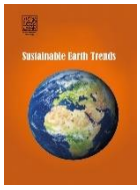
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Sustainable Earth Trends

Journal homepage: http://sustainearth.sbu.ac.ir



Presenting an optimal model of urban justice in sari city by using structural equation model

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ABSTRACT

The aim of the present study was to design an urban justice model in Sari City. This study is applied in terms of purpose, exploratory in terms of data collection method, and qualitative and quantitative (mixed) in terms of data nature. The data collection method in the qualitative part was interviews, and the analysis method was the Grounded Theory technique in the MAXQDA 2018 software environment. In the quantitative part, the data were analyzed using the Delphi technique and then structural equations. The statistical population in the qualitative part included 15 senior managers of Sari Municipality and academic elites from the fields of urban management and planning, who were interviewed in-depth using the snowball method until theoretical saturation was reached. In the quantitative part, the statistical population included all employees of Sari Municipality, and to measure the model, a researcher-made questionnaire was distributed among 285 of the samples using the relative cluster sampling method. The research findings showed that the factor loading of all items was more than 0.6, which means the validity of the items. Also, considering the value of the path coefficients obtained among the variables, it can be stated that all the existing relationships between the variables were positive and direct, with the highest relationship being related to the spatial justice variable, which was equal to 0.471, and the lowest factor being the structural justice variable with a path coefficient of 0.177. The findings indicate that the proposed urban justice model for Sari City is valid and reliable, with all item loadings above 0.6. Spatial justice emerged as the most influential factor, while structural justice had the least impact, highlighting the need to prioritize spatial considerations in urban planning for enhancing overall urban justice.

ARTICLE INFO

Keywords:
Spatial justice
Structural equations
Structural justice
Urban justice

Article history:
Received: 20 July 2025
Accepted: 29 November 2025

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Citation:
Asghari Ghajari, J. et al., (2026). Presenting an optimal model of urban justice in sari city by using structural equation model, *Sustainable Earth Trends:* 6(4), (80-95).

DOI: 10.48308/set.2025.240731.1143

1. Introduction

Justice has been a central concern of humanity throughout history, encompassing law, politics, economy, culture, and identity (Mashhoodi and Kasraian, 2024). Broadly, justice implies the fair allocation of resources in society, emphasizing both societal equity and equitable distribution among different social groups (Xu et al., 2024; Peroni and Pappalardo, 2024). While historically studied within law, sociology, and politics, the concept of justice has expanded into fields such as management, geography, and urban planning, giving rise to the notion of "urban justice" (Derickson et al., 2024). At this level, urban justice focuses on the equitable distribution of facilities and resources across cities and regions, reflecting the social and spatial dimensions of development (Hewidy and Harsia, 2025). Rapid technological and societal developments have fundamentally transformed urban spaces, making the study of urban justice increasingly urgent (Cuchi et al., 2024). Inequality in access to urban facilities, infrastructure, and services is especially pronounced in developing countries, where disparities in social classes and urban culture are evident (Barbosa et al., 2024). Key factors influencing urban justice include political structures, economic conditions, and prevailing cultural norms. Addressing these

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factors are critical, as neglecting urban justice can lead to pervasive urban crises, whereas promoting it supports sustainable urban development. Sustainable Earth Trends and Urban Justice are deeply interconnected, as both emphasize equitable access to resources, environmental protection, and long-term urban resilience. Achieving urban justice through fair distribution of services, balanced spatial planning, and inclusive governance directly supports global sustainability trajectories. When cities reduce spatial and social inequalities, they also lower environmental pressures and enhance ecological efficiency. Thus, promoting urban justice becomes a practical pathway for aligning local urban development with broader Sustainable Earth Trends.

Despite growing attention to urban justice, there is a lack of comprehensive and practical models tailored to specific urban contexts. This study aims to fill this gap by designing an optimal model of urban justice for Sari City using structural equation modeling. The main research question is: "What variables constitute the optimal model of urban justice in Sari City?" The study has two objectives: (1) theoretically, to develop an effective and comprehensive model for achieving urban justice in Sari County; and (2) practically, to provide actionable recommendations to urban policymakers to strengthen strategic capacity and support equitable urban development. Throughout history, the establishment of urban balance, order, and security has been closely linked to the concept of justice in societies. In the 21st century, justice is considered a fundamental mental, moral, and political framework at the urban level (Fang et al., 2023). Understanding justice requires recognizing its diverse interpretations across historical periods and cultural contexts. In Western thought, approaches to justice are generally divided into three periods: the philosophical tradition, the modern period, and the contemporary period (Forde, 2024). In the philosophical tradition, justice was interpreted individually, emphasizing wisdom, order, and proportionality, as reflected in the works of Plato and Aristotle. Justice was considered alignment with natural order and moderation (Sheikh et al., 2023). In modern thought, justice is linked to moral virtue and equality, realized through institutions and social contracts that mediate conflicts among individual interests (Fried et al., 2024; Codato et al., 2024). Immanuel Kant emphasized the role of political institutions in structuring social interactions to prevent collective behaviors based solely on individual moral capacities (Yazar and York, 2023). Empirical studies have since explored how these theoretical principles can guide urban justice globally (Da Silva et al., 2023). In Iran, the Islamic perspective adds another dimension, emphasizing divine principles, moral values, and the integration of justice into development programs (Saberi et al., 2024).

Different philosophical and political schools have interpreted urban justice in diverse ways. Conservative liberals emphasize individual freedom, egalitarian liberals focus on equality in choice, and virtue scholars, such as Michael Sandel, link justice to collective virtue (Larson et al., 2025). In urban theory, left-wing thinkers like Henri Lefebvre and David Harvey see justice as ensuring rights and equity in urban space, while right-wing thinkers associate it with democracy and diversity (Snep et al., 2023). Justice in urban planning is increasingly recognized as a meta-criterion. Planning itself is often viewed as the "conscious creation of a just city" (Larson et al., 2025), and scholars like Kevin Lynch consider justice essential for guiding urban design decisions (Lynch, 2021). Despite varying definitions, the achievement of urban justice depends on political, social, and temporal contexts (Haase et al., 2025). Since the 1960s, social justice has entered geographical discourse, focusing on social welfare, inequality, poverty, and unemployment. Radical and liberal geographers have emphasized the spatial dimension of justice. David Harvey and Emmanuel Castells, from different perspectives, highlight how geographical structures influence social inequalities. Harvey proposed criteria such as need, public interest, and entitlement to analyze fair resource distribution and access to basic services (Ahn and Juraev, 2024).

