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GLOCALIZATION CHALLENGES AND THE CONTEMPORARY ARCHITECTURE: SYSTEMATIC REVIEW OF COMMON GLOBAL INDICATORS IN AGA KHAN AWARD'S WINNERS

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Abstract. Local reports from different international societies have considered the achievement of the successful Glocalized architecture model in line with the 2030 UN Sustainable Development Goals (SDGs). The Aga Khan Cultural Foundation's International Program for Islamic Architecture has also prioritized the understanding of the success drivers in architectural projects. This study aimed to detect the potentials of the common global indicators to access qualitative design assessment through analyzing the Aga Khan Award's reports. The selected methodology in the present study is a quantitative approach using the systematic content analysis and coding techniques for qualitative data obtained from the technical. The physical, non-physical, modern, and traditional factors that have contributed to the success of the works as well as their combinations were extracted and analyzed using Sensible and Abstract international, national, and local indications. There is a relative superiority for Sensible indications (A combination of modern and physical factors). The hybrid data distribution provides the ground to assess the works, and this can be used to manage the globalization challenges in the contemporary architecture of Muslim societies.

Keywords: glocalization, global architectural indicators, Aga Khan Award, systematic evaluation, contemporary architecture.

Introduction

Over the past two decades, investigations on desirable Islamic architecture have played a critical role in various national and international cultural strategic plans, and this reflects the local architecture's struggle in modernization, and in the most recent modernity model, i.e., "globalization", while still not completely abandoning its past (Wu, 2019; Ministry of Culture and Islamic Guidance, 2015). Consequently, the global architecture framework affects historical architectures and demands up-to-date responses according to the present conditions (Uddin Khan, 2018). Now, how the local architecture is affected by the inclusive phenomenon of globalization is a hotbed for discussion since architecture has always been a natural reflection of what is economically, politically, and socially happening, and two pillars of modern architecture (namely, supermodernism and regionalism) reflect the two pillars of globalization, i.e., homogenization and localization (Elahe Zoghi Hoseini & Diba, 2018; Adam, 2013).

Established in 1977, the Aga Khan Award for Architecture identifies and encourages building concepts that successfully address the needs and aspirations of communities in which Muslims have a significant presence. The prestigious Award recognizes examples of architectural excellence in the fields of contemporary design, social housing, community improvement and development, historic preservation, reuse, and area conservation, as well as landscape design and improvement of the environment (Mehan & Mostafavi, 2023). The proposals in the cultural programs of the Aga Khan Foundation for Architecture advocate an innovative response to globalization through multilateral engagement with contemporary Muslim communities' projects to promote contemporary Islamic architecture (Aga Khan Development Network [AKDN], 2018; Mehan, 2016; Mostafavi, 2013).

With the goal of creating a basis for the inclusion of contemporary architecture in globalization (Razzaghi, 2014), an innovative method has been introduced in this paper and its practicality was evaluated by quantitative analysis of qualitative data regarding common architectural factors. This article first reviews how the UNESCO Cultural Approach provides an incentive for more

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interdisciplinary alliances in the field of cultural diversity and describes Aga Khan's competitive reports on how the evaluation systems of Islamic architecture projects assess cultural identity enhancement. It also discusses the potential of global architectural factors in assessing how to confront globalization as a bridge between the two scientific-architectural and globalization fields.

1. Literature review

1.1. Toward the globalization challenge in Islamic architecture

New paradigms in urban planning and Islamic architecture about globalization, rather than being limited to spatial and temporal periods (Rabbat, 2012; Ben-Hamouche, 2010), are associated with the participation of contemporary Islamic architecture on a global scale while adopting an identity approach (=Glocalization) (Boodaghi et al., 2022; Barrese & Pareja-Eastaway, 2020; Uddin Khan, 2014). On the other hand, and competitive programs in the field of contemporary Islamic architecture have been implemented by the Aga Khan Foundation since 1977 in pursuit of the objectives in the approach (Fahmy et al., 2020; Fischer, 2011). This approach reflects a pluralistic umbrella containing conservation tendencies to modernization, continuity and change, tradition, and modernity, regional and international while considering the role of determinants in the various life dimensions of contemporary Muslim societies (Mehan, 2022; Bozdogan, 2013). The balance between the local and global elements (Glocal) has become a turning point for research in various fields such as the compatibility of technology with region and identity to change the existing designs (Yavuz & Savran, 2020; Faleh, 2013; Uddin Khan, 2018; Nezhad Haj Ali Irani & Noruzi, 2011).

1.2. Trends in evaluating outstanding contemporary works of Islamic architecture

An overview of the literature shows the existence of two types of dominant tendencies in conceptualisation of the contemporary Islamic architecture. The first and most common tendency is proof of the tension between history and tradition with modern technology and development (Bazazzadeh et al., 2022; Hassanpour & Soltanzadeh, 2016). In an extreme case, there are some customers seeking traditional images focusing on regional cultural connections, while others seek for a fully internationalized image, the main reason for which globalization (Miri Nejad, 2013). Nevertheless, the positive effects of contemporary globalist forces have less been investigated and the current development and innovation opportunities in architecture that are compatible with culture and regions to act globally (=glocally) have also been disregarded (Rajendran et al., 2021; Bazazzadeh et al., 2021; Zhang, 2021).

The second trend in literature is to seek practical solutions to the compromise between these two poles, -tradition and modernity, local and global, and to the continuity of past, present, and future, from the perspective of critiques on the contemporary works of the Islamic world in the light of promising architectural competitions (Mehan & Mehan, 2020; Mehan & Rossi, 2019; Bierman et al., 2013). Majority of studies in Iran have been based on preliminary case studies, in which the researchers adopted a series of customized assessment standards and used personal conceptualization rather than pieces of evidence and documents offered based on systematic evaluations (Hosseini, 2011; Miri Nejad, 2013; Shayan & Memar Dezfuli, 2014; Bulandian & Naseri, 2014; Mahdavi Nejad & Mansouri Majoumard, 2015).

