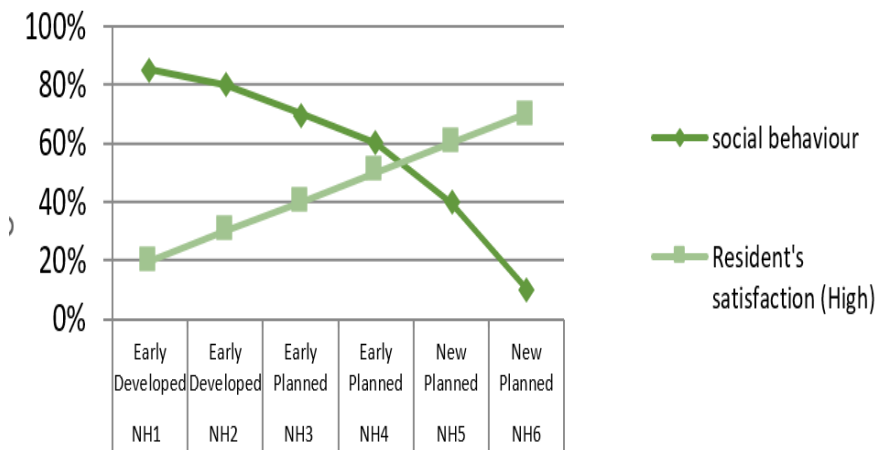


Figure 8: The variation of social cohesion indicators in different case studies.

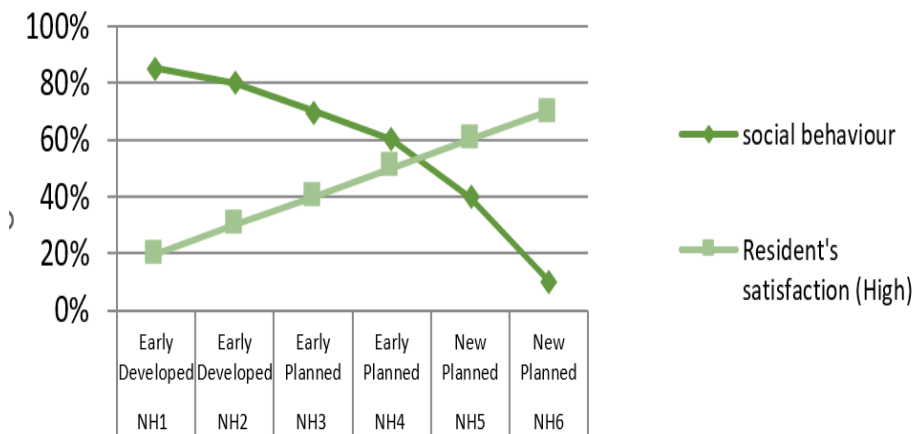


Figure 9: The variation of environmental indicators in different cases.

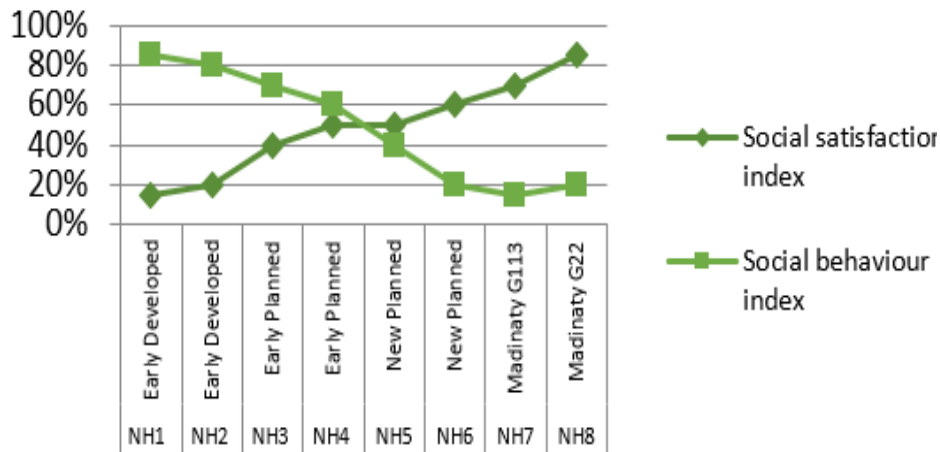


Figure 10: The conflict between performance and quality-of-life satisfaction.

