

Participatory Design Components in the Conceptualization Phase for Enhancing Innovation in Architecture*

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ABSTRACT

In developing countries, participatory architecture has led to changes in design paradigms toward inclusive participation in architecture, from idea to execution. Participatory architecture is a novel approach for addressing the needs of Iranian users in various spatial contexts, wherein—alongside the views of designers and experts—the opinions of space users are also considered. This research aims to identify the components of participatory design in the conceptualization phase to enhance innovation in architecture. The study adopts a qualitative, post-positivist, and causal methodology, conducted inductively through the structured and categorized collection of primary data. Design components and sub-criteria were identified using academic sources and prioritized through expert judgment and multi-criteria decision-making models (ANP). The relationships among components and the degree of their consistency in the context of conceptualization and weighting were analyzed. Finally, using expert evaluation and the Decision Super software, ideal options for enhancing innovation were ranked. The results show that according to the inconsistency rate algorithm, the inconsistency rate for the main criteria matrix was calculated to be 0.033, indicating acceptable weights and overall validity of all components. Accordingly, the key participatory design components in the conceptualization phase, in order of importance, are: Gathering users' ideas and opinions (weight: 0.391), Addressing reasoning and problems (weight: 0.208), Applying group architectural techniques (weight: 0.128), Collaborating with expert teams (weight: 0.180), Creating a platform for testing and evaluating ideas (weight: 0.093). Moreover, among the three proposed options for participatory design, “modeling in participatory design” with a weight of 0.502 was more sensitive compared to “accurate understanding of conceptualization” (weight: 0.277) and “enhancing innovation in architecture” (weight: 0.221).

Keywords: Conceptualization, Participatory Design, Architecture, Multi-Criteria Decision-Making Models.

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1. INTRODUCTION

Architecture—and even the execution of the simplest architectural projects—is almost exclusively a collaborative effort that requires the expertise of a range of individuals who work together to achieve a singular goal. Each of these experts is highly trained in their respective fields, yet very few have received training in collaborative skills. The attention to participatory architectural approaches, especially in developing countries, has in recent years brought changes to design paradigms, steering them toward participatory involvement in architecture from concept to execution. This movement seeks to reduce the impact of misguided designs from the outset and to improve the quality of the built environment through a better understanding of communities, their values, and the desires of space users. A culture of participation in architecture can foster effective and efficient communication between architects and users of space (Hashempour et al. 2024, 15). Participatory design, as an approach, aims to involve citizens and users in the design process. At the core of this concept is user-centricity and the increased inclusion of users as active partners in architectural design (Soikkeli et al. 2023, 2). Today, the role of the architect as the sole decision-maker in environmental design is evolving. Attention to the needs, desires, and interests of space users has created opportunities for collaboration across disciplines and has transformed architectural paradigms from concept to implementation. Nowadays, deep user interaction and collaboration in design have become standard practice in the development of products and services (Jensen, Hyysalo, and Oudshoorn 2016, 126). Moreover, the belief that user and stakeholder involvement throughout the process is essential for ethical design practices and long-term social responsibility has been supported widely in the design community (Christiansen 2014; Sanders and Stappers 2008). User participation in architectural design is a social phenomenon that has emerged with the growth of humanistic movements and is recognized as a key factor in social sustainability and the strengthening of human relationships. In architecture, it can increase satisfaction, confidence, identity, and a sense of belonging to the built environment, helping designers to better understand and represent users' needs, desires, experiences, and perspectives. It can also serve as a source of inspiration and creativity, enabling the designer to develop innovative and appropriate solutions to design challenges.

User participation in architectural design requires identifying the components and importance of collaboration and interaction between designer and user. These must be adjusted based on the type of project, the level of user involvement, and the desired degree of creativity. The goal of considering public opinion in environmental decision-making

is to address user needs. Thus, adapting to new circumstances can lead to changes in participatory design paradigms—ones that respond more effectively to the present-day needs of users. This is particularly crucial in a country like Iran, where many public spaces are conceived, designed, and implemented without user consideration. Participatory architecture can offer a new approach to addressing Iranian users' needs across diverse spatial contexts—one that, in addition to expert and designer insights, also takes user perspectives into account, introducing a more democratic outlook in design after years of expert-dominated practice. In this context, a range of ideas from theorists such as Ulrich, Eppinger, Nigel Cross, and Henry Sanoff may be considered.

Given these points, the present study seeks to explore the conceptualization phase—the initial stage of the design process—as a fundamental dimension of participatory architecture. It aims to answer the following questions: Which components of design during the conceptualization phase (need identification, concept generation, and concept evaluation/selection) are most significant, and how does each parameter influence the enhancement of architecture?

2. THEORETICAL FOUNDATIONS

Participatory design refers to the involvement of people in creating and managing their built and natural environments. It is grounded in the belief that built and natural environments function more effectively when citizens are not passive consumers but active participants in their creation and management (Sanoff 2022). Since the 1980s, participation and collaboration with users have faced numerous challenges. For instance: Who should be invited to participate in the design process? To what extent should the design process remain open to contributors? How can the infrastructure for participation be shaped to foster collective creativity? (Lee et al. 2018, 16). To address such questions, a vast body of research in participatory design has focused on documenting and developing a wide range of techniques, approaches, and methods for user engagement and collaboration (Drain and Sanders 2019; Botero et al. 2020). Today, hundreds of participatory design methods have been formalized and assessed in the academic literature.