1.3. Common approaches to judge contemporary Islamic architecture works

On a global scale, there are two available databases that provide statistical reports on the relationship between development and culture. The first one is called CDIS (Culture for Development Indicators), which was created by UNESCO to assess cultural indicators for the development and welfare of the communities. The second one is FCS, a framework for cultural statistics based on the UNESCO Convention on the Protection and Promotion of the Diversity of Cultural Expressions, issued in 2005 (UNESCO, 2016). The UNESCO program considers the FCS database in terms of the international trade of cultural goods and specified seven cultural areas. No clear definition is put forth for the last area, in which the architecture is also included (UNESCO, 2016). UNESCO's CDIS database (2014b) expresses the stimulating role and potentials of culture in sustainable development. The factors involved in architecture can be specified in different categories; however, these classifications have ignored specific local factors such as Islamic architecture. On the other hand, many countries have not still included in such statistics.

The second category of databases is the Aga Khan Trust for Culture (AKTC) with the aim of developing a humanitarian, non-religious, and private foundation that manages three major programs: Aga Khan Award for Islamic Architecture, "Support Program for Historical Cities" and "Culture and Education Program". The focus of the present study is on the first program introduced by this foundation, Aga Khan Award for Islamic Architecture. This award has been continuously presented every other three years to seven projects on average since its inception in 1977 (14 rounds), with a clear and evolving commitment to improving the welfare in the continents Asia and Africa. The factors involved in the selection of the best works, despite a basic framework, follow the change and evolution principles in each period. In general, the projects fall into one of the four categories: infrastructure, landscape, social development, and urban public space. According to the change and evolution principle, which is DNA of the Aga Khan Award, the projects were specially organized in 2004 in three sub-categories: heritage and conservation, search and experiment, and novelty on a large scale (AKDN, 2019).

Criticisms have been directed against the databases (UNESCO and Aga khan). For example, there is more attention to the community than the continuation of tradition and another one is that the lack of attention to a high-quality building as the focus was on building adapted to culture and climate (Bozdogan, 2013). A comparison of these two reports shows that the former (UNESCO) uses a comprehensive statistical survey from all countries with different cultures and focuses on ranking the countries based on their cultural status. While the latter (Aga Khan), with more practical methods, is to promote cultural identity within a specific Islamic culture.

These databases (first category: UNESCO and second category Aga Khan Award), despite referring to globalization, are not thus specifically designed for this issue; therefore, a systematic assessment and comparison of existing Islamic architectural projects is of essence to provide information about their effects and about what makes a favorable experience of promotion in contemporary Islamic architecture. There is a serious gap in this regard.

1.4. Application of common global architecture indicators

Existing global indicators-with the exception of heritage-do not specifically look for architectural interactions within a cultural context (Mehan, 2023b; Eurostat, 2018; UNESCO, 2014a; Lupu, 2013). Local architectures thus should have access to a special tool to manage global developments and assess various aspects based on multifaceted influences and systematic approaches to data collection and analysis. Accordingly, the development of new indicators is of paramount importance (Gyglia et al., 2018).

To achieve a global status in the context of Islamic architecture, the application of global architecture indicators provides the grounds to improve the understanding of the interactions between the local and global (Baybordi & Karimian, 2014). Indicators are also a common tool for promoting the cultural status of nations, due to their simple nature and high analytical efficiency in producing quantitative data, even from qualitative design data, which are generally in line with the main indicators of sustainable development and human values (Mehan, 2023a; Guzman, 2017; Asefi & Imani, 2016; Stott, 2018; Harputlugil et al., 2014). The main obstacle to ensuring these indicators is to convert quantitative data into qualitative data since the architecture domain includes Sensible and Abstract facts as well as objective and subjective components and should be responsive to the management challenges in developing societies. However, due to the flexibility and capability of these indicators in translating complex qualitative architectural concepts into measurable information and optimizing design results in the decision-making process, they would enhance the users' quality of life (Rajali & Bakri, 2018). The application of commonly used global architecture indicators would be useful in collaborative efforts to link the globalization experiences with contemporary architecture management over the long term (Mehan, 2017; Beckman, 2016).

2. Research methodology

With the aim of arguing for the inclusion of architecture, particularly Islamic architecture, in cultural globalization, the reporting system of the Aga Khan Award for Islamic Architecture was selected as a source of analysis since it contains a complete set of relevant information. According to their focus on global architecture indicators, the reports were derived from the global reports on cultural development and valid Iranian and non-Iranian articles on the architecture evaluation indices. The research methodology was developed in three phases: (1) Preparation of a list for current global architecture indicators, (2) Semi-automatic search for architecture indicators in the Aga Khan's periodic reports to detect factors contributing to the superiority of some works, and (3) systematic classification of architecture factors based on three coding stages.

2.1. A shortlist of global indicators

A shortlist of common global indicators for the development of culture was derived from three types of sources, including five cultural reports by UNESCO and UN-Habitat, six reports of global competition with globalization indicators, and several scientific studies on the qualitative assessment of architecture. The selection of reports was based on an interconnected axis of intercultural communication and global competitions in city and architecture. By adopting a method used by Guzman (2017) and Orbea (2019), we collected 754 indicators, which included a shortlist of them, a shortlist of which was selected based on their higher frequency in architecture. A list of indicators was classified based on the main dimensions of economic, social, political, and technological globalization, and their commonly used hybrid architectural dimensions while adhering to the definitions presented in the reports.