Spatial justice links social justice to the geographical distribution of resources and services, highlighting inequalities in access. Scholars have identified two main approaches: redistribution of resources and decision-making processes that affect fairness (Milano et al., 2024). The focus is on quality of life, equitable access to infrastructure, and opportunities. For instance, spatial justice can include equal access to schools, healthcare, cultural services,

and employment opportunities (Hasanalizadeh et al., 2024; Omranzadeh, 2024). Planners must address disparities in the location and distribution of services, identifying which groups are most disadvantaged (Mashoudi Sani Joybari et al., 2024). Lu et al. (2025) proposes three fundamental principles for equitable service distribution:

- Ensuring equality of opportunity for all individuals;
- Supporting deviations that primarily benefit the most disadvantaged;
- Maintaining a minimum quantitative or qualitative standard for services to ensure baseline access.

Several studies have examined urban and spatial justice from multiple perspectives, highlighting inequalities in access to resources, services, and urban opportunities. Hassen (2025) emphasized four principles of environmental justice distributional, procedural, recognition, and restorative in urban greenspaces, linking these to racial equity and actionable design considerations. Rezaee et al. (2025) showed that urban services in Mashhad are unevenly distributed, with central and western districts advantaged and eastern and peripheral districts disadvantaged, due to service concentration, poor transportation, and deteriorated urban fabric. Shan and He (2025) found that peri-urban parks provide unequal benefits across social groups, with women, the elderly, low-income populations, and ethnic minorities often disadvantaged.

Moukouei et al. (2025) highlighted that theoretical justice evaluation frameworks, combined with transportation cost analysis, significantly affect accessibility prioritization. Karimi and Roshani (2024) and Rakhshmah et al. (2024) demonstrated uneven spatial justice in Shiraz and Yasuj, where physical and socio-economic dimensions are prioritized over human and managerial aspects, suggesting a misalignment with comprehensive urban development principles. Mashoudi Sani Joybari et al. (2024) analyzed neighborhood-level service distribution in Rasht, showing disparities in access to parks, education, and administrative facilities. De Luca et al. (2024) investigated Bologna's urban green areas, finding generally good accessibility but highlighting procedural inequities for vulnerable populations.

Collectively, these studies indicate that urban justice is a multidimensional challenge influenced by social, economic, environmental, and infrastructural factors. While valuable insights exist, there is a lack of a comprehensive, context-specific model that identifies the main dimensions of urban justice and their interrelationships in developing cities. Addressing this gap, the present study aims to examine the key dimensions of urban justice in Sari using structural equation modeling, determine the relative importance of each component, and propose an integrated model to guide equitable urban planning and policy.

2. Material and methods

Since the main objective of the present study is to design an urban justice model in the city of Sari using a structural equation model, this research is classified as applied research from the perspective of its objective. In terms of data collection, the study is exploratory, and regarding the nature of the data, it adopts a mixed-methods approach, incorporating both qualitative and quantitative data. In the qualitative section, data were collected through interviews, and analysis was conducted using the Grounded Theory approach in the MAXQDA 2018 software environment. The statistical population of this section comprised specialists and experts related to the research topic, namely urban justice, including senior managers from the Sari Municipality and academic elites in the fields of urban management and planning. A total of 15 participants were selected using the snowball sampling method. The selection criteria were explicitly defined and included: relevant work experience (at least five years in urban management or urban planning), managerial position, educational level (minimum of a master's degree), direct relevance to the topic of urban justice, personal interest in participating in the research, and availability to dedicate sufficient time for in-depth interviews. To extract codes, interviews were conducted using the theoretical sampling method until theoretical saturation was empirically confirmed. In this study, saturation was reached after 15 interviews, as no new codes, categories, or conceptual properties emerged during the last three interviews, and all new data were fully incorporated within the existing coding structure without necessitating the

creation of additional categories. The operational criteria used to confirm saturation included repeated occurrence of themes in the final interviews, absence of new codes, stability of categories, and verification through constant comparison of each new transcript with previous ones. These indicators demonstrate that sufficient data were collected to complete and refine the theoretical categories, confirming the reliability of the research method. In Table 1, the demographic characteristics of the experts in the qualitative section are specified:

Table 1. Demographic characteristics of research experts in the qualitative sector.

Row	Index		Abundance	Percentage
1	Gender	Female	6	40
		Male	9	60
2	Education	MA	4	26.67
		Ph.D.	11	73.33
3	Experience	From 10 to 15 years	5	33.4
		From 16 to 20 years	7	46.6
		From 21 to 30	3	20

Table 1 presents the demographic characteristics of the experts who participated in the qualitative phase of the study. Among the 15 experts, 6 (40%) were female and 9 (60%) were male, indicating a relatively balanced gender distribution with a slight male predominance. In terms of education, the majority held a Ph.D. (73.33%), while 26.67% had a Master's degree. Regarding professional experience, most experts had 16 to 20 years of experience (46.6%), followed by 10 to 15 years (33.4%) and 21 to 30 years (20%), reflecting a diverse range of professional backgrounds within the research team. In the quantitative section of the study, data were collected through the distribution of a researcher-developed questionnaire among experts, managers, and academic staff who possessed relevant knowledge and expertise on the research topic. The questionnaire included 45 initial items, which were designed based on a literature review, qualitative interviews, and existing models in the field of urban justice. To ensure its validity, the content of the questionnaire was first reviewed by 10 experts in urban management and planning to confirm its face and content validity. Then, reliability testing was conducted using Cronbach's alpha in a pilot sample, and items with a reliability coefficient below 0.7 were revised or removed. The final selection of items was made based on their conceptual importance and expert consensus. The statistical population of this section included all employees and specialists related to the research topic across the city. For sampling, the relative cluster sampling method was used, in which the entire population was first divided into clusters based on urban districts or organizational units, and then samples were randomly selected from each cluster in proportion to its size. In this study, six main clusters were identified, and from each cluster, a specific number of participants were selected proportional to the cluster population. The sample size was also determined using the Cochran formula to estimate the required sample for quantitative research with an acceptable margin of sampling error. Accordingly, the required sample size was estimated to be 285 participants, ensuring the accuracy of the results and their generalizability to the statistical population.