Participatory design emphasizes the collective nature of the design process and the necessity of user involvement. This approach considers user participation a prerequisite for achieving good and successful design (Pour-Ebrahimi and Sharif 2015, 2). Many theorists and researchers view participation in the design process as a modern approach to architectural design (e.g., Huang et al. 2015, 4; Mokhtarmanesh and Ghomeishi 2019, 3; Smith and Iversen 2018, 6; Li et al. 2012, 4; Xie et al. 2017, 2). Experts argue that

participatory involvement has always had intrinsic value—particularly when individuals can influence decisions related to the design, construction, and management of their homes. This process and its outcomes can enhance their social well-being (McLagan and Nel 1998, 45; Kamel-Nia 2013, 64). The inclusion of user input in the design process increases the final quality of the product.

Participatory design involves various stakeholders—such as clients, end users, and community members—working collaboratively within the architectural process. In this approach, individuals’ goals, needs, and experiences are shared to help designers propose appropriate and transparent solutions. The process is interactive and collaborative, listening to constructive feedback and leveraging user ideas and suggestions to reach better outcomes. This method generally improves the design process, increases user satisfaction, and strengthens connections between experts and non-experts. Overall, participatory design values the genuine experience and knowledge of participants. It can improve architectural projects, better align them with users’ real needs, and enhance the transformation of spaces and products. It also fosters a sense of ownership within local communities toward public and private spaces.

2.1. Components of Participatory Design

The components used for participatory design and conceptualization include communication tools and methods, online participation platforms, idea-gathering spaces, and participatory leadership processes. These elements facilitate dialogue, knowledge enhancement, observation, conceptual sharing, and the creation of solidarity and shared motivation among members of the architectural community. Some strategies to improve architectural knowledge through conceptualization include: Organizing workshops and seminars, Creating shared educational platforms, Utilizing online learning tools, and Promoting a culture of participation in architectural projects. These approaches help architects stay informed and up-to-date, enabling them to address contemporary challenges and technologies. Since architecture is inherently operational, it is closely linked to the lifestyles of society members, including designers themselves. Hence, the architectural process requires designers to pay close attention to users’ lifestyles and psychological characteristics and be practically familiar with the structure of user communities. According to Danledshown, innovation in architecture follows a pragmatic or constructivist approach. Thus, architectural innovation can only be fully achieved through social interaction in the studio and collaborative problem-solving processes.

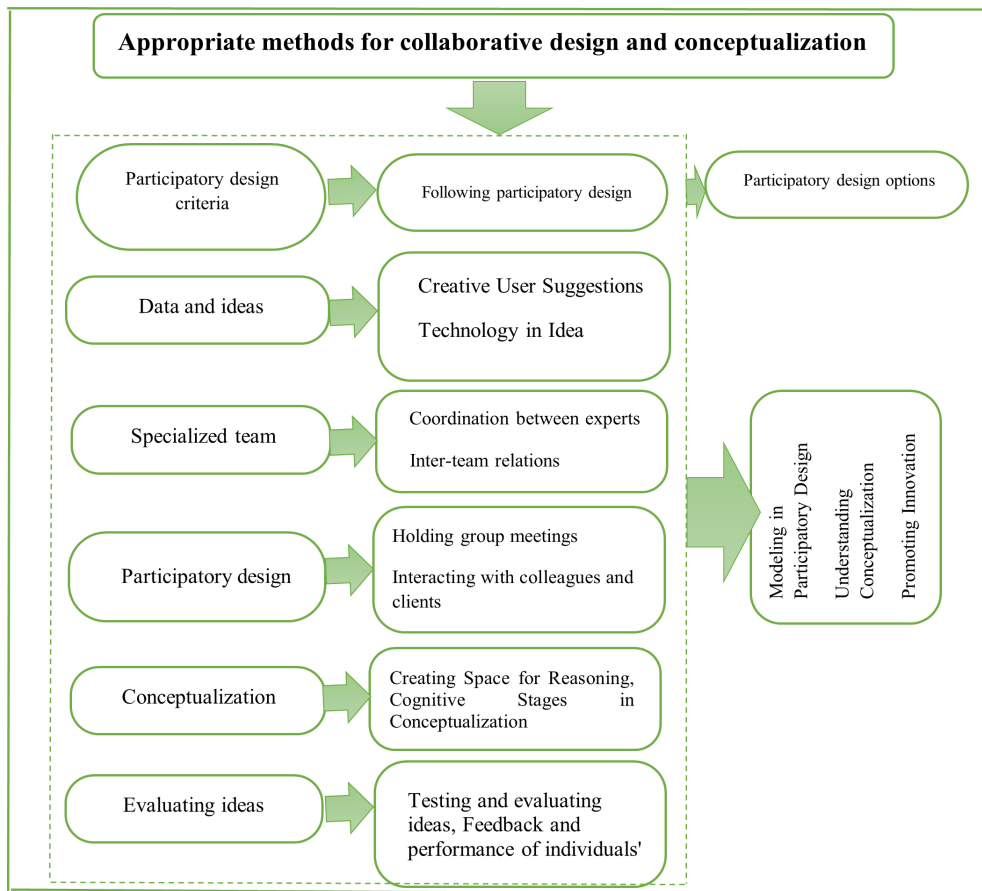


Fig. 1. Conceptual Model of Participatory Design and Conceptualization

2.2. Research Background

Numerous studies have been conducted on

participatory design. Table 1 presents a brief overview of some of the most recent studies.