2.2. Analysis of architectural factors in the reporting system of the Aga Khan Award for Islamic architecture

To maintain and adhere to a global analysis, we selected Aga Khan's three-yearly reports as analytical examples since it has been the most reliable instrument for the global observation of Islamic architecture since 1977. These reports provide information on the feasibility of revising the architectural factors that affect the superiority of contemporary projects in Muslim societies. We selected the analytical samples from 117 works awarded for Islamic architecture, 20 works from 2004 to 2016 and from the two last rounds (2013 and 2016) (Figures 1, 2, 3, 4, 5), and 24 works from the shortlist. To sum, a total of 44 contemporary projects from the subcategory of architecture were selected. To search for descriptive and technical information about the selected buildings, the online ARCH Net and AKDN systems were used.

Figure 1. Apartment No. 1 (Mahallat, Iran); Micro Yuan'er Children's Library & Art Center (Beijing,China); Tabiat Pedestrian Bridge (Tehran, Iran) and Friendship Centre (Gaibandha, Bangladesh) (source: on site review reports, Aga Khan Award Cycle 2013–2016) (right to left)

Figure 2. House of 40 Knots (Tehran, Iran); King Fahad National Library (Riyadh, Saudi Arabia); New Power Station (Baku, Azerbaijan); Issam Fares Institute (Beirut, Lebanon) (right to left)

Figure 3. Doha Tower (Doha, Qatar); Casa-Port Railway Station (Casablanca, Morocco); Embassy of the Netherlands (Addis Abeba, Ethiopia); The Met Tower (Bangkok, Thailand) (right to left)

Figure 4. Madinat Al-Zahra Museum (Córdoba, Spain); Ceuta Public Library (Ceuta, Spain); Guelmim School of Technology (Guelmim, Morocco); Sandbag Shelter Prototypes (Ahwaz, Iran) (right to left)

Figure 5. Umubano Primary School (Kigali, Rwanda); Islamic Cemeteay (Altach, Austria); Salam Centre for Cardiac Surgery (Khartoum, Sudan); University of Technology Petronas (Perak, Malaysia) (right to left)

2.3. Systematic classification of factors affecting the success of the contemporary architectural works in Islamic societies

A collection of references was prepared to facilitate the classification of the architectural factors and relevant terms based on the codes presented in. First step: Pre-coding classification applied based on the descriptions of the selected projects, including the project title, location, function, and year of the award. Second step: Post-coding was applied based on the quality of architecture components that distinguished references in semantic context (Iman & Noshadi, 2011; Baghmirani et al., 2017). The references to global architecture indicators were categorized based on nature analysis and effective content factors. The former aimed to have a "systematic measurement of architectural components, including both physical and non-physical ones". The latter was a qualitative classification of content, including traditional or modern cases regarding the approaches adopted by the projects. For such a classification, the content analysis method was used to interpret references to indicators (Manan Raisey, 2016) in Aga Khan's reports.

Step Three: An analysis of the relationships between the first and second steps that lead to the conceptualization based on the commonly used indicators for the superiority of Islamic architecture. Local was defined as indicators responding to the context of the architecture and included actions within the realm of local executors' competence. Global was defined as indicators representing the global architecture concerns, including attention to sustainable development, and encompassed actions directly related to the consequences of the modern world. Sensible indications represented the obvious architectural components, which were at the top of the list, and consisted of structural systems, materials, and manufacturing technology that were fully associated with local skills and capabilities. Abstract indications represented invisible architectural components, which ranked as the second top priority and contained spatial character and user satisfaction, which, despite being ranked second in priority, play a crucial role in the success and survival of architectural work (Zamani & Mehan, 2019).

3. Findings

3.1. A shortlist of common global architecture indicators

Out of a total of 579 indicators that came from 16 sources including global reports and several scientific-research papers, it was found that the frequency of these indicators varies from 1 to 2775 in these twelve report references. To determine a list of common global architecture indicators, the 25 cases with the highest frequency (>16) were kept. The shortlist indicates that 59.52% of the indicators were repeated more than 16 times. According to the main classification of each report based on the globalization dimensions, 35.17% of the architecture indicators (15 indicators) are essentially associated with the technology dimension of globalization. This is not surprising, given that the analytical reports emphasized the technical points. However, 11 indicators (26.19%) in UNESCO and Habitat reports were classified as the socio-cultural dimension, which was associated with five major architectural factors: (1) sustainable development, (2) users, (3) cultural identity, (4) aesthetics of buildings, and (5) public interests.

3.2. Common indicators of the global architecture affecting the success of Islamic architectural works

Out of 42 global architecture indicators, only 25 cases were referred to as factors affecting the success of Islamic architecture. The references of indicators were matched with 76 keywords used in expressing the design factors in the reports on the winners and the shortlists of the Aga Khan Award and qualification criteria (Figure 6). For example, the indicator construction systems had the highest number of keywords (seven items) and the highest frequency of referrals about natural and mechanical ventilation (18 referrals), electrical installations (9 referrals), cooling and heating systems (8 referrals), and natural and artificial lighting (5 referrals), and cooling (3 referrals) and acoustic (3 referrals) systems. Building construction techniques, urban-social sustainability, and building security were ranked next with five, four, and four keywords, respectively. Building construction techniques encompassed construction details (6 referrals), construction