The data obtained from the questionnaire were then analyzed using structural equation modeling (SEM) in the SmartPLS software environment to test the dimensions of the identified model. Table 2 presents the demographic characteristics of the experts in the quantitative section. Table 2 presents the demographic characteristics of the experts who participated in the quantitative phase of the study. Among the 384 respondents, 112 (29.17%) were female and 272 (70.38%) were male, indicating a predominance of male participants. Regarding educational background, most experts held a Bachelor's degree (31.11%) or a Master's degree (31.77%), followed by an Associate degree (24.88%) and a Ph.D. (12.24%). In terms of professional experience, the largest group had 15 to 20 years of experience (28.91%), followed by 5 to 10 years (26.82%), 10 to 15 years (23.18%), less than 5 years (10.67%), and more than 20 years (10.42%), demonstrating a wide range of expertise within the quantitative sample.

Table 2. Demographic characteristics of research experts in the quantitative sector.

Row	Index		Abundance	Percentage
1	Gender	Female	112	29.17
		Male	272	70.38
2	Education	Associate degree	84	24.88
		Bachelor	131	31.11
		MA	122	31.77
		Ph.D.	47	12.24
3	Experience	Less than 5 years	41	10.67
		Between 5 and 10 years	103	26.82
		Between 10 and 15 years	89	23.18
		Between 15 and 20 years	111	28.91
		More than 20 years	40	10.42

3. Results and discussion

3.1. Findings of the qualitative section

1. Open Coding: At this stage, the interview transcripts were read line by line, and the initial raw concepts were extracted. In the sample below, three statements from the interviews are presented along with their corresponding codes (Table 3):

Table 3. Sample interview quotations and generated codes.

Interview Quotation	Initial Open Code
“Some neighborhoods have no access to green spaces at all, which has created dissatisfaction.”	Lack of green space
“Municipal services are always concentrated in the city center, and peripheral neighborhoods are less attended to.”	Service centralization
“Citizens are not invited to urban decision-making processes, and their opinions are not heard.”	Weak citizen participation
“Public transportation does not meet the needs of southern neighborhoods.”	Inadequate public transport
“Urban budgets are usually allocated based on relationships rather than actual needs.”	Non need based budgeting

In total, approximately 70–120 codes were generated. A brief sample of these codes is presented below: Lack of green space, Insufficient parks, Service centralization, Unequal service distribution, Weak citizen participation, low public involvement, inadequate public transport, long waiting times, Poor transport connectivity, Non-need based budgeting, Administrative corruption, Weak interdepartmental coordination.

2. Axial Coding: At this stage, the initial codes were organized into intermediate subcategories and then into major categories. Causal, contextual, intervening, and consequential relationships were also identified (Table 4). Subcategories integrated into major categories is shows in Table 5.

Table 4. Sample Grouping of Codes

Subcategory	Constituent Open Codes
Spatial Access Problems	Lack of green space, Insufficient parks
Service Distribution Inequality	Service centralization, Unequal service distribution
Citizen Participation Issues	Weak citizen participation, Low public involvement
Transport Deficiencies	Inadequate public transport, Poor transport connectivity
Governance Weaknesses	Non need based budgeting, Administrative corruption, Weak interdepartmental coordination

Table 5. Major Categories and Their Constituent Subcategories in the Axial Coding Process.

Major Category	Constituent Subcategories
Spatial Justice	Spatial Access Problems, Transport Deficiencies
Service Justice	Service Distribution Inequality
Participatory Governance	Citizen Participation Issues
Institutional Justice / Governance	Governance Weaknesses

Sample Causal- Contextual Intervening- Strategic-Consequential Relationships:
According to Strauss & Corbin's paradigm model:
1. Phenomenon: Urban Justice.
2. Causal Conditions: Unequal service distribution, Non-need based budgeting, administrative corruption.
3. Contextual Conditions: Weak interdepartmental coordination, Growing population pressure.
Intervening Conditions: limited budget, Outdated urban infrastructure.
4. Strategies: Enhancing public participation, need based planning, Improving transport Connections.
5. Consequences: improved spatial equity: increased public satisfaction, Reduced service gap.
3. Selective Coding: At this stage, a core category was selected and the emerging theory was integrated around it.
Core Category: "Balanced Urban Justice"
Based on this, the study concludes that urban justice is achieved when the three principal components spatial justice, service justice, and participatory governance—are reinforced simultaneously.
Spatial justice is strengthened by reducing inequalities in access to green spaces, transportation, and environmental services.
Service justice is achieved when the concentration of municipal services is reduced and service distribution is based on the actual needs of neighborhoods.
Participatory governance is enhanced through increased citizen participation and greater transparency in urban decision-making.
In terms of institutional governance, strengthening includes reforming the budgeting structure, reducing administrative corruption, and improving interdepartmental coordination.
Theoretical Integration
"In the final model, urban justice is a multidimensional phenomenon resulting from the interaction among spatial justice, service justice, participatory governance, and institutional governance. Weakness in any of these dimensions disrupts the structure of urban justice and exacerbates urban inequalities.
Causal Conditions → (Service Distribution Inequality, Weak Governance).
Context Conditions → (Population Pressure, Weak Coordination).
Intervening → (Budget Constraints).
Strategies → (Participatory Planning, Improvement of Transport, Fair Resource Allocation)
Outcome → (Balanced Urban Justice).
After the qualitative analysis, the resulting paradigmatic model is presented in the form of Fig.1.