H. The conflict between urban sustainability performance and quality-of-life Satisfaction:

Fig. 10 indicates that Residents subjective quality-of-life satisfaction and objective urban sustainability performance recorded a coincided and a conflicted record according to resident’s income level as follow:

A comparison between social satisfaction and social behavior reveals a conflict that resident's satisfaction does not align with social behavior. Social satisfaction and resident’s attraction do not emerge as an important predictor of social sustainability. The research failed to find significant relation between residents’ satisfaction and social sustainability. Where traditional NH recorded higher sustainability behavior it failed achieve any social satisfaction, residents are hoping to move to modern neighborhoods. On the other hand, new planned NH recorded higher sustainability satisfaction it failed achieve any social sustainability behavior, developers work to achieve needs of elite groups and neglect the need of the

overall community to achieve socially sustainable development.

VI. APPLICABLE GUIDELINES TO ENHANCE SUSTAINABLE QUALITY-OF-LIFE

In order to create applicable sustainable indicators, it should take in consideration filling the gap between satisfaction and behavior. An optimized model between urban sustainability behavior and quality-of-life satisfaction could increase the applicability of achieving urban sustainability and bring it the ground of practice.

A. Street network pattern:

Fig. 11 indicates that Street network pattern is aligned with (sustainability behavior) and negative relation with (quality-of-life satisfaction). It indicates that (sustainability behavior) is reduced by moving from Grid to Hierarchical street pattern.

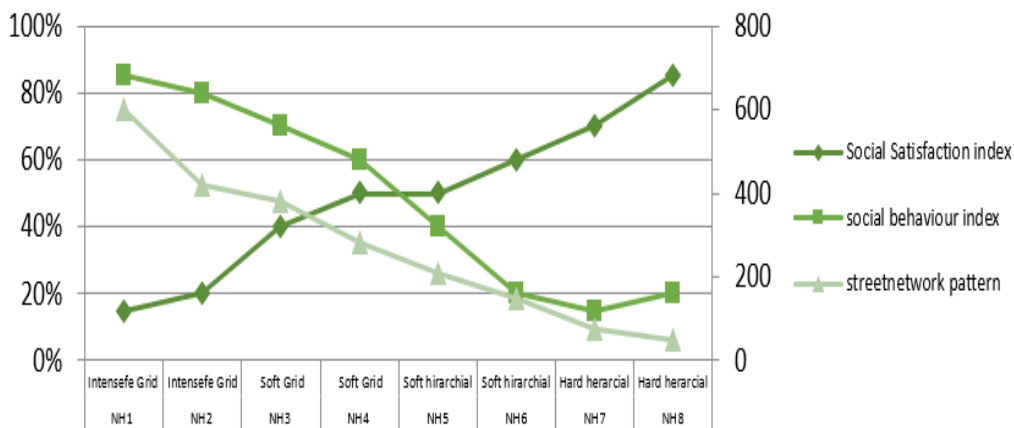


Figure 11: The conflict between performance and quality-of-life satisfaction.

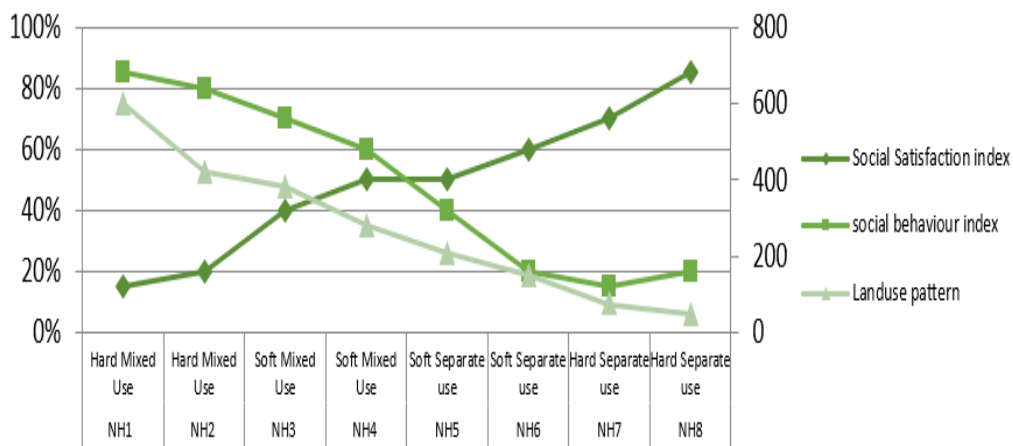


Figure 12. The conflict between performance and quality-of-life satisfaction.