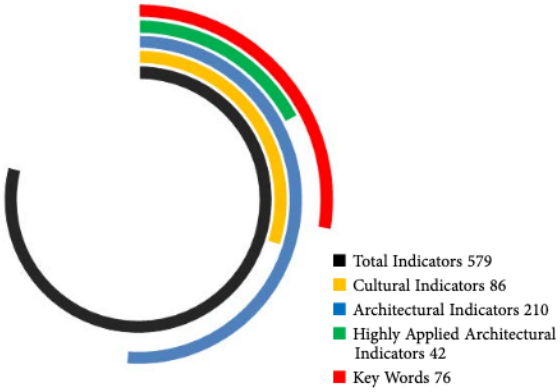

Figure 6. Indicator analysis

regulations (5 referrals), structural system (3 referrals), brickwork (3 referrals), and plasterwork (2 referrals). The urban-social sustainability encompassed social commitment (3 referrals), "social interaction", "location dependency", and "sense of belonging to the place" (2 referrals for each). Finally, the building security contained "accident prevention techniques" (6 referrals), security (5 referrals), safe evacuation and shelter provision (3 referrals), and adequacy of fire extinguishing equipment (2 referrals). Other architecture indicators, such as public interests and benefits, were not found in their true sense; however, they were found in association with the terms used in the text of the reports (e.g., feedback on social media (3 referrals), regional development (6 referrals), and public policies (4 referrals). According to one of the reports, "The project [Petronas Twin Towers] uniquely covered in many languages throughout its design and construction, and even after being occupied by regional and international media ... Many reports and details are also available on the Internet. Almost all magazines have highlighted and admired the project's success and innovation and focused on its technological, aesthetic, and symbolic aspects and its position as the tallest building in the world and as a favorable tourist destination in Kuala Lumpur." In this example, the referrals state that the public interest as a modern factor influences the success of the project. The list of factors and the frequency of relevant keywords are shown in Figure 7.

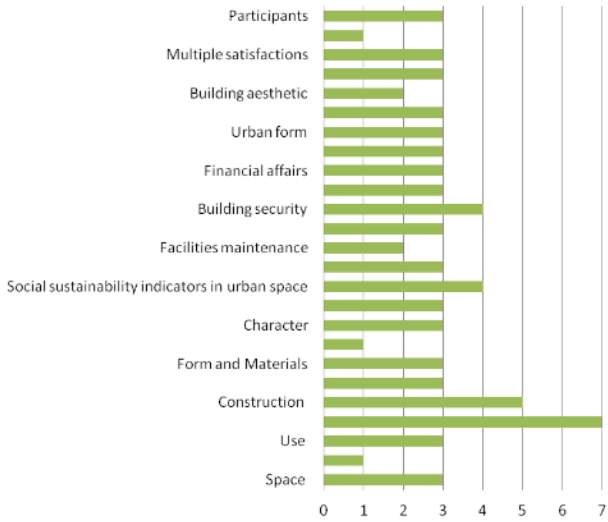

Figure 7. Referred global architecture indicators and frequency of relevant keywords

3.3. Systematic classification of factors affecting the success of works

The classification of referrals to the global architecture indicators, according to the descriptions of the works, shows 332 cases referring to effective architectural factors in a shortlist of examples from reports on 44 awarded projects or the shortlists of the Aga Khan Islamic Award from 2004 to 2016. The distribution of the referrals and recipients of the award in all domains, given the geographical location in the shortlist and among the final winners, reveals approximately similar proportions. The largest group of referrals and analyzed works were in continent Asia (44% and 42% respectively), followed by the continent Africa with 26% in both lists and Southeastern Europe with 1% of the shortlist and 0% of the final winners (the minimum value). A slight difference was observed in the distributions between Southeast Asia and the Arabian Peninsula regions, as East Asia had the greater number of awarded works (13%) in the shortlist projects (12%). Similarly, the Arabian Peninsula was greater regarding the number of finally awarded projects (13%), and smaller regarding the number of shortlists that participated in this competition (11%).

3.4. Analyzing the adopted approach and architectural components

An analysis of the approach shows that most of the architectural factors affecting the success of the works in Islamic architecture were associated with a feature "traditional" as an approach to design (65.66%). The architectural factors classified in this group represented the following local architecture indicators: geographical and cultural context, climatic comfort, user participation, the use of local materials and technologies, reduced energy consumption, and construction and maintenance costs. The feature "traditional" mostly encompassed the design ideas influenced by individuals' quality of life at the national and regional levels and local responses to control natural factors. The remaining factors (32%) were related to the feature "modern". These items usually are a part of the standards, approaches, and strategies of modern life to improve or modernize the effects of contemporary architecture in Islamic societies around the world. The relevant architectural features are advanced construction technology and regulations, building durability, security and efficiency, mechanical heating and cooling systems, public policies, and tourism.

The analysis of global architecture indicators also revealed that "physical components" with 41.66% were the most frequent ones. According to the Aga Khan's reports stating that the focus is on physical problems and contemporary usage of traditional language, it can be predicted that "non-physical components" would reach a 12%

balance. Common global architecture indicators referring to physical components are spatial dimensions and size, color and texture, spatial organization, form and materials, mechanical comfort equipment, brickworks, and plasterworks. Architectural Indicators of non-physical components consist of spatial features such as flexibility, a social policy for the future development of architecture, a symbol of users' power and discretion, attention to financial issues, and compliance with identity.

3.5. Mixed data analysis

Observations suggest that the Sensible global indications (modern-physical factors) with 58 referrals formed the largest group (46% of 332 referrals with the inclusion of eight architecture indicators). The most-frequently referred factors were engineering systems such as both natural and mechanical lighting and ventilation systems, electrical installations, partially renewable heating systems such as geothermal, cooling, audio, and thermal insulation in projects (29.31% of the total Sensible indications), and then the availability of space and site (12.07%). Other specified physical factors were building construction activities and the implementation of standards and details in accordance with the latest global standards (8.62% percent), the use of materials with a longer lifespan and lower maintenance costs (8.62%), improved security Instruments for dealing with unintentional accidents, such as fire extinguishing systems, security devices, and building security systems (with a sum of m.62%), flexible structural forms along with performance (6.9% percent), efficiency and spatial performance (5.17% for each factor). The abovementioned factors were effective as they are still the factors determining the success of architectural work in terms of responding to human spatial performance and energy usage. Other referrals to physical factors, with a value smaller than 5%, were spatial attributes such as privacy and proportions and aesthetic elements of buildings such as form and materials, identity issues, and outstanding features of the building, along with other factors, including finance and market strategy. Figures 8 and 9 shows the statistical data distribution.