Table 1. Summary of Research Background

Researcher / Year	Title	Summary of Findings
Zandi-Moheb et al. (2023)	Developing a Model for Participatory Education in Introductory Architectural Design Studios (Action Research in Design Studio 3)	This study focused on various existing resources in the field of design and the methods for extracting practical knowledge from these resources, evaluating how such use impacts innovation in ideation and design solution generation. The findings indicated that the use of diverse thematic resources, alongside methods that facilitate knowledge extraction, can significantly enhance creativity in proposing innovative design solutions.
Norouzi & Javanforozandeh (2021)	Analysis of Participation Dimensions in the Design Process of Public Spaces	The researchers identified three key elements—individual, collective, and environmental factors—as foundational influences on the participatory design process. These were framed around personal attitudes, community inclinations, and symbolic-functional necessities as theoretical bases for joint design. Their interaction with concepts such as place attachment, structural and functional diversity, accessibility, and spatial legibility had the greatest impact on different levels of participatory design. Factors like accessibility, safety, and environmental appeal were considered of secondary importance.
Sayyad & Saeidi Rezvani (2020)	“Charrette”: A Method for Participation in Urban Design	In this method, individuals participate in decision-making, programming, and implementation within a defined and purposeful timeframe, maintaining ongoing oversight. The study concluded that implementing Charrette in Iran is feasible but requires appropriate groundwork.
Esmailzadeh et al. (2018)	Explaining the Process and Benefits of Service Design with a Participatory Approach	Analyzing four projects on service design, this study identified a three-stage process applicable to all participatory service design projects. Evaluating the impact of participatory design tools on innovation in service design revealed that such tools can have a positive effect in innovation domains.
Sanoff (2022)	Participatory Design	Researchers utilized a variety of methods, including participatory decision-making techniques and field data collection tools such as surveys (questionnaires and interviews), in-depth discussions, focus groups, and group mapping. These tools were broadly categorized into three groups: information-sharing methods, group participation techniques, and indirect approaches.
Hamarat et al. (2022)	Participation: An Interdisciplinary Border for Architectural Research and Practice	This study provided a general overview of current research in participatory architecture, analyzing such participation through user profiles, project teams, and project scales. It emphasized how participatory architecture emerges and operates in intermediary spaces.
Aijala (2022)	Participatory Methods: User Participation in Architecture	This study presented a comprehensive set of participatory methods applicable to architectural and urban design projects. It covered six major categories of participatory techniques: educational workshops, guided tours, mapping, prototyping, future scenario enactments, and visualization.
Sasmito and Hidayattullah (2021)	Implementation of User-Centered Design Methods in Public Service Mapping Websites	Based on a case study in Tagal, Indonesia, this research examined projects by companies like BUMD focused on participatory public space design. It concluded that integrating expert and user perspectives can result in a more desirable environment.

Researcher / Year	Title	Summary of Findings
Priya et al. (2020)	Participatory and Collaborative Design Approaches in Architectural Design Studios	This paper aims to share a new method in education through a participatory approach within the architectural design studio. This studio explored the participatory design process through a potential intervention in the design of a primary school for fourth-semester students in the Department of Architecture, at the School of Architecture and Planning, PRIMENEST Institute of Science & Technology, Tiruchirappalli, India. The paper reports on the lessons learned from participatory learning experiences, reflecting contemporary design practices.

Previous studies on this topic have addressed various aspects, including the impact of thematically diverse sources on enhancing design creativity; identifying core components such as individual, social, and spatial dimensions as key factors influencing participatory design; the potential for structured and time-bound participatory processes in decision-making, planning, and execution along with the necessity of infrastructure development in Iran; the positive effects of using participatory design tools in innovation domains; techniques such as informational methods, group interaction methods, and indirect methods for data collection; how participation functions in architectural “intermediate spaces”; participatory methods including educational workshops, guided tours, mapping, prototyping, future scenario enactment, and visualization; the integration of expert and user opinions; and shared participatory learning experiences. However, it appears that identifying components—i.e., criteria and sub-criteria—within the conceptualization phase of participatory design aimed at enhancing innovation in architecture has remained largely unexplored.

3. METHOD

The methodology employed in this study is descriptive-analytical. Data collection was conducted using two approaches: library research and field studies. In the first stage, available sources such as books, articles, theses, etc., were reviewed. After establishing the initial theoretical framework and literature review, the participatory design indicators relevant to conceptualization and their role in architectural innovation were identified, along with their sub-indicators. Based on this, a hierarchical structure (see Fig. 3) was developed. Using the constructed hierarchy, a paired comparison questionnaire consisting of 15 comparisons (for comparing criteria and sub-criteria) was designed. The validity of the questionnaire was confirmed by expert reviewers and specialists, and then completed by 15 experts in the related field. The expert selection followed a purposeful snowball sampling method until theoretical saturation was

achieved. Based on the identified components, the Analytic Network Process (ANP) method was used to categorize the elements. Subsequently, pairwise comparisons were conducted among the indicators and their interrelations. Next, the consistency of the data was examined to determine the degree of alignment between the participatory design indicators and the conceptual framework. After calculating the inconsistency rate, the indicators were ranked, and finally, the role of each criterion in generating optimal options for improving participatory design and its impact on enhancing architecture was determined. All data were analyzed using Decision Super software.

4. FINDINGS

4.1. Participatory Design Components

The results indicate that participatory design during the conceptualization phase can significantly contribute to architectural innovation. The following components were identified as particularly effective:

1. Collecting Ideas and Opinions: Gathering ideas and suggestions from a variety of individuals, including users, can result in more creative and innovative architectural solutions.
2. Collaboration with Expert Teams: Creating opportunities for collaboration with interdisciplinary expert teams—from fields such as engineering, technology, and aerospace—can foster innovation.
3. Using Group Architectural Techniques: Holding collaborative architecture sessions and engaging with colleagues and clients can yield novel and inventive architectural ideas.
4. Addressing Arguments and Problems: Creating an environment for discussing arguments and existing problems during the conceptualization phase helps identify more innovative solutions.
5. Establishing a Platform for Idea Testing and Evaluation: The ability to test and evaluate emerging ideas through collaboration and feedback from diverse stakeholders can lead to improvements and innovation in architecture.