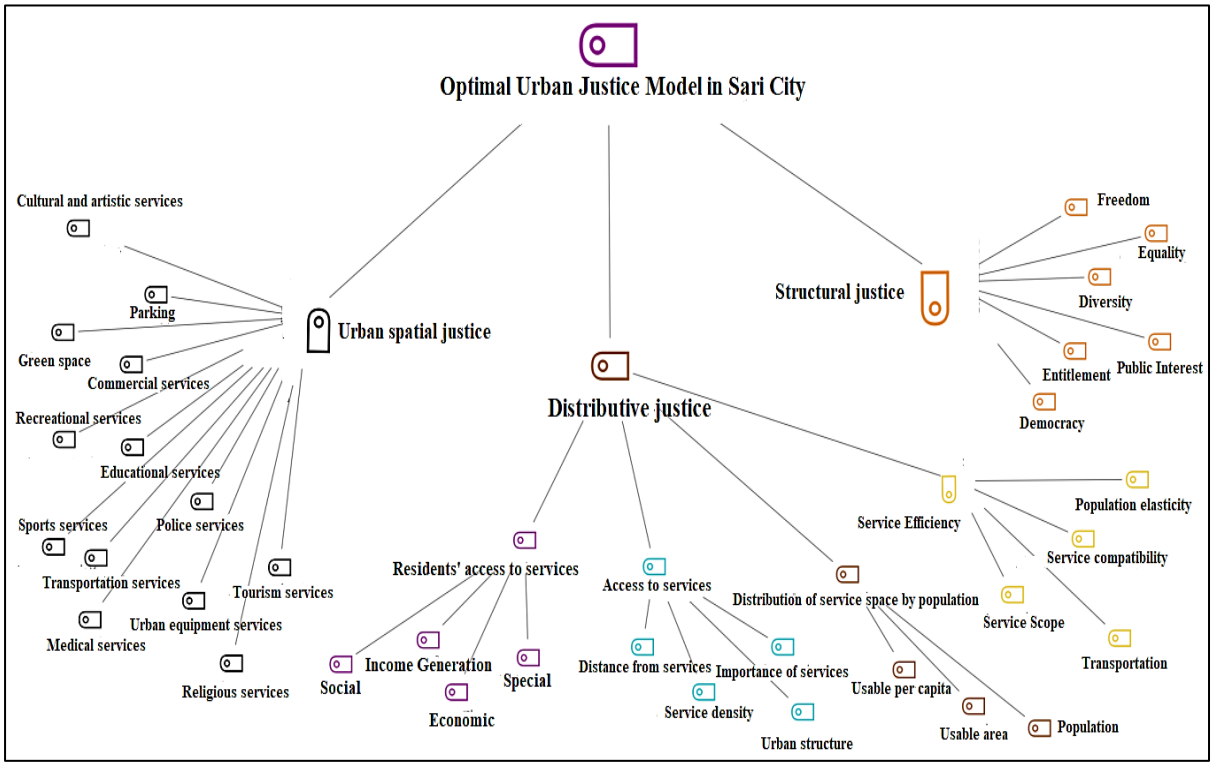


Fig. 1. The paradigmatic model results.

The model is divided into three major components: Urban Spatial Justice, Structural Justice, and Distributive Justice, each containing multiple sub-categories.

Urban spatial justice emphasizes the equal distribution of physical and social services, including green spaces, parking, transportation, educational and medical services, sports and recreational facilities, tourism services, and religious centers.

This dimension highlights the importance of providing residents with balanced access to essential facilities across the city's geography.

Structural justice focuses on deeper societal values such as freedom, equality, diversity, democracy, entitlement, and the public interest, suggesting that fair urban systems must also respect social rights and ethical principles.

Distributive justice examines how services and resources are allocated among different population groups based on factors such as service density, population elasticity, usable area, service scope, service efficiency, and distance from services.

It also includes social and economic aspects, such as residents' access to services, income generation, and the importance of services in daily life. The model illustrates the interconnectedness of these justice dimensions, showing that achieving urban justice requires both physical fairness in service distribution and social fairness in governance.

By integrating structural, spatial, and distributive components, the diagram presents a holistic approach to planning a more equitable urban system in Sari City.

Inferential statistics: At this stage, the face validity of the questionnaire, which had been designed in the qualitative phase, was first approved by several academic experts, and a few modifications were made. Then, based on the calculation of CVR and CVI for each item, the content validity of the questionnaire was also confirmed by a group of academic and organizational experts (17 people), with the CVR and CVI values for each item ranging between 0.1 and 0.8.

Next, to measure the quantitative part of the model, the questionnaire, after confirming its reliability and using relative cluster sampling, was distributed among 384 participants. The resulting data were analyzed using exploratory and confirmatory factor analysis with SPSS and SmartPLS software.

In the quantitative section, the structural equation modeling (SEM) was conducted using SmartPLS. This model included 5 latent variables (three independent variables and one main dependent variable) and 20 observed variables (questionnaire items). The model type was considered as a reflective path model. The factor loadings for all items were above 0.6, and the model fit indices were reported as follows:

RMSEA = 0.045

CFI = 0.96

GFI = 0.92

The reliability and validity indices of the constructs are summarized in the Table 6:

Table. 6. Reliability and Validity Indices of the Latent Constructs in the SEM Model.

Latent Variable	Type	Number of Items	Minimum Factor Loading	Average Factor Loading	AVE	CR	Cronbach's Alpha
Spatial Justice	Independent	5	0.62	0.70	0.55	0.83	0.81
Structural Justice	Independent	4	0.60	0.68	0.52	0.80	0.79
Social Justice	Independent	4	0.61	0.69	0.53	0.81	0.80
Urban Justice	Dependent	6	0.64	0.72	0.56	0.85	0.83

As shown in the Table 6, the factor loadings for all items are above 0.6, indicating appropriate loading of the items on their respective constructs. The AVE values above 0.5, along with CR and Cronbach's Alpha values above 0.7, confirm convergent validity, composite reliability, and internal consistency of the constructs. Furthermore, the model fit indices (RMSEA, CFI, and GFI) indicate a good fit of the model to the data and the high quality of the SEM. The confidence level for the tests was set at 95%, and all analyses were conducted in accordance with standard methodological procedures.