This is due to increasing streets lengths and reducing alternative passes and increasing travel distance that reduce residents dependency on walkability and make them depend on private car, the matter that make them hardly see and engage to their neighbors.

It indicates that (quality-of-life satisfaction) is increased by moving from Grid to Hierarchical street pattern, this due to reducing street permeability to control through traffic and provide relative security and safety. An optimum loop system is highly recommended, that could consider satisfaction by reducing permeability and partially control through traffic and provide relative security and safety that enable residents to rely on walkability than private car. And could enhance sustainability behavior by relatively reduce travel distance and enable residents to rely on walkability than private car.

B. Land use pattern:

Fig. 12 indicates that land use pattern is highly aligned with positive relation with (sustainability behavior) and negative relation with (quality-of-life satisfaction). It indicates that (sustainability behavior) is reduced by moving from hard mixed use to soft separate use, this is due to removing retails, shops, entertainment uses from residential area that make them far from walking distance accordingly discourage residents walkability, the less they walk the less they have chance to meet their neighbors, it converts urban spaces to negative one that fails to attract residents accordingly they loss both intentional and accidental interaction and feel less connected to their community, and discourages residents to be socially engaged, and do not like to know their neighbors, and fair to trust or have faith in them and accordingly.

It indicates that (sustainability satisfaction) is increased by moving from hard mixed use to soft separate use, they consider excluding services to become quit place and safe for their residents, there is no unknown intrusions that increases trust between residents, accordingly they are willing to know each other, through neighboring

familiarity. There is no intuition or external passengers, the only neighbors who exist in urban spaces; they mostly know each other that provides a local sense of community and identity. Beside they prefer rather than know neighbors from streets to know them in community social club where they can meet and socialize their young children with similar socioeconomic level. Where they can encourage contraction, involvement, and participation in micro community. An optimized soft mixed use in early developed neighborhoods is highly recommended that could provide diversity of interaction between different integrators with keeping safety and security.

C. Housing Income pattern:

Fig. 13 indicates that (sustainability behavior) is reduced by moving from mixed to separate housing income. Separate housing income will achieve homogeneity and reduce diversity between residents. Residents do not have the chance to meet dissimilar residents. A great social gap and exclusion exist between the community and diverse housing income groups. It discourages existence of diverse relations, with dissimilar residents. It indicates that (quality-of-life satisfaction) is increased by moving from mixed income to separate housing income. This can be explained by achieve homogeneity between residents. accordingly, apply shared values and interests and avoid social tension between community residents. Regarding inclusion that keep homogeneity of residential types. An optimized soft mixed housing type in early developed neighborhoods is highly recommended that could provide diversity of interaction between different types of residents.

D. Residential Density pattern:

Fig. 14 indicates that residential density pattern is highly aligned with positive relation with (sustainability behavior) and negative relation with (quality-of-life satisfaction). It indicates that (sustainability behavior) is reduced by moving from hard high density to hard low density.