Global Abstract indicators formed 5.5% (7 cases) of 332 referrals, representing the smallest group of data distribution and five indicators. The most commonly-used architectural factors were attention to the amount of trust in a project when used by the users (1.59%), seven referrals to architectural factors that make a project affordable for users, for example, extremely low maintenance costs for users, user satisfaction with a value of 1.59% reflects the architect's concern for the context and target user requests and the application of personal ideas in the form of innovative responses to user's spatial requirements (e.g., special attention to the spatial organization to achieve the acoustic quality required by audience acting in cultural projects). User satisfaction also included project strengths in terms of design concepts. Social sustainability, land use, and financial affairs (each with 0.79%) were ranked second and included developing strategies for the project's future, collective beliefs about the project's social affairs, and financial support from donor organizations, respectively.

Local Sensible indications (traditional-physical factors) represented the second group of data distribution with 30.95% (12 out of 39 referrals). The construction systems show the highest frequency of referrals (41.2% of the total indications) and included the use of traditional ventilation systems, natural heating, and cooling systems with the removal of automatic devices, and the use of solar and wind systems. Construction technology (12.82%) is an innovation in brickwork and executive details with a focus on local methods and skills instead of modern, unconventional, and imported systems. It also refers to the quantity and quality of post-constructional facilities, such as maintenance costs, and durability of materials and structures when being used (10.25%), sustainable development, especially in increasing

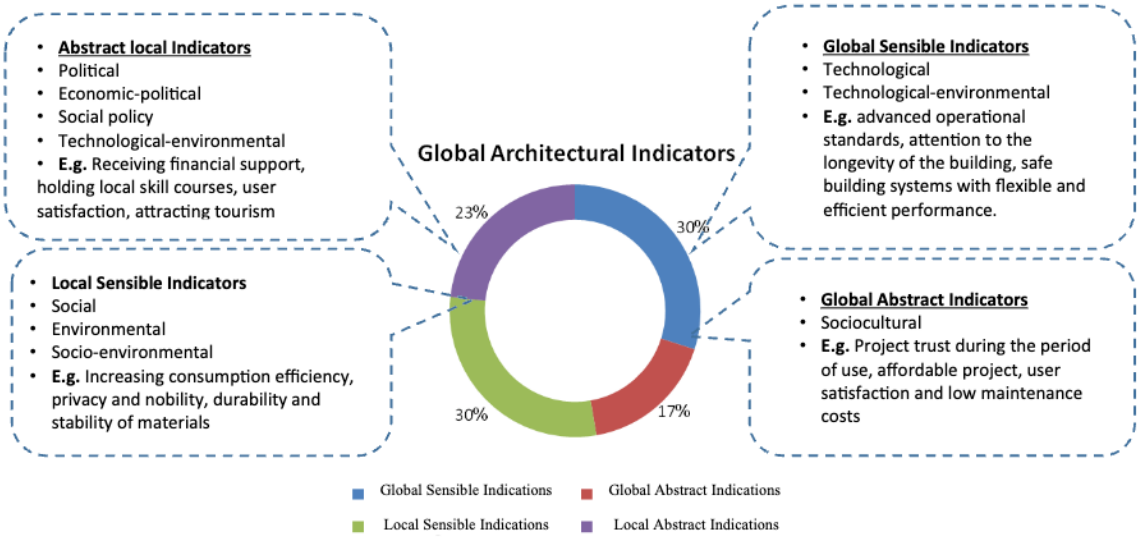

Figure 8. Data distribution

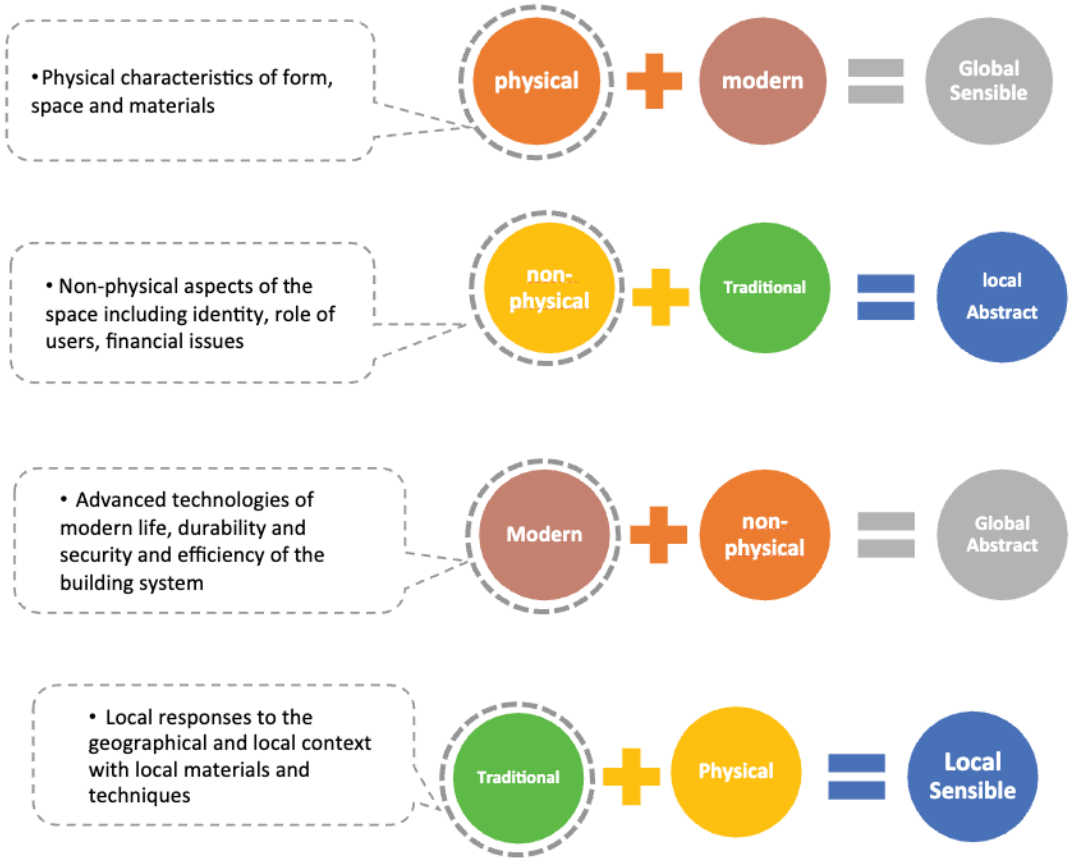

Figure 9. Mix data analysis

efficiency of energy consumption with the application of renewable energies (10.25%), form and materials (confidentiality and lack of awareness) (7.70%).

