THE MORPHOLOGICAL SIDE OF ACADEMIC SPACE: A SUSTAINABILITY AND LIVEABILITY MULTI-CRITERIA EVALUATION OF UNIVERSITY-CITY INTERACTION

SUMMARY

The emergence of the global knowledge-based world has influenced the reality of higher education institutions. Currently, universities are major sources of knowledge generation and dissemination, innovation and technology transfer, initiators of new visions, supporters of socio-cultural progress, and economic growth engines in the societies. Contemporary universities are not isolated and mono-functional entities anymore, instead they are active urban transformation agencies. In this regard, the mission of universities has altered profoundly from education and research towards the "third mission" i.e. public service and urban outreach activities. Many contemporary universities are engaged in urban dynamics, fostering synergies and functioning as engines of sustainable urban development.

This fact has been also represented in the universities' aspiration to be an integral part of the city in which they are located. They are place-based large institutions which create a direct interaction with their surrounding urban setting. Universities are shape and are shaped by their urban context. They are influential actors in urban dynamics of their territories. Considering universities' third mission, they are key urban development agents in terms of social, cultural, economic, environmental, and physical aspects. In this respect, the physical setting of universities has a significant role in addressing their mission. To do so, they revise their urban physical setting to make a mutually beneficial relationship with their hosting urban context. They have a great potential to enhance liveability, promote the quality of urban space and academic space, and enhance the sustainability of the urban space. Universities' mission and vision are materialized in their campus space. Campus physical setting is not just a mean to facilitate learning but it has a larger influence on the educational, social, cultural, economic life of the academic community and the broader society. A university campus with a high-quality urban space can reinforce a higher

quality research and education, attract and nurture high-quality human capital, assure the presence of people, support diversified activities, stimulate the flow of synergy, foster social and economic well-being, and consequently contribute to vibrancy, liveability and sustainability of campus space, and promote prosperity of the hosting neighborhood, city, and region. Moreover, it is claimed that the campus location within the residing urban context has an important role in universities' performance and diffusing required synergies in the urban context. The spatial organization and morphological characteristics of universities demonstrate the extent and type of their interaction. The extent of this influence can vary depending on the type of interaction that is formed between two domains and the physical features and morphological characteristics of the university campuses.

In this sense, this research argues that the physical features and morphological characteristics of the university campus and its urban outreach activities influence the sustainability and liveability of the campus space and surrounding urban space.

For this purpose, this research provides a theoretical framework to evaluate the impact of physical attributes and morphological characteristics of campus form and the university's outreach activities on sustainability and liveability dimensions.

In this respect, a methodological framework is proposed which encompasses two cycles: hypothesizing cycle and theorizing cycle. Hypothesizing cycle follows a qualitative approach for hypothesis making and conceptualizing the research object. Considering universities' insertion within surrounding urban context and their morphological attributes, **six typologies of university campuses** are identified. Following a comprehensive literature review, the theorizing cycle encompasses a content analysis of forty university campus masterplans and investigating the university campus design principles. This approach makes it possible to understand and incorporate the perspectives of both campus design practitioners and academic scholars about the most important campus planning strategies and principles.

Based on the developed methodological approach, a set of criteria has been developed that assess the sustainability and liveability of university campuses. **The multi-criteria set** comprises nine main criteria and twenty-eight sub-criteria. The criteria include **liveability, legibility, cohesion, compactness, walkability, accessibility, connectivity, integration,** and **sustainability**. The defined set of criteria addresses spatial and morphological attributes of a campus setting such as

campus spatial organization, greenness, compactness, density, legibility, whereas including the dimensions regarding the urban outreach activities of the university which is related to campus physical space such as shared facilities, provided services, and sustainability incentives.

The developed set of criteria can be used to assess the performance of different types of university campuses. It can be utilized for the existing university campuses and the campus redevelopment projects as well as newly constructed campuses. To assess the performance of campus regarding each sub-criterion, a "**Histology Atlas of Campus Form**" has been developed which makes it possible to evaluate the campus spatial maps and score them for each criterion in a base of three-point Likert scale. Acquiring these criteria facilitates the comparisons between campus spatial organizations and makes it possible to generalize the findings. In this research, a multiple case study analysis has been conducted and the set of criteria has been applied to fifteen university campuses which have been selected among the best representatives of their typologies as case studies for the defined six university campus typologies. To do so, a morphological approach has been obtained and an in-depth study has been implemented through which the university campus history, development processes, and third-mission activities have been analyzed. Then, a spatial analysis has been applied to each university campus and analytical maps have been produced. Then, the analytical maps have been assessed according the set of criteria and the Histology Atlas of Campus Form.

The case study analysis makes it possible to have a better understanding of how each campus typology performs regarding the defined set of criteria in terms of sustainability and liveability aspects. Based on the produced campus analytical maps, "**A Campus Form Morphological Atlas**" has been developed. The Campus Form Morphological Atlas is a model to illustrate the performance of various morphological dimensions of the university setting, concerning the campus typology.

Indeed, the developed set of criteria and the proposed campus typologies make it possible to propose a well-performing university campus model. This university campus model can assist university campus designers, decision-makers, and university authorities to better understand the relationship between the campus typology and campus form with the associated sustainability and liveability outcomes. It also provides an opportunity to explore the relationship between campus form and the mission and vision of the university.

Keywords*:* University-City Interaction, Multi-Criteria Analysis, Morphological Characteristics, Liveability, Sustainability.