5. RESEARCH PROCESS

5.1. Implementation of the Analytic Network Process (ANP) Model

To implement the ANP model, an appropriate network model must first be established that includes the research objective, followed by its main components,

criteria, and sub-criteria covering the scope of the study. Figure 3 illustrates the constructed network model used to evaluate participatory design indicators in the conceptualization phase. After establishing the dependency tree among the variables—starting from the objective and progressing toward the indicators—the network analysis was conducted.

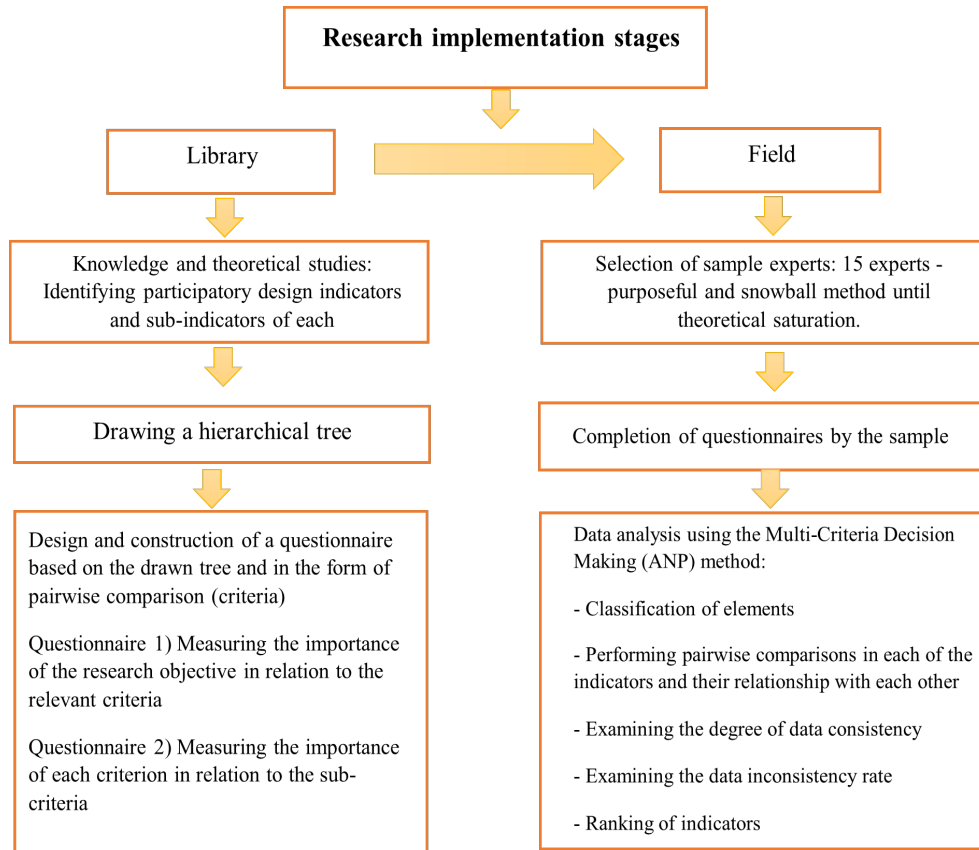


Fig. 2. Research Implementation Steps

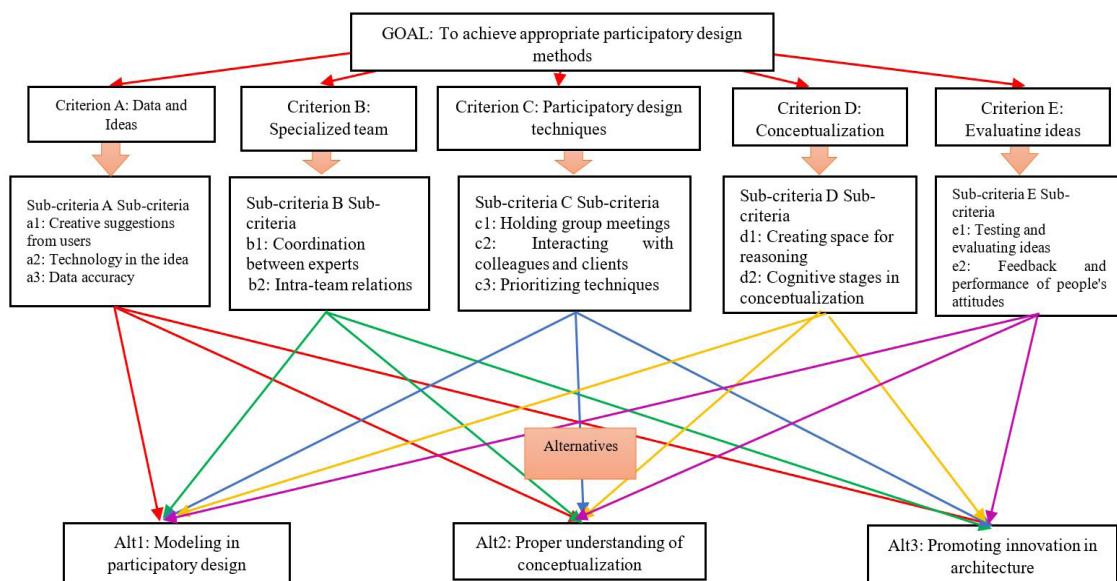


Fig. 3. Analytic Hierarchy Tree to show the Prioritization of Appropriate Participatory Design Methods

