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# Barriers to social sustainability in urbanisation: a comparative multi-stakeholder perspective

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## Abstract

Social sustainability is a key pillar of sustainable development that usually receives less focus and emphasis when compared to other environmental or economic aspects. This entails the need to address this gap, should the concept of urban sustainability be comprehensively tackled. Despite such importance, social sustainability is considered a relatively difficult pillar to measure, considering its entanglements with the concerned individuals, communities, and stakeholders. This study aimed to identify the key barriers to achieving social sustainability in the context of Jordan. It relied on the opinions of three groups of experts, including academics, practitioners, and end users to reach a comprehensive account of understanding such barriers within a multi-faceted approach. The methodology relied on the Delphi technique by identifying areas of consensus and variance in provided opinions. The Kruskal–Wallis test was then applied to identify the inter-group differences and explore the key causes for such differences. The study concluded by developing a comprehensive framework of identified barriers weighed according to their relative importance considering the provided cumulative feedback. In so doing, it represents a step towards a comprehensive model