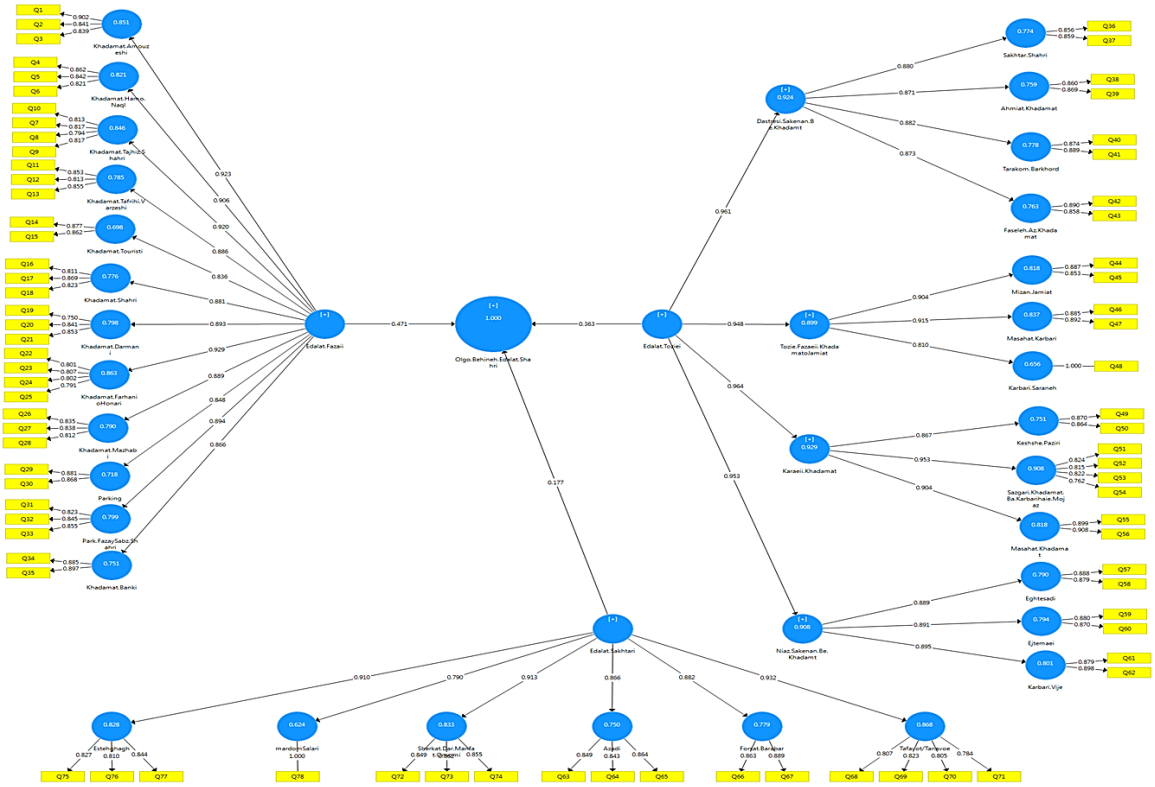


Fig. 2. Structural equation model of service quality, fairness, and satisfaction dimensions.

The Fig. 2. illustrates a comprehensive structural equation model (SEM) designed to capture both the measurement and structural relationships between several latent constructs. The latent variables, shown as blue circles, represent abstract concepts such as public service quality, facility satisfaction, and fairness, which cannot be observed directly. These constructs are measured through observed indicators highlighted in yellow boxes labelled Q1, Q2, and so on, each corresponding to a specific survey or assessment item. Arrows connecting latent variables to their indicators display factor loadings, which quantify the strength and direction of the relationship between each observed item and its underlying construct. Loadings closer to 1.0 signify strong alignment between the item and its latent factor, while lower values suggest weaker measurement associations. At the center sits a primary higher-order construct that integrates several first-order latent variables, effectively acting as a summary dimension of the overall phenomenon studied. This central variable draws input from subordinate constructs such as Justice in Urban Services, Justice in Banking, Service Contract Quality, and others, each feeding into the model via defined path coefficients. These path coefficients between blue circles reflect predictive or causal relationships values such as 0.564 or 0.471 represent the magnitude of influence one construct exerts on another.

The hierarchical nature of the model is evident: individual questions measuring, for example, parking facilities or tourism services, group together to form sub-dimensions; these sub-dimensions then connect into broader categories reflecting systemic aspects of fairness, service delivery, or infrastructure. This structure ensures that the model distinguishes the low-level measurement layer from the high-level conceptual mapping of how different satisfaction and justice dimensions interrelate. In addition, the diagram showcases how multiple pathways converge into the top-level construct, highlighting key contributors with stronger coefficients and isolating weaker links. The clearly separated clusters within the model aid in identifying which aspects may need improvement for example, domains with moderate factor loadings might indicate inconsistent experiences or measurement issues. Overall, the diagram provides a holistic visual summary of the study's theoretical model, the validated measurement scales, and the hypothesized structural pathways connecting all dimensions into one integrated framework.

Also, based on the values obtained in the diagram, which are accompanied by the path coefficient between the questions and the variables, it has been determined that all factor loadings are above 0.6, which indicates the correct elimination of the questions. Also, considering the value of the path coefficients obtained among the variables, it can be stated that all the variables are related and the relationship between them is positive and direct, with the highest relationship being related to spatial justice, which is equal to 0.471. Table 7 summarizes the results obtained from the above test.

Table. 7. Results of structural equation testing (Urban justice).

Optimal model of urban justice	
Spatial justice	0.471
Structural justice	0.177
Distributive justice	0.363

Table 7 presents the results of structural equation modeling (SEM) for urban justice, highlighting the contributions of three main dimensions. The spatial justice dimension has the highest path coefficient (0.471), indicating that spatial and geographical factors play the most significant role in achieving urban justice. Structural justice has the lowest coefficient (0.177), suggesting that institutional frameworks and regulations have a relatively smaller impact. Distributive justice shows a moderate influence with a coefficient of 0.363, emphasizing the importance of fair distribution of urban resources and services. Overall, these results indicate that an effective model of urban justice requires a combination of spatial, structural, and distributive components. Policymakers should prioritize spatial considerations while also addressing distributive and structural aspects to ensure comprehensive urban justice. This model provides a clear framework for understanding which areas of urban policy are most influential in promoting fairness within cities.

Table 8. Results of structural equation testing (Spatial justice).

Spatial justice	
Educational services	0.923
Transportation services	0.906
Urban equipment services	0.920
Sports and Recreation Services	0.886
Tourist Services	0.836
Urban Services	0.881
Medical Services	0.893
Cultural and Artistic Services	0.929
Religious Services	0.889
Parking	0.848
Parks and Green Spaces	0.894
Banking - Commercial Services	0.866

Table 8 presents the results of structural equation modeling (SEM) for spatial justice and the contributions of various urban services to this dimension. Cultural and artistic services have the highest impact with a coefficient of 0.929, indicating their strong role in achieving spatial equity. Educational services (0.923), urban equipment services (0.920), and transportation services (0.906) also show very high contributions, highlighting the importance of access to basic infrastructure and mobility in promoting spatial justice. Other services, including medical services (0.893), parks and green spaces (0.894), and sports and recreation services (0.886), demonstrate substantial influence as well. Services like tourist services (0.836) and parking (0.848) have slightly lower but still meaningful effects. Overall, the results suggest that equitable access to a wide range of urban services cultural, educational, recreational, medical, and infrastructural is essential for achieving spatial justice in cities. This emphasizes the need for policymakers to consider multiple service domains when planning for fair urban development.