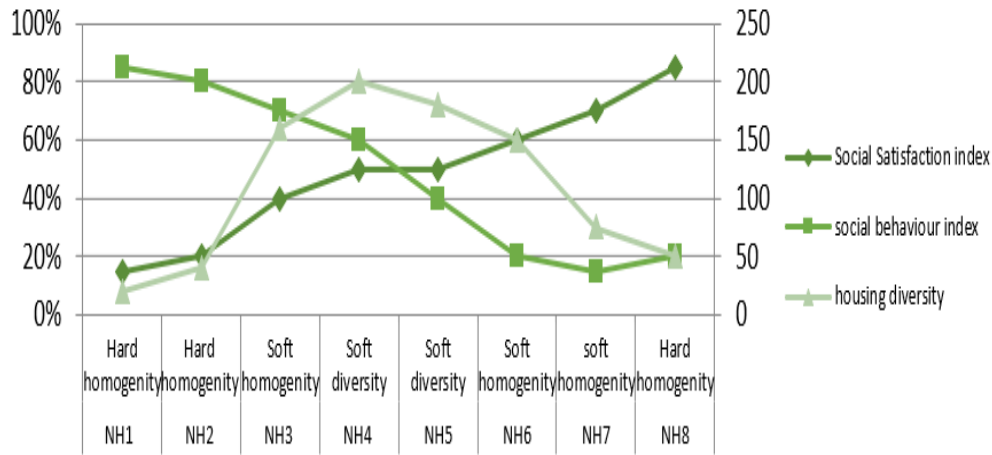


Figure 13: The conflict between performance and quality-of-life satisfaction.

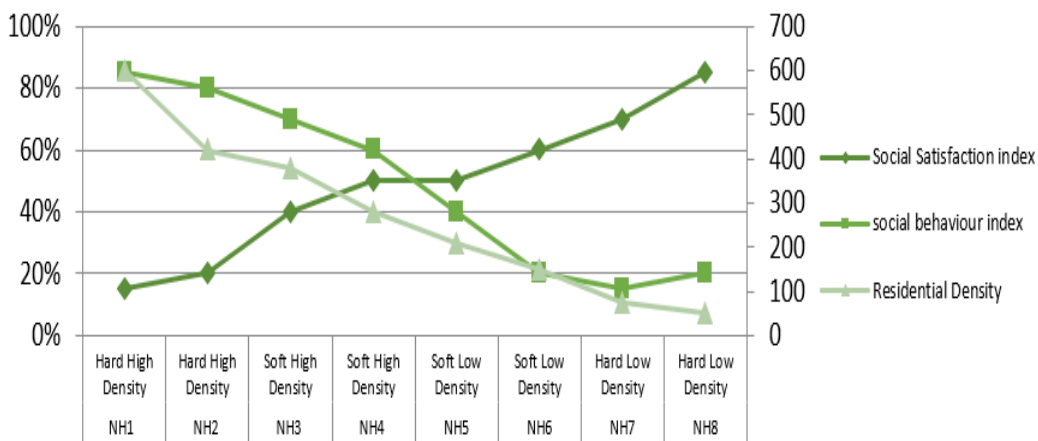


Figure 14: The conflict between performance and quality-of-life satisfaction.

This is due to reduced community size that reduce the chances of meeting neighbors. Residents hardly know each other and hardly acknowledge strangers, and fair to build social ties. It indicates that (satisfaction) is increased by moving from hard high density to hard low density, according to their opinion it minimizes community size that increase resident’s familiarity of their neighbors, they can build small social groups and can easily define strangers. An optimized soft density in early developed neighborhoods is highly recommended that could provide viable size of interaction between community residents with keeping safety and security.

VII. CONCLUSIONS AND RECOMMENDATIONS

This research suggests that the way we design our neighborhoods affects sustainability and quality-of-life in terms of satisfaction and behavior. The research reached three conclusions:

The first: Both early planned and new planned neighborhood stand short in measuring social sustainability in terms of behavior and satisfaction dimensions, respectively each in its own way.

- It is found that new planned NHs that recorded higher value for resident’s satisfaction, stands short against achieving accidental interaction, natural surveillance, and sense of safety, and lack diversity of interaction. On the other hand, Early developed NHs that are discouraged by residents’ satisfaction did not stand short against achieving high social capital, intentional and accidental interaction and high surveillance and sense of security.
- It is concluded that an optimum early planned neighborhoods with high quality urban form with integrated mixed use and mixed income social fabric, provides greater social sustainability in term of social interaction, both intentional and accidental types, and provide diversity of social relations between the rich and the poor and different integrators, and creates sense of safety against criminals.
- It indicates that neither residents living in early developed neighborhood, nor residents living in modern planned neighborhood are encouraging social sustainability. The first stand short to achieve accidental interaction, and diversity of interaction with low surveillance and low diversity, and the second stand short against defining integrators from neighbors and accordingly fail to create

trust to neighbors and define strangers. A moderate neighborhood model is more likely to enhance social sustainability.