According to Figure 3, the objective is to identify appropriate methods for participatory design. The criteria, sub-criteria, and alternatives are as follows:

- Criteria:

- (A) Data and Ideas:
 - (a1) Users' creative suggestions
 - (a2) Technology in ideas
 - (a3) Data accuracy
- (B) Expert Team:
 - (b1) Coordination among experts
 - (b2) Intra-team relationships
- (C) Participatory Design Techniques:
 - (c1) Holding group sessions
 - (c2) Interaction with colleagues and clients
 - (c3) Prioritization of techniques

- (D) Conceptualization:
 - (d1) Creating space for reasoning
 - (d2) Recognition stages in conceptualization
- (E) Idea Evaluation:
 - (e1) Testing and evaluation of ideas
 - (e2) Feedback and individuals' attitude performance

- Alternatives:

1. Modeling in participatory design
2. Accurate understanding of conceptualization
3. Enhancing innovation in architecture

The matrix values have been extracted from the questionnaires and are defined based on Table 2. In the next step, the relative weight of each criterion has been calculated.

Table 2. Pairwise Comparison Matrix of Main Criteria

Criteria	A	B	C	D	E	Normalized Weight
A	1	3	3	2	3	0.391
B	0.333	1	1	0.617	1	0.128
C	0.333	1	1	1	3	0.180
D	0.500	1.620	1	1	3	0.208
E	0.333	1	0.333	0.333	1	0.093

5.2. Calculating the Incompatibility Rate of Matrices and Determining their Acceptability

Table 3. Criteria Inconsistency Rates and their Normal and Ideal Limits

Criterion	Inconsistency Rate	
	Normal	Ideal
A	0.391	1.000
B	0.128	0.328
C	0.180	0.461
D	0.208	0.533
E	0.093	0.239

It can be said that the acceptable limit of the matrix inconsistency depends on the decision maker, but Saati offers the number 0.1 as an acceptable amount and believes that if the system inconsistency rate is more than 0.1, it requires a revision of judgments. According to the algorithm for calculating the inconsistency rate and considering the data in Table 3, the inconsistency rate of the main criteria matrix is 0.033, which is much less than 0.1. As a result, all the criteria have appropriate and acceptable weights. The result is that based on the calculations made and

ensuring their accuracy, it was determined that among the appropriate participatory design methods, data and ideas are in the first place, conceptualization, participatory design techniques, specialized team, and idea evaluation are in the next order of importance. By examining the hierarchical analysis tree (Fig. 3), it can be concluded that to determine the relative weights and prioritization of the criteria across all subgroups, additional pairwise comparison matrices must be created for the sub-criteria under A, B, C, D, and E. These are all provided in Tables 4 and 5.

Table 4. Inconsistency Rates and Ranking of Criteria and Sub-Criteria

Criterion	a1	a2	a3	Normal	Ideal	Inconsistency Rate	
A	a1	1.000	3.000	3.000	0.594	1.000	
	a2	0.333	1.000	2.000	0.249	0.420	0.052
	a3	0.333	0.500	1.000	0.157	0.265	
Criterion	b1	b2	Normal	Ideal	Inconsistency Rate		
B	b1	1.000	3.000	0.75	1.000	0	
	b2	0.333	1.000	0.25	0.333		
Criterion	c1	c2	c3	Normal	Ideal	Inconsistency Rate	
C	c1	1.000	1.000	1.000	0.319	0.693	
	c2	1.000	1.000	0.333	0.221	0.481	0.130
	c3	1.000	3.000	1.000	0.460	1.000	
Criterion	d1	d2	Normal	Ideal	Inconsistency Rate		
D	d1	1.000	0.000	0.500	1.000	0	
	d2	0.000	1.000	0.500	1.000		
Criterion	e1	e2	Normal	Ideal	Inconsistency Rate		
E	e1	1.000	0.000	0.500	1.000	0	
	e2	0.000	1.000	0.500	1.000		

Based on the data in Table 4, the inconsistency rates of the criteria and sub-criteria show that—except for Sub-criterion C—all others have inconsistency rates below 0.1, indicating acceptable and valid weights for the sub-criteria. Consequently, based on the performed calculations and confidence in their accuracy, the following conclusions were reached:

- Among the sub-criteria of Data and Ideas, users' creative suggestions, innovation in ideas, and data validity rank first to third, respectively.

- Among the sub-criteria of the Expert Team, coordination among experts ranks first, followed by internal team relationships.

- Among the sub-criteria of Conceptualization, stages of understanding in conceptualization and creating space for reasoning are equally ranked first.

- Among the sub-criteria of Idea Evaluation, testing and evaluating ideas and feedback/attitudes of individuals are equally ranked first.

Table 5. Inconsistency Rate and Ranking of Goals, Criteria, Sub-Criteria, and Alternatives

Criterion	Alternative	Option 1	Option 2	Option 3	Normal	Ideal	Inconsistency Rate
a1	Option 1	1.000	3.000	2.000	0.550	1.000	
	Option 2	0.333	1.000	1.000	0.210	0.382	0.018
	Option 3	0.500	1.000	1.000	0.240	0.437	
a2	Option 1	1.000	1.000	3.000	0.405	0.843	
	Option 2	1.000	1.000	5.000	0.481	1.000	0.028
	Option 3	0.333	0.200	1.000	0.114	0.237	
a3	Option 1	1.000	2.000	1.000	0.413	1.000	
	Option 2	0.500	1.000	1.000	0.260	0.630	0.052
	Option 3	1.000	1.000	1.000	0.327	0.794	
b1	Option 1	1.000	5.000	3.000	0.659	1.000	
	Option 2	0.200	1.000	1.000	0.156	0.237	0.028
	Option 3	0.333	1.000	1.000	0.185	0.281	
b2	Option 1	1.000	1.000	1.000	0.319	0.693	
	Option 2	1.000	1.000	3.000	0.460	1.000	0.130
	Option 3	1.000	0.333	1.000	0.221	0.481	