Table 9. Results of structural equation testing (Structural justice).

Structural justice	
Entitlement	0.910
Democracy	0.790
Participation in the common good	0.913
Freedom	0.866
Equal opportunity	0.882
Difference/diversity	0.932

Table 9 shows the results of structural equation modeling (SEM) for structural justice and the contributions of its key components. Difference/diversity has the highest path coefficient (0.932), highlighting the importance of recognizing and accommodating social and cultural differences in promoting structural justice. Participation in the common good (0.913) and entitlement (0.910) also have very strong impacts, emphasizing the role of inclusive engagement and rights-based frameworks. Other factors such as equal opportunity (0.882) and freedom (0.866) demonstrate substantial influence, underlining the importance of fairness, autonomy, and non-discrimination in urban structures. Democracy has a slightly lower coefficient (0.790) but still contributes meaningfully to the model. Overall, these results suggest that structural justice depends on a combination of diversity, participation, rights, and democratic principles, guiding policymakers to build more equitable and inclusive urban governance systems.

Table 10. Results of structural equation testing (Distributive justice).

Distributive justice	
Residents' access to services	0.961
Distribution of service space by population	0.948
Service efficiency	0.964
Residents' need for services	0.953

Table 10 presents the results of structural equation modeling (SEM) for distributive justice and the contributions of its key indicators. Service efficiency has the highest path coefficient (0.964), indicating that the effectiveness and quality of urban services are crucial for achieving distributive justice. Residents' access to services (0.961) and residents' need for services (0.953) also show very strong contributions, highlighting the importance of ensuring that services are both available and aligned with citizens' needs. The distribution of service space by population (0.948) further emphasizes equitable allocation of resources according to population density. Overall, these results suggest that distributive justice in urban areas depends on accessible, efficient, and needs-based distribution of services, guiding policymakers to focus on fairness and effectiveness in urban planning and resource allocation. After the factor loading of the questions was examined and it was determined that the questions had appropriate factor loading, at this stage, the relationship between the indicators and variables with the urban justice model was assessed.

Table 11. Test results.

	Sample Mean	STDEV	T	P-Values
Spatial justice ---> Optimal model of urban justice	0.471	0.007	65.651	0.000
Structural justice ---> Optimal model of urban justice	0.177	0.005	32.603	0.000
Distributive justice ---> Optimal model of urban justice	0.363	0.006	58.705	0.000

Table 11 presents the test results for the structural equation model of urban justice, including path coefficients, p-values, standard deviations, and sample means for the three dimensions. All p-values are 0.000, indicating that the relationships are statistically significant. Spatial justice has the highest path coefficient (0.471), suggesting it is the most influential factor in the optimal model of urban justice according to employees' opinions. Distributive justice follows with a coefficient of 0.363, and structural justice has the lowest impact with 0.177. These results indicate that spatial considerations, such as equitable access to urban services and infrastructure, play the most critical role in achieving urban justice. Additionally, the model's validity has been confirmed using convergent and divergent

validity tests, ensuring that the measurements reliably capture the underlying constructs. Overall, the findings highlight the relative importance of different justice dimensions and provide guidance for urban policymakers to prioritize spatial and distributive factors alongside structural reforms.

Table 12. Divergent and convergent validity test

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Spatial justice	0.977	0.978	0.560
Structural justice	0.941	0.948	0.584
Distributive justice	0.969	0.971	0.557

Table 12 presents the results of the divergent and convergent validity tests for the three dimensions of urban justice: spatial justice, structural justice, and distributive justice. These tests are essential to ensure that the measurement model is both reliable and valid. The Average Variance Extracted (AVE) values for all three dimensions are above 0.5 (0.560 for spatial justice, 0.584 for structural justice, and 0.557 for distributive justice), indicating that more than 50% of the variance in the indicators is explained by their respective latent constructs. This confirms good convergent validity. The Composite Reliability (CR) values are all above 0.7 (0.978, 0.948, 0.971), demonstrating strong internal consistency of the indicators within each construct. Similarly, Cronbach's alpha values (0.977, 0.941, 0.969) also exceed 0.7, further confirming the reliability of the measurements. In summary, these results indicate that the measurement model for the urban justice model in Sari County is valid and reliable. According to the structural equation model, the final model, as depicted in Fig. 3, can be implemented effectively by focusing on its three main dimensions. Strengthening these dimensions spatial, structural, and distributive justice based on expert opinions and the obtained path coefficients ensures the model's practical feasibility and provides a clear framework for urban planning and policy interventions. The Fig. 3 illustrates a comprehensive research model designed to conceptualize and integrate different dimensions of urban justice into a unified analytical framework. At the center of the diagram lies the concept of an "Optimal Model of Urban Justice," which serves as the ultimate goal that urban planners and policymakers aim to achieve. Surrounding this central element are several interconnected domains, each representing essential components that collectively shape the justice-oriented structure of urban environments.

The upper portion of the diagram divides the framework into two main realms: Urban Spatial Justice and Distributive Justice. Urban spatial justice focuses on the geographical organization of services, emphasizing how equitably different types of services such as administrative, recreational, religious, medical, transportation, educational, and tourism-related services—are distributed across the city. This dimension recognizes that uneven spatial patterns often result in unequal access, thereby affecting residents' daily lives and social well-being. The distributive justice domain further separates into several detailed categories. One of these is Residents' Need for Services, which takes into account the diversity of people's socioeconomic conditions, their special needs, and the economic or income-generating functions of urban services. This highlights the idea that justice is not achieved solely through equal distribution but through distribution based on differentiated needs. Alongside this, the diagram addresses Residents' Access to Services, which concerns the physical distance from service locations, the density of available services, the structure of the urban fabric, and the importance or hierarchy of specific services. Another branch under distributive justice is Social Distribution of Services, which examines how services are allocated among the population in relation to demographic factors such as population size, density, and per-capita availability. This component ensures that the fairness of resource allocation is evaluated not only geographically but also socially. Closely linked is Service Efficiency, which encompasses the quality and performance of service delivery, the efficiency of their networks, and the compatibility or interconnectedness between various service systems. This suggests that even if services are available, ineffective networks or poor-quality delivery can undermine justice.