The second: it indicates a variation of social sustainability indicators across the three categories of neighborhoods, in terms of social cohesion, social inclusion, social capital, and social democracy:

- Regarding social interaction, it indicates that traditional neighborhood proved to achieve high social interaction; it could provide required urban spaces, mixed use and mixed income area to assure intentional and accidental interaction between residents and to assure diversity of interaction. On the other hand, modern neighborhood lack to provide such chances and seems to achieve interaction only by invitation. Early developed Neighborhoods residents know everyone in the community. They always share their public life to meet in the streets. On the other hand, residents in new planned NHs hardly know their nearest neighbors.
- Regarding sense of safety and security, neither modern nor traditional neighborhoods can provide a sense of safety, the first reduce dense concentration of people and reduce mixed use that reduce surveillance of streets and urban spaces and the second increase dense concentration of people with extreme mixed use that reduce the resident's ability to define neighbors, strangers, and criminals. The third a moderate value could provide enough density and mix level to assure surveillance with defining strangers.
- Regarding social inclusion, early developed NHs achieve social inclusion for residents and different types of integrators. All can meet and interact. On the other hand, new developed NHs failed to achieve inclusion in term of resident's income type and diversity of integrators. In term of satisfaction, early developed NHs faced with low satisfaction and higher satisfaction in New planned NHs.
- Regarding social democracy, three types of adopted regulations are recorded, the common regulation between residents in early developed NHs, the intended regulation adopted by the state in modern NHs, and the unwritten regulation adopted by developers in new planned NHs.

The third: indicates that some urban form proved to achieve optimized social sustainability in term of satisfaction and behavior. Accordingly, planners and urban designers are recommended to consider the impacts of neighborhood physical characteristics on social sustainability dimensions as follow:

- Good design should force a continuous activity in urban spaces to assure resident's participation and increase quantitative and qualitative social interaction.
- Good design should encourage soft mixed use like Heliopolis that encourage both intentional and accidental interaction, natural surveillance and enhance sense of safety and security, and encourage diversity of interaction of (passers, targeters, and residents). In contrast to both separate and hard mixed use community that could reduce social sustainability, the first discourage accidental interaction and rely only to

intentional interaction who rarely happen, it reduces natural surveillance from streets and reduce sense of safety, and reduce diversity in the community; and the second make residents fail to define and recognize neighbors among huge diversity of users in streets, that make residents fail to define neighbors and fail to know them and fail to build social relations with them, also it increase the existence of strangers where it would be hardly to define offenders and accordingly increase criminality and reduce sense of safety in the community, finally it creates huge disorder and crudeness of visual image, activities, and users, that become uncontrolled.

- Good design should encourage soft heterogeneity of income, with narrow range of diversity. It encourages interaction, relation, and social ties between the rich and the poor to increase their familiarity and trust in each other, to avoid social tension between them and provide sense of safety and neighbor right to each other. In contrast to both hard homogeneity and hard heterogeneity that could reduce social sustainability, the first widen the gap between residents and increase social tension that creates fair of interaction and could reduce social ties and creates heterogeneous social fabric. The second reduce interaction, relation, and social ties between different social groups, it reduces familiarity, trust and neighborhood wright between the rich and the poor and increase social tension with others and increase criminality and reduce sense of safety.
- Good design should provide moderate community density and community size that provide required dense concentration of people to build social relations between community members and increase their chances for intentional and accidental interaction and accordingly enhance relation and correlation between residents, it provide sufficient community size that enhance surveillance of streets and increase crime prevention and enhance sense of safety; and to increase diversity of choices, interest and knowledge. In contrast to both high and low density and community size that could reduce social capital; the first increase community size to an extent that makes residents cannot define each other, cannot define strangers, and accordingly cannot define offenders; the second fails to provide sufficient community size to make residents have probability to meet each other and to have accidental interaction, it fails even to have partial surveillance to their neighborhood to keep their sense of safety.

REFERENCES

1. B. Hillier and J. Hanson , "The Social Logic of Space", Cambridge University Press, 1984.
2. Bahadure, S. (2012). Social Sustainability and Mixed Landuse, Case Study of Neighborhoods in Nagpur, India. Bonfring International Journal of Industrial Engineering and Management Science, 2(4).
3. Bahamam, Ali Ben Salem (2001), "Hiring Urban design to achieve crime prevention in residential areas" journal of since, medicine and engineering Om El Kora University.
4. Baldassare, M. (1982). The effects of neighborhood density and social control on resident satisfaction. Sociological Quarterly, 23(1).