Finally, Abstract local indications represented a value of 17.46% (22 referrals) and included 11 global architecture indicators. The third group in this category encompassed some issues related to policy and public interest (27.27% of the total Abstract local indications), including the successful political impact of a work in attracting attention and support from local authorities and encouraging their representatives to conduct training courses on the introduction and skills required in working with local materials. Users' multilateral satisfaction (18.18%) contained welcoming projects and expressing physical and emotional satisfaction with the spatial organization, climate comfort, and the vitality created about the project site, building security (18.18%), and project reputation for managing natural disasters. The project stakeholders (13.63%) refer to the characteristics and the number of target groups in terms of their use and their livelihoods. Furthermore, the project's success in attracting tourism due to the natural and cultural conditions as well as the ecosystem of the region, and the visual features of the newly established facilities in the project are considered as local Abstract indications. Figure 10 shows the classification of data based on architecture indicators.

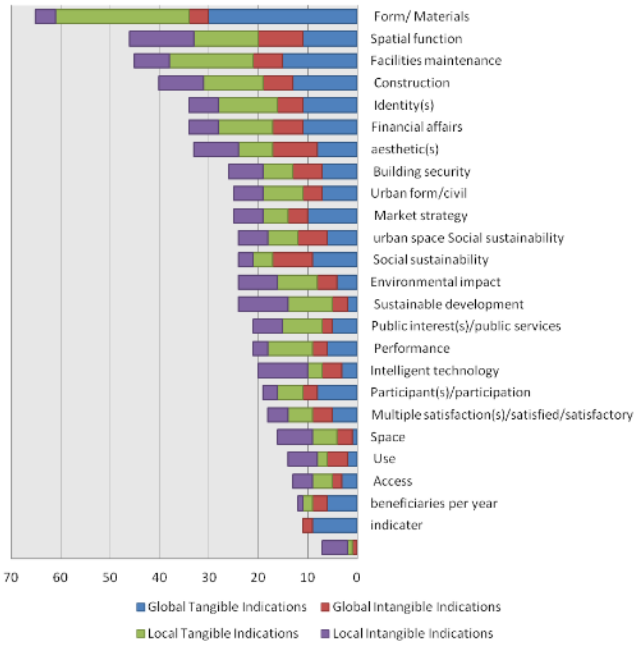

Figure 10. Distribution of data based on mixed referrals

Conclusion and discussion

According to the findings, the present study re-analyzed the architecture indicators and their impact on technological, economic, social, environmental, and political aspects of architectural projects and their attributed features. The analysis of mixed data showed that all the architectural indicators specified in the Aga Khan Award in the form of both modern and traditional language could affect the success of Islamic architecture works. Thus, the present study shows how changing the use language of architectural components leads to local or global practical experiences.

This study proposes special attention to successful projects in setting cultural development strategies through a global-local approach to managing favorable contemporary architectures in Muslim societies. The detailed understanding of Islamic architecture, especially in local experiments, requires future research. In the wider lenses, the reports on Aga Khan Award for Islamic architecture proved that they can be a key source for providing useful insights on Islamic architectural interactions in the context of contemporary global architecture. By providing a systematic classification of the 25 most frequently used architecture indicators, this study can be used as an empirical and theoretical framework to achieve the comprehensive understanding of the factors contributing to the success of the architectural projects in contemporary Islamic architecture. The physical architecture indicators, in the form of global and local Sensible indications, had a relatively larger contribution to this study.

A significant number of architectural factors, however, were associated with non-physical factors. According to the findings, user satisfaction, and participation, collective identity and security, construction and maintenance costs, regional policy are mainly referred to as non-physical factors, while construction systems, aesthetics and spatial organization, performance, and energy consumption efficiency, construction materials, and technology, represent the common physical factors. Most indicators, even though, can be evaluated regarding both qualities.

The data can become a valuable resource for researchers and contributors in the field of Islamic architecture and cultural development to further work out on the multilateral, comparative, and multiscale strategies and policies of architecture and urbanization. The challenges identified in the process of applying research methodology, including the non-significant role of direct local architecture factors among cultural development indicators and evaluation systems of architectural works, should be improved in cultural reporting systems in the application of more sustainable indicators and criteria. Further research can be provided through a deeper analysis of detected factors and possible links among the findings. These efforts would provide more effective assessments on the status of Islamic architecture in Muslim societies, in different geographic regions, by cultural development organizations such as UNESCO, ICOMOS, TICCIH, orienting trends, and evolving trends in the years to come. Also, the application of this method on a local scale can represent a level of integration of the desired architecture in cultural development in the approaches of Islamic architecture to better face the globalization challenges.

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Author contributions

Safa Salkhi Khasraghi conceived the study and were responsible for the design, development and writing of the data analysis. Asma Mehan were responsible for re-writing, editing, and adding new and updated references.

Disclosure statement

I hereby certify that, to the best of my knowledge, no aspect of my current personal or professional circumstance places me in the position of having a conflict of interest with this manuscript.

References

Adam, R. (2013). *The globalization of modern architecture: The impact of politics, economics and social change on architecture and urban design since 1990*. Cambridge Scholars Publishing.