At the bottom of the diagram lies the foundation of Structural Justice, which supports and guides the entire framework. Structural justice emphasizes deeper societal values including democracy, entitlement, participation in the public good, equality, freedom, diversity, and equal opportunity. These principles are essential because they establish a normative basis for justice, shaping how policies are designed and implemented to ensure fairness for all residents. In sum, the figure offers a holistic and multilayered model in which spatial, distributive, and structural dimensions interact dynamically. It demonstrates that achieving an optimal model of urban justice requires addressing not only the physical distribution of services but also the social, economic, and ethical foundations that underpin urban life. This integrated approach helps clarify how different aspects of justice overlap and influence each other, ultimately contributing to a fairer and more inclusive urban environment.

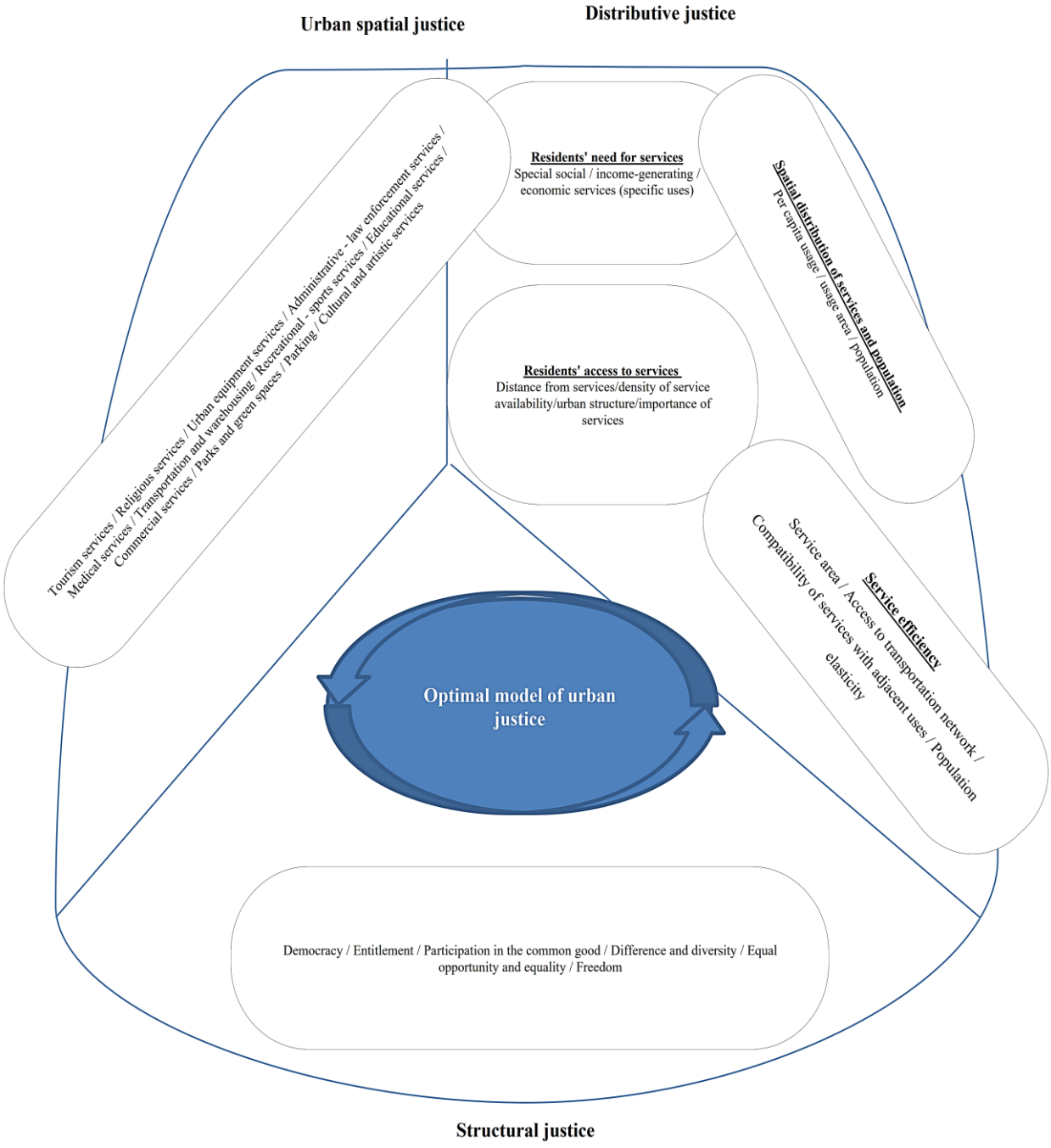


Fig. 3. Final research model (Design: authors).