Criterion	Alternative	Option 1	Option 2	Option 3	Normal	Ideal	Inconsistency Rate
c1	Option 1	1.000	3.000	2.000	0.528	1.000	0.051
	Option 2	0.333	1.000	0.333	0.140	0.265	
	Option 3	0.500	3.000	1.000	0.333	0.630	
c2	Option 1	1.000	2.000	3.000	0.550	1.000	0.018
	Option 2	0.500	1.000	1.000	0.240	0.437	
	Option 3	0.333	1.000	1.000	0.210	0.382	
c3	Option 1	1.000	4.030	2.000	0.585	1.000	0.053
	Option 2	0.248	1.000	1.000	0.183	0.313	
	Option 3	0.500	1.000	1.000	0.232	0.396	
d1	Option 1	1.000	1.000	1.000	0.319	0.693	0.130
	Option 2	1.000	1.000	3.000	0.460	1.000	
	Option 3	1.000	0.333	1.000	0.221	0.481	
d2	Option 1	1.000	3.000	2.000	0.550	1.000	0.017
	Option 2	0.333	1.000	1.000	0.210	0.382	
	Option 3	0.500	1.000	1.000	0.240	0.437	
e1	Option 1	1.000	3.000	3.000	0.584	1.000	0.130
	Option 2	0.333	1.000	3.000	0.281	0.481	
	Option 3	0.333	0.333	1.000	0.135	0.231	
e2	Option 1	1.000	1.000	2.000	0.387	0.874	0.018
	Option 2	1.000	1.000	3.000	0.443	1.000	
	Option 3	0.500	0.333	1.000	0.169	0.382	

Based on the data in Table 5, the inconsistency rates of sub-criteria and alternatives indicate that, except for the sub-criteria e1, d1, and b2, in all other cases, the inconsistency rate is less than 0.1. Therefore, the criteria have appropriate and acceptable weights. Ultimately, based on the performed calculations and the assurance of their accuracy, it was determined that:

- Among the sub-criteria of data and ideas, the users' creative suggestions and data accuracy primarily play a role in modeling within the participatory design, followed by enhancing innovation in architecture, and finally, accurate conceptualization. The technology sub-criterion within ideas primarily contributes to accurate conceptualization, followed by modeling in participatory design, and finally enhancing innovation in architecture.
- Among the sub-criteria of the specialized team, coordination among experts plays a primary role in modeling participatory design, followed by enhancing architectural innovation, and finally, accurate conceptualization.
- Among the sub-criteria of participatory design

techniques, holding group sessions and prioritizing techniques primarily influence modeling in participatory design, followed by enhancing innovation in architecture, and finally accurate conceptualization. The sub-criterion of interaction with colleagues and clients also primarily affects modeling in participatory design, then accurate conceptualization, and finally architectural innovation.

- Among the conceptualization sub-criteria, the stages of recognition in conceptualization primarily contribute to modeling in participatory design, then enhancing architectural innovation, and finally accurate conceptualization.

- Among the sub-criteria for idea evaluation, feedback and individuals' performance attitudes primarily contribute to accurate conceptualization, followed by modeling in participatory design, and finally enhancing innovation in architecture.

Subsequently, based on the existing data in the software, the alternatives and criteria have been prioritized.

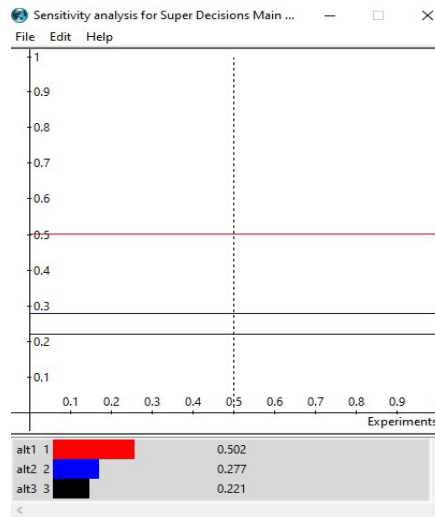


Fig. 4. Sensitivity Analysis of Alternatives

As seen in Figure 4, the alternative “Modeling in Participatory Design” ranks first, and the two alternatives “Accurate Conceptualization” and “Enhancing Innovation in Architecture” are placed second and third, respectively. The sensitivity analysis of the alternatives is shown in the figure. The alternative “Modeling in Participatory Design” is more sensitive compared to the two alternatives “Accurate Conceptualization” and “Enhancing Innovation in Architecture.”

6. DISCUSSION AND CONCLUSION

Studies in the field of participatory design are very broad; over the past fifty years, various methods, models, frameworks, and principles have been presented by specialists in this field in different countries. The reason for such breadth is the increasing importance of the user’s role in the contemporary era as a decisive factor in shaping industry and technology. This diversity in methods in previous research highlights the need for more comprehensive and analytical studies on these works.