5. Bentley, I. (1990). Ecological Urban Design. *Architects' Journal*, 192(24).
6. Berman, M. A. (1996). The transportation effects of neo-traditional development. *Journal of Planning Literature*, 10(4), 347–363.
7. Berube, A. (2005). Mixed communities in England: A US perspective on evidence and policy prospects. Joseph Rowntree Foundation.
8. Blandy, S., Lister, D., Atkinson, R., & Flint, J. (2004). Gated communities in England Final report of the Gated Communities in England 'New Horizons' Project.
9. Bramley, G., & Power, S. (2009). Urban form and social sustainability: The role of density and housing type. *Environmental Planning B*, 36(1), 30–48.
10. Breheny, M. (1992). *Sustainable Development and Urban Form*. London, UK: Pion.
11. Bridger, J. C., & Luloff, A. E. (2001). Building the sustainable community: is social capital the answer? *Sociological Inquiry*, 71(4), 458–472.
12. Burgess, R. (2000). The compact city debate: A global perspective. In Jenks M., & Burgess R. (Eds.), *Compact Cities: Sustainable Urban Forms for Developing Countries* (pp. 9–24.). London, UK: EFN Spon.
13. Calthorpe, P. (1993). *The Next American Metropolis: Ecology, community and the American dream*. Princeton Architectural Press: New York, USA.
14. Calthorpe, P. (2003). "The Regional City", time saver - standards - for urban design.
15. Carmona, M., Heath, T., Oc, T., & Tiesdell, S. (2003). *Public Spaces Urban Spaces, The Dimensions of Urban Design*. Oxford, Architectural Press.
16. Evans, G. L. (2001). *Cultural planning: An urban renaissance?* London: Routledge.
17. Gehan Elsayed Abd Eldayem Noha Ahmed Nabil. (2014, March). Influence of mixed land-use on realizing the social capital. *Housing and Building National Research Center*, vol. 11, pp. 258-298.
18. Ghannam, F. (2002). *Remaking the Modern Space, Relocation, and the Politics of Identity in a Global Cairo*. University of California Press, Berkeley.
19. Ghonimi I., et al., (2011), "The Contribution of Gated Communities to Urban Development in Greater Cairo Region", *EL Azhara engineering faculty magazine*.
20. Ghonimi, I. (2017 a) "Measuring the correlation between neighborhood models and crime rates and sense of security" *Journal of Urban Research Faculty of Urban and Regional Planning Cairo University (JUR)*.
21. Ghonimi, I. (2017 b) "Towards Sustainable New Settlements in Egypt: Lessons Learned from a Comparison between Traditional and Modern Settlements in Greater Cairo Region – Egypt" *Journal of sustainable development*.
22. Ghonimi, I. (2017a). "The impacts of neighborhood land-use patterns on resident's satisfaction and perception to sustainable urban development: A comparison of four neighborhoods in greater cairo region - egypt. *Journal of Engineering Sciences-Assiut University-Faculty of Engineering*, 45(4).
23. Ghonimi, I. (2017c). "Sustainable urban mobility: Assessing Different Neighborhood Models in Greater Cairo Region, Egypt. 22th International Conference on Urban Planning Regional Development and Information Society.
24. Ghonimi, I. (2018) "Socially sustainable neighborhood in Egypt: Assessing Social Capital for Different Neighborhood Models in Greater Cairo Region." *Journal of Engineering Sciences Assiut University*, vol.46.
25. Grogan-Kaylor, A., Woolley, M., Mowbray, C., Reischl, T. M., Gilster, M., Karb, R., ... & Alaimo, K. (2006). Predictors of neighborhood satisfaction. *Journal of Community Practice*, 14(4), 27-50.
26. Hagen, B., Nassar, C., & Pijawka, D. (2017). The social dimension of sustainable neighborhood design: comparing two neighborhoods in Freiburg, Germany. *Urban Planning*, 2(4), 64-80.
27. Houghton, J. (2006) "Renewing deprived neighborhoods through mixed communities: lessons from the US" Hubert H. Humphrey Institute of Public Affairs / Office of the Deputy Prime Minister.
28. Jacobs, J. (1961) "The Death and Life of Great American Cities" New York: Vintage Books.