Aga Khan Development Network. (2019). www.akdn.org

Asefi, M., & Imani, A. (2016). Redefined the design patterns of desirable Iranian-Islamic contemporary housing with the quality assessment of traditional homes. *Quarterly Journal of Islamic Architectural Studies*, *4*(11), 56–75. (in Persian)

Baghmirani, M., Ismaili Givi, M., Hassanzadeh, M., & Norouzi, A. S. (2017). Development of a conceptual model of problem-solving research using the directional content analysis method. *Human and Information Interaction*, *4*(3), 34–47. (in Persian)

Barrese, L., & Pareja-Eastaway, M. (2020). Glocalisation dynamics: The appropriation of the 'creative turn' discourse in Buenos Aires, Argentina (2007–2015). *City, Culture and Society*, *21*, 100343. https://doi.org/10.1016/j.ccs.2020.100343

Baybordi, A., & Karimian, A. S. (2014). Globalization of culture and its influence on Iran's national identity. *Journal of International Relations Research*, *7*(28), 77–101. (in Persian)

Bazazzadeh, H., Safaei, S. S. H., & Mehan, A. (2022). Heritage impact assessment method in the production of cultural heritage. Iranian Cases. In *Living* (*world*) *heritage cities:*

Opportunities, challenges, and future perspectives of people-centered approaches in dynamic historic urban landscapes (pp. 171–182). Sidestone Press.

Bazazzadeh, H., Nadolny, A., Mehan, A., & Safaei, S. S. H. (2021). The importance of flexibility in adaptive reuse of industrial heritage: Learning from Iranian cases. *International Journal of Conservation Science*, *12*(1), 113–128.

Beckman, G. (2016, April 7). *Global architecture and urbanism*. https://www.di-mediagroup.com/2022-quarterly/q3/global-architecture-and-urbanism/

Ben-Hamouche, M. (2010). Islamization of contemporary architecture: Shifting the paradigm of Islamic architecture. *Journal of Islamic Architecture*, *1*(2), 70–86. https://doi.org/10.18860/jia.v1i2.1720

Bierman, I. A., Al-Asad, M., & Türeli, A. (2013, December 5). Architecture. In *The Oxford encyclopedia of the Islamic world*. http://www.oxfordislamicstudies.com/article/opr/t236/e0074

Boodaghi, O., Fanni, Z., & Mehan, A. (2022). Regulation and policy-making for urban cultural heritage preservation: A comparison between Iran and Italy. *Journal of Cultural Heritage Management and Sustainable Development*. https://doi.org/10.1108/JCHMSD-08-2021-0138

Bozdogan, S. (2013). The Aga Khan award for architecture: A philosophy of reconciliation. *Journal of Architectural Education*, *45*(3), 182–188. https://doi.org/10.1080/10464883.1992.10734507

Bulandian, M., & Nasseri, S. (2014). An analytic discourse on the assessment of urban context urbanization approaches and procedures in the age of globalization. *Urban Management*, (37), 326–299. (in Persian)

Elahe Zoghi Hoseini, E., & Diba, D. (2018). New trends in critical regionalism through the lens of Tzonis and Lefaivre. *Creative City Design*, *1*(2), 1–6.

Eurostat. (2018). *Guide to Eurostat culture statistics*. European Union.

Fahmy, Y. Y., Nassar, D. M., & Elsayad, Z. T. (2020). Identifying the evolution of cities' architectural characters in connection to global events over time. *WIT Transactions on Ecology and the Environment*, *249*, 127–137. https://doi.org/10.2495/SC200111

Faleh, M. (2013). Urban metamorphosis and Islamic Architecture in the time of globalization: Utopian realities and challenges. *A|Z ITU Journal of the Faculty of Architecture*, *10*(1), 128–137.

Fischer, O. (2011). Slow architecture? - The myth of local resistance to globalization in architecture: A critique. In I. Sabouni & J. Vanegas (Ed.), *ACSA fall meeting, local identities global challenges* (pp. 141–146). https://www.acsa-arch.org/proceedings/Fall%20Conference%20Proceedings/ACSA.FALL.11/ACSA.FALL.11.20.pdf

Guzman, P. (2017). *World heritage cities and sustainable urban development*. Dereumaux.

Gyglia, S., Haelgb, F., & Sturm, J. E. (2018). *The KOF Globalisation Index – Revisited*. KOF Swiss Economic Institute, ETH Zurich. https://doi.org/10.2139/ssrn.3338784

Harputlugil, T., Gültekin, A. T., Prins, M., & Topçu, Y. İ. (2014). Architectural design quality assessment based on analytic hierarchy process: A case study. *Metu Journal of the Faculty of Architecture*, *2*(31), 139–161. https://doi.org/10.4305/METU.JFA.2014.2.8

Hassanpour, N., & Soltanzadeh, H. (2016). Tradition and modernity in contemporary architecture of Turkey (Comparative study referring to traditional and international architecture in 1940-1980). *The Turkish Online Journal of Design, Art and Communication - TOJDAC*, 1167–1183. https://doi.org/10.7456/1060AGSE/002

Hosseini, A. (2011). Explaining and developing the conceptual trends of Iran after the Islamic revolution (Architectural study of 1360-85). *Hoviyat-e- Shahr*, *5*(8), 26–17. (in Persian)

Iman, M., & Noshadi, M. (2011). Qualitative content analysis. *Journal of Research*, *3*(2), 15–44. (in Persian)

Lupu, I. (2013). A foray into the tangle of globalization measurement. *Studii Financiare* (*Financial Studies*), *17*(2), 8–20.