Based on the findings of this study, the components of participatory design that play a key role in the conceptualization phase, in order of importance, include: collecting users’ ideas and opinions, addressing reasoning and problems (conceptualization), using group architectural techniques, collaborating with expert teams, and creating a platform for testing and evaluating ideas. By gathering ideas and opinions from various individuals, including users, more innovative and creative proposals can be made for architecture. Deep listening and understanding during active interviews and discussions with residents and stakeholders of the area help to better recognize their needs and desires and also to deeply investigate the environment and existing spaces for a better grasp of physical and social conditions. Furthermore, creating

a space for reviewing reasoning and existing issues in the conceptualization stage helps to discover more innovative solutions. Providing opportunities for collaboration with expert teams from fields like engineering, technology, and aerospace, and enabling testing and evaluation of emerging ideas through collaboration and feedback from various individuals can help improve and enhance innovation in architecture. The findings of this study align with the results of Norouzi and Javanforouzandeh (2021), Sayyad and Saeedi Rezvani (2022), Aijala (2022), Sasmito and Hedayatollah (2021), and Pirya et al. (2020). Norouzi and Javanforouzandeh identified the main components of individual, social, and spatial dimensions as the key influencing factors in participatory design, encompassing personal mindsets, social preferences, and functional-semantic needs, under the title of conceptual indicators of participatory design. Sayyad and Saeedi Rezvani concluded that there is potential for targeted and specific participation in planning, decision-making, and execution, and for establishing appropriate foundations in Iran. Sanoff recommended the use of interactive group decision-making techniques and field methods such as awareness techniques, group interaction techniques, and indirect methods for data collection. Aijala referred to six main categories of participatory methods (workshops, guided tours, mapping, prototyping, scenario implementation, and visualization). Sasmito and Hedayatollah focused on the participatory design of communal spaces and concluded that integrating expert and user input leads to optimal environments. Pirya and colleagues reported on participatory learning experiences during a participatory design process, particularly through intervention in the design of a primary school.

It appears that employing these participatory design components during the conceptualization phase can accelerate the design process, improve ideas and

innovation, increase the acceptance of proposed solutions by the community, and enhance the final quality of the architectural project. This leads to improved architectural design quality due to reasons such as designing according to real user needs, increasing creativity and innovation by combining user perspectives with architectural expertise, strengthening social interactions by creating attractive spaces for gatherings and social communication, and reinforcing a sense of belonging. It also optimizes resources and reduces costs and time by preventing post-construction changes by identifying and resolving potential problems in the early design stages. Moreover, it promotes social and environmental sustainability (design compatible with cultural and social identity) through the alignment of designed spaces with the specific needs of the community and local values. User participation in architectural design stages leads to the creation of spaces that reflect the real needs and desires of users. This process increases the sense of belonging, strengthens social interactions, and results in more attractive and functional spaces. Consequently, such space design improves in terms of functionality, aesthetics, and social aspects (Beiti et al. 2023).

According to experts, among the three proposed alternatives for participatory design, “Modeling

in Participatory Design” has higher sensitivity compared to “Accurate Conceptualization” and “Enhancing Innovation in Architecture.” Therefore, it is essential that in future research, all sub-components of “Modeling in Participatory Design” be thoroughly explained in detail by referring to users’ and designers’ ideas and opinions, evaluating obstacles and challenges, and aligning the context with group architectural techniques and methods of utilizing expert teams.

6.1. Recommendations

- Organize workshops and group sessions with the active participation of residents and enthusiasts to share ideas and opinions for generating innovative approaches;
- Use data obtained from participatory and field research to deeply analyze existing needs and issues;
- Encourage team members to present creative and innovative ideas to solve architectural challenges;
- Use visualization and representational methods to showcase architectural ideas and alternatives proposed by stakeholders;
- Create educational and practical opportunities for participants to strengthen their knowledge and competencies in the field of architecture and design.

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CONFLICT OF INTEREST

The authors have no conflicts of interest to declare.

MORAL APPROVAL

The authors commit to observe all the ethical principles of the publication of the scientific work based on the ethical principles of COPE. In case of any violation of the ethical principles, even after the publication of the article, they give the journal the right to delete the article and follow up on the matter.

PARTICIPATION PERCENTAGE

The authors state that they have directly participated in the stages of conducting research and writing the article.

ENDNOTE

1. Charrette is a cycle of design or planning activities. The term charrette may refer to any participatory process through which a group of designers drafts a solution to a design problem. In a broader sense, it can be used for the development of public policy through dialogue between decision-makers and stakeholders. In general, a charrette is an effort to complete work within an intense and limited time frame. In a design environment, although the structure of a charrette depends on the problem and the group members, charrettes are often conducted in multiple sessions. During these sessions, the main group is divided into sub-groups. Each sub-group then presents its work to the larger group as a subject for further discussion. Such charrettes function as a means of rapidly generating design solutions while integrating the talents and interests of a diverse group of people.

REFERENCES

- Äijälä, Saara. 2022. Participatory methods: user participation in Architecture. Master's thesis.
- Beiti, Hamed, Abolfazl Chahardouli, and Arian Javid. 2023. The Participatory Role of Users in the Design Process of Residential Spaces. *Spatial Planning* 13(1): 117-138. doi: [10.22108/spl.2023.136521.1695](https://doi.org/10.22108/spl.2023.136521.1695). [in Persian]
- Botero, Andrea, Sampsa Hyysalo, Kohtala Cindy, and Jack Whalen. 2020. Getting participatory design done: From methods and choices to translation work across constituent domains. *International Journal of Design* 14(2): 17-34.
- Christiansen, Ellen. 2014. From "ethics of the eye" to "ethics of the hand" by collaborative prototyping. *Journal of Information, Communication and Ethics in Society*.
- Drain, Andrew, and Elizabeth B-N. Sanders. 2019. A collaboration system model for planning and evaluating participatory design projects. *International Journal of Design* 13(3): 39-52.
- Esmailzadeh, Masoumeh, Zahra Ghodousi Nejad, and Mehran Fateminiya. 2018. Explaining the Process and Benefits of Service Design with a Participatory Approach. *Journal of Fine Arts: Visual Arts* 23(2): 119-129. doi: [10.22059/jfava.2018.66703](https://doi.org/10.22059/jfava.2018.66703). [in Persian]
- Hamarat, Yaprak, Clémentine Schelings, and Elsen Catherine. 2022. Participation: A Disciplinary Border for Architectural Research and Practice. *Architecture* 2(4): 711-723.
- Hashempour, Parisa, Leila Medghalchi, and Ahmad Mirahmadi. 2024. Prioritization of Participatory Culture Components in Affordable Housing Architecture. *Haft Hesaar Environmental Studies* 12(47): 51-66. [in Persian]
- Huang, Youliang, Ying Ning, Zhang Tong, and Yu Fei. 2015. Public acceptance of waste incineration power plants in China: Comparative case studies. *Journal of Habit International*, 47: 11-19.
- Johnson, Mikael, Sampsa Hyysalo, Sampsa Mäkinen, Pasi Helminen, Kari Savolainen, and Laura Hakkarainen. 2014. From recipes to meals... and dietary regimes: Method mixes as key emerging topic in human-centred design. In Proceedings of the 8th Nordic Conference on Human-Computer Interaction: Fun, Fast Foundational (pp. 343-352).
- Kamel-Nia, Hamed. 2013. A New Framework for Collective Architectural Interaction in the Design of Contemporary Residential Complexes. *Naqsh-e Jahan Journal* 3(2): 63-73. [in Persian]
- Kamel-Nia, Hamed. 2020. The Theory of "Collective Architecture" in Contemporary Architecture of Islamic Countries: Analysis and Review of Various Types of Collective Architecture in Contemporary Islamic Countries Based on the "Architect-User" Relationship. *Ferdows Honar* 1(1): 70-86. doi: [10.30508/fhja.2020.44654](https://doi.org/10.30508/fhja.2020.44654). [in Persian]
- Lee, Jung-Joo, Mikko Jaatinen, Arto Salmi, Tuuli Mattelmäki, Riitta Smeds and Mikko Holopainen. 2018. Design choices framework for co-creation projects. *International Journal of Design* 12(2): 15-31.
- Li, Terry H. Y, S. Thomas Ng, and Martin Skitmore. 2012. Public participation in infrastructure and construction projects in China: From an EIA-based to a whole cycle process. *Habit International* 36(1): 47-56.
- McLagan, Patricia, and Christo Nel. 1998. *The age of participation*. First Edition. Berrett-Koehler Publishers.
- Mokhtarmanesh, Saghar, and Mohammad Ghomeishi. 2019. Participatory design for a sustainable environment: integrating school design using students' preferences. *Sustainable Cities and Society* 51: 101762. [in Persian]
- Norouzi, Sood and Ali Javan Forouzandeh. 2021. Analysis of Aspects of the Concept of Participation in the Design Process of Public Spaces. *Urban Studies Quarterly* 10(38): 49-62. doi: [10.34785/J011.2021.503](https://doi.org/10.34785/J011.2021.503). [in Persian]
- Pour-Ebrahimi, Mohammad and Hamidreza Sharif. 2015. An Inquiry into the Ways of User Participation in the Design Process. The *Second International Congress on New Horizons in Architecture and Urban Planning with a Development and Technology Approach, Tehran*. [in Persian]
- Priya, Rajagopal Sundararajan, Pullara Shabitha, and Subramani Radhakrishnan. 2020. Collaborative and participatory design approach in architectural design studios. *Social Sciences & Humanities Open* 2(1): 100033.
- Sanders, Elizabeth B-N., and Pieter Jan Stappers. 2008. Co-creation and the new landscapes of design. *Co-design* 4(1): 5-18.
- Sasmito, Ginanjar Wiro, and Mohammad Fikri Hidayattullah. 2021. The implementation of user centered design methods on public service mapping websites. In *IOP Conference Series: Materials Science and Engineering* (Vol. 1077, No. 1, p. 012022). IOP Publishing.
- Sanoff, Henry. 2022. Participatory design. *Journal of Design Planning and Aesthetics Research* 1(2): 1-12.
- Sayyad, Nima, and Navid Saeidi Rezvani. 2020. Charrette: A Method for Participation in Urban Design. *Journal of Urbanism and Environmental Identity Research* 1(3): 1-16. doi: [10.22034/\(jrpa-ei\).2020.107525](https://doi.org/10.22034/(jrpa-ei).2020.107525). [in Persian]
- Smith, Rachel Charlotte, and Ole Sejer Iversen. 2018. Participatory design for sustainable social change. *Journal of Design Studies* 59: 9-36.
- Soikkeli, Anu Santamaki, Elina Oskari Hynninen and Saara Aijala. 2023. Challenges of participatory design in apartment buildings' renovation projects in Finland. *Journal of Housing and the Built Environment* 38(1): 1-17.

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- Xie, Lin-lin, Bo Xia, Yong Hu, Ming Shan, Ying Le, and Albert Chan. 2017. Public participation performance in public construction projects of South China: A case study of the Guangzhou games venues construction. *International Journal of Project Management* 35(7): 1391-1401.
- Zandi Moheb, Arezou, Omid Dezhdar, and Gholamreza Talischi. 2023. Explaining a Model for Participatory Education in Introductory Architectural Design Workshops (Action Research in Introductory Design Workshop 3). *Iranian Architecture and Urbanism (JIAU)*. doi: [10.30475/isau.2023.236717.1608](https://doi.org/10.30475/isau.2023.236717.1608). [in Persian]

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