29. Kamon, Heidar, (1997) " The relationship between urbanization and criminology), *El Maousoa Journal* (405).
30. Knaap, G., Song, Y., & Ewing, R. (2005). *Seeing the Elephant: Multidisciplinary disciplinary Measures of Urban Sprawl*, National Centre for Smart Growth Research and Education.
31. Koenigsberger, O.H. (2011) "Manual of Tropical Housing and Building - Climate Design" Orient Longman,
32. Kotharkar, R. S., & Bahadure, S. P. (2010). *Mixed Landuse, An approach to Sustainable Urban Development*. In International Conference Urbanism and Green Architecture, Hamirpur, pp. 149-158.
33. Kuppinger, P., & College, M. (2004). Exclusive Greenery: new gated communities in Cairo. *City & Society*, 16(2), 35–62.
34. Landman, K. (2004). Gated communities in South Africa: The challenges for spatial planning and land use management. *The Town Planning Review*, 75.
35. Leed-ND. (2010). *A Citizen's Guide to LEED for Neighborhood Development: How to Tell if Development is Smart and Green*. united states green building consul.
36. Leyden, K. M. (2003). Social capital and the built environment: the importance of walkable neighborhoods. *American journal of public health*, 93(9), 1546-1551.
37. Lofland, Lyn. (1973) "A World of Strangers: Order and Action in Urban Public Space." New York: Basic Books.
38. Lovejoy, K., Handy, S., & Mokhtarian, P. (2010). Neighborhood satisfaction in suburban versus traditional environments: An evaluation of contributing characteristics in eight California neighborhoods. *Landscape and urban planning*, 97(1), 37-48.
39. Masnavi, M.-R. (2000). *The New Millenium and the New Urban Paradigm: The Compact City in Practice*. In Williams, et al. (Eds.), *Achieving Sustainable Urban Form*. London: E&F Spon.
40. Minette, J. (1975). As the City is not a Tree... it should not be designed as a System. *planning outlook new series*, 16.
41. Newman, O. (1972) "Defensible Space: People and design in the violent city." New York: Macmillan.
42. Newton, P. (2000). *Urban Form and Environmental Performance*. In Williams, et al. (Eds.), *Achieving Sustainable Urban Form*. London: E&F Spon.
43. Paul Mitchell, A. V., & Logsdon, M. G. (2012, February). *Measuring landuse patterns for transportation research*. *transportation research record* , p. 17.
44. Putnam, Robert (1995) "Bowling Alone: America's Declining Social Capital" *Journal of Democracy*.
45. Putnam, Robert (2000) "Bowling Alone: The Collapse and Revival of American Community" New York: Simon and Schuster.
46. Salingarous. (2003). *Connecting the Fractal City*. In: 5th Biennial of towns and town planners in Europe, Barcelona, Spain.
47. Sennett, R. (1976). *The fall of public man*. Cambridge: Cambridge University Press.
48. Shalaby, A.-F. S. (2003). *Transfer of Ideas through Planning Education in Egypt: The Case of the Spatial Form of Low Income Housing*. Cardiff: Cardiff University.
49. Song, Y., Clifton, K., & Knaap, R. E. G. (n.d.). *Seeing the Elephant: Multidisciplinary measures of urban sprawl*. National Center for Smart Growth University of Maryland.
50. Steele, F. (1981). *The sense of place*: CBI Publishing Company, Inc.
51. Talja Blokland and Mike Savage. (2008). *Social Capital and Networked Urbanism*. Networked Urbanism: Aldershot: Ashgate.
52. Tendulkar, R. (2017) "Passive design strategies for cold and cloudy climate", *International Journal of Engineering Research and Technology*.
53. Urbed. (1997). *The Model Sustainable Urban Neighborhood?* Sun Dial, (4).
54. Yang, Y. (2008). The tale of two cities: Physical form and neighborhood satisfaction in metropolitan Portland and Charlotte. *Journal of the American Planning Association*, 74(3), 307–323.
1. Wiesli, T. X., Liebe, U., Hammer, T., & Bär, R. (2021). Sustainable Quality-of-life: A Conceptualization That Integrates the Views of Inhabitants of Swiss Rural Regions. *Sustainability*, 13(16), 9187.