4. Conclusion

This research aimed to develop an urban justice model for Sari County, employing a mixed-methods approach that integrated qualitative and quantitative analyses. The study was conducted in two main stages to systematically identify and validate the components of urban justice. In the first stage, qualitative data were collected through semi-structured interviews with experts in urban management and senior managers from Sari Municipality and its subordinate units. In addition, relevant literature and prior research were reviewed to extract insights related to urban management and urban justice. Data were analyzed using open, axial, and selective coding techniques, which allowed for the identification of key indicators, dimensions, and categories, and facilitated their organization under broader thematic constructs. This process resulted in the identification of three primary components of urban justice: urban spatial justice, distributive justice, and structural justice. Urban spatial justice encompasses access to and quality of tourism, religious, administrative, law enforcement, medical, transportation, recreational, educational, commercial, parks, cultural, and parking services. It reflects the equitable distribution of urban facilities across different neighborhoods, ensuring that residents can utilize essential services without spatial disadvantage. Distributive justice focuses on the allocation of resources and services according to residents' needs, including four subcategories: residents' service needs (social, economic, income-generating, and specialized), residents' access to services (distance, density, urban structure, and service importance), distribution of service space and population (per capita use, area allocation, population density), and service efficiency (service coverage, access to transportation, compatibility with neighboring uses, and responsiveness to population dynamics). Structural justice refers to principles of democracy, entitlement, public participation, diversity, equal opportunity, and freedom, highlighting the role of governance and institutional arrangements in promoting fair urban management. In the second stage, findings from the qualitative phase were used to design a researcher-made questionnaire. The brainstorming technique was applied to validate the indicators, and experts scored each item on a scale of 1 to 5. Low-scoring items and those with high redundancy or overlap were eliminated, resulting in a final questionnaire of 78 validated questions. This process was conducted iteratively three times to ensure rigor and reliability. Quantitative analysis was conducted using structural equation modeling (SEM) to evaluate relationships among the components. All factor loadings exceeded 0.6, confirming the appropriateness of the retained items. Path coefficient analysis revealed positive and direct relationships among all variables. Spatial justice had the strongest influence on the overall urban justice model (path coefficient = 0.471), while structural justice had the least (path coefficient = 0.177). These results indicate that spatially equitable access to services is the most significant determinant of urban justice in Sari County, while institutional and governance factors, though important, exert a comparatively smaller influence. The proposed model integrates multiple dimensions of urban justice in a comprehensive and operational framework, making it a novel contribution compared to previous studies. While prior research addressed individual factors affecting urban management, such as service distribution or residents' access, none have developed a fully integrated model that considers spatial, distributive, and structural dimensions simultaneously. For instance, Mohammadi et al. (1400) analyzed spatial distribution and access to urban services in Ardabil but focused primarily on commercial uses and neighborhood disparities without integrating structural governance factors. Overall, this research demonstrates that an urban justice model requires the alignment of spatial equity, resource distribution, and governance principles. The model provides practical guidance for municipal managers and policymakers, highlighting priority areas for intervention and resource allocation. By addressing disparities in access to services and strengthening institutional support, municipalities can enhance fairness, efficiency, and sustainability in urban development.

The findings of this study are largely consistent with recent research by Hassen (2025), Rezaee et al. (2025), and Shan and He (2025), although some divergence exists compared to the studies of Rakhshmah et al. (2024), Mashoudi Sani Joybari et al. (2024), and De Luca et al. (2024).

This highlights the context-specific nature of urban justice and the importance of local empirical validation. The proposed model not only clarifies causal relationships among urban justice components but also provides an evidence-based tool for designing strategies to enhance equity and sustainability in urban settings. In conclusion, this study successfully develops a validated, practical, and comprehensive model of urban justice for Sari County, integrating spatial, distributive, and structural dimensions. The model serves as a reference for future research and policy initiatives, ensuring that urban management decisions are informed by a multidimensional understanding of fairness and equity. The findings of this study reveal strong connections between the proposed urban justice model for Sari City and broader Sustainable Earth Trends. The significant influence of spatial justice aligns with global sustainability priorities that emphasize equitable access to services, balanced land use, and reduced spatial inequality. Although structural justice shows a lower impact, it still highlights the importance of governance reform, transparency, and institutional resilience—core elements of sustainable urban systems. The validated model functions as a localized response to global sustainability trajectories by integrating social, environmental, and spatial dimensions of justice. Moreover, strengthening spatial justice can indirectly support environmental sustainability through reduced ecological pressures and fairer resource distribution. The use of structural equation modeling provides a data-driven mechanism for monitoring and improving the alignment of urban policies with Sustainable Earth Trends.

1. Spatial Justice and Sustainable Earth Trends: The finding that spatial justice has the strongest effect aligns with Sustainable Earth Trends, as equitable distribution of urban services and resources is a key global sustainability priority.

2. Structural Justice and Institutional Sustainability: Although structural justice had the lowest impact, it still relates to Sustainable Earth Trends by highlighting the need for stronger governance, transparency, and institutional reform to support sustainable urban development.

3. Local Justice Model as a Response to Global Sustainability Trends: The validity of the urban justice model shows that it can serve as a localized framework aligned with global sustainability trends, integrating social, environmental, and spatial equity in urban planning.

4. Urban Justice as an Environmental Sustainability Mechanism: Enhancing spatial justice can reduce environmental pressures and promote balanced access to urban green spaces and infrastructure an essential dimension of Sustainable Earth Trends.

5. Structural Equation Modeling and Sustainability Alignment: Using structural equation modeling provides a data-driven basis for evaluating how urban justice policies align with Sustainable Earth Trends, enabling continuous monitoring and improvement.

Research Suggestions:

The necessary resources in various fields of information, finance, and human capital should be made available to the community and managers of subordinate units to realize the vision of urban management and fulfill the mission. In this section, it is possible to both optimally allocate existing resources and seek to attract resources (signing contracts with specialized and skilled contractors).

1. Provide the community and managers of subordinate units with the necessary resources in information, finance, and human capital to achieve urban management goals. Optimize the allocation of existing resources and seek new resources by contracting specialized and skilled professionals;
2. Strengthen urban management through training courses, seminars, succession planning, and delegation of authority. Focus on structured programs for skill development and leadership transition;
3. Although the moderating effects of internal and external enabling factors were not confirmed, they may influence urban management:

-Internal factors: Emphasize managers' locus of control, risk-taking, resilience, toughness, and sense of belonging to improve supervision and control.

- External factors: Enhance social, political, and cultural support, as well as organizational culture, to reinforce management effectiveness.

4. Develop a long-term strategic plan for talent development;

5. Establish a comprehensive managerial training center, preferably outside the municipality. Provide continuous, face-to-

face training for one to three months, followed by performance evaluation and issuance of management certificates.

Research Limitations:

1. Context-specific focus: The study was conducted exclusively in Sari County, which may limit the generalizability of the findings to other urban areas. Differences in local governance, urban infrastructure, and population distribution may result in variations if the model is applied elsewhere.

Sample size and composition: In the qualitative phase, interviews were conducted with 15 experts and senior managers, and the quantitative phase included 384 participants from municipal employees. While sufficient for SEM analysis, the limited and specific sample may not fully capture the perspectives of all urban stakeholders, such as residents or private sector actors.

3. Researcher-made questionnaire: Although the questionnaire was rigorously validated through expert scoring and iterative revisions, it remains a researcher-developed instrument. Potential biases in item selection, phrasing, or scoring could influence responses and the resulting model structure.

4. Cross-sectional design: The study employed a cross-sectional design, capturing data at a single point in time. This limits the ability to examine temporal changes or causal dynamics in urban justice, particularly regarding long-term impacts of policy interventions or evolving spatial and governance patterns.

Acknowledgments

This article was not under any financial support.

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