Mahdavi Nejad, M., & Mansouri Majoumard, P. (2015). The introduction of modernizing currents into contemporary Iranian architecture. *Studies of Islamic Iran*, *6*(21), 29–19. (in Persian)

Manan Raisey, M. (2016). Evaluation and critique of research approach in architecture and urbanism from the Islamic perspective. *Quarterly Journal of Islamic Architectural Studies*, *4*(11), 3–20. (in Persian)

Mehan, A. (2023a). Re-narrating radical cities over time and through space: Imagining urban activism through critical pedagogical practices. *Architecture*, *3*(1), 92–103. https://doi.org/10.3390/architecture3010006

Mehan, A. (2023b). Gio Ponti and Villa Namazee: (De)listed modern heritage. *Heritage*, *6*(2), 789–801. https://doi.org/10.3390/heritage6020043

Mehan, A., & Mostafavi, S. (2022). Building resilient communities over time. In *The Palgrave encyclopedia of urban and regional futures*. Palgrave McMillan. https://doi.org/10.1007/978-3-030-51812-7_322-1

Mehan, A. (2022). *Tehran: From sacred to radical*. Taylor & Francis. https://doi.org/10.4324/9781003140795

Mehan, A., & Mehan, M. (2020). Housing as politics: The case of Tehran. In *Spaces for living, spaces for sharing* (pp. 56–65). LetteraVentidue.

Mehan, A., & Rossi, U. (2019). Multiplying resistance: The power of the urban in the age of national revanchism. In *Philosophy and the city interdisciplinary and transcultural perspectives* (pp. 233–244). Rowman & Littlefield International.

Mehan, A. (2017). "Tabula Rasa" planning: Creative destruction and building a new urban identity in Tehran. *Journal of Architecture and Urbanism*, *41*(3), 210–220. https://doi.org/10.3846/20297955.2017.1355277

Mehan, A. (2016). Blank Slate: Squares and political order of city. *Journal of Architecture and Urbanism*, *40*(4), 311–321. https://doi.org/10.3846/20297955.2016.1246987

Ministry of Culture and Islamic Guidance. (2015). *Strategic document of the Ministry of Culture and Islamic Guidance* (*Sixth Development Plan*). (in Persian)

Miri Nejad, S. (2013). Romanticism in contemporary Iranian architecture (with emphasis on the architecture of the second Pahlavi period after 1962). *Journal of Fine Arts - Architecture and Urbanism*, *18*(1), 102–191. (in Persian)

Mostafavi, M. (Ed.). (2013). *Architecture is life*. Lars Müller Publishers.

Nezhad Haj Ali Irani, F., & Noruzi, M. (2011). Globalization and challenges; What are globalization's contemporary issues? *International Journal of Humanities and Social Science*, *1*(6), 216–218.

Orbea, S. (2019). *Modernisation and globalization challenges and opportunities in architecture, urbanism, cultural heritage* [Paper presentation]. 3rd International Forum for Architecture and Urbanism, Tirana, Albania. FLASH Publishing.

Rabbat, N. (2012). What is Islamic architecture anyway? *Journal of Art Historiography*, *6*(1), 1–15.

Rajendran, L., Molki, F., Mahdizadeh, S., & Mehan, A. (2021). (Re)framing spatiality as a socio-cultural paradigm: examining the Iranian housing culture and processes. *Journal of Architecture and Urbanism*, *45*(1), 95–105. https://doi.org/10.3846/jau.2021.14032

Rajali, A. R. B., & Bakri, A. b. (2018, July 15). *Building Safety Index: Contributing factor*. https://civil.utm.my/wp-content/uploads/2016/12/Building-Safety-Index-Contributing-Factor.pdf

Razzaghi Asl, S. (2014). Borderline issues in the approach to environmental design in Iran from the viewpoint of professors. *Armanshar Architecture and Urbanism*, (13), 211–219. (in Persian)

Shayan, H., & Memar Dezfuli, S. (2014). A comparative study of Iranian contemporary architecture approaches; The recognition of theory in the works of three generations of architects. *Naghsh -e- Jahan*, *4*(2), 1–10. (in Persian)

Stott, R. (2018, July 15). *RIBA report aims to put architecture at the heart of next government's agenda*. https://www.archdaily.com/522959/riba-report-aims-to-put-architecture-at-the-heart-of-next-government-s-agenda

Uddin Khan, H. (2014). A new paradigm: Glocal urbanism and architecture of rapidly developing countries. *International Journal of Islamic Architecture*, *3*(1), 5–34. https://doi.org/10.1386/ijia.3.1.5_2

Uddin Khan, H. (2018). Because we can: Globalization and technology enabling iconic architectural excesses. *International Journal of Islamic Architecture*, *7*(1), 5–26. https://doi.org/10.1386/ijia.7.1.5_2

UNESCO. (2014a). *UNESCO culture for development indicators: Methodology manual*. https://unesdoc.unesco.org/ark:/48223/pf0000229608

UNESCO. (2014b). *UNESCO culture for development indicators (Swaziland's analytical brief)*. UNESCO.

UNESCO. (2016). *The globalisation of cultural trade: International flows of cultural goods and services 2004-2013*. UNESCO Institute for Statistics.

Wu, X. (2019). Challenges to the professional practice of architects in China under the trend of globalization. *Asian Journal of Social Science Studies*, *4*(2), 2424–9041. https://doi.org/10.20849/ajsss.v4i2.612

Yavuz, K. B., & Savran, S. (2020). Glocalization and tourism relation: Bauhaus architecture in Tel Aviv example. *Kentleşme ve Ekonomi Özel Sayısı*, *Cilt*, *11*, 1205–1222.

Zamani, F., & Mehan, A. (2019). The abstract space and the alienation of political public space in the Middle East. *Archnet-IJAR: International Journal of Architectural Research*, *13*(3), 483–497. https://doi.org/10.1108/ARCH-03-2019-0054

Zhang, Y. (2021). "Glocalization" through international practice in landscape architecture. In *Place making in international practice of landscape architecture* (Vol. 64, pp. 187–222). Springer. https://doi.org/10.1007/978-981-16-2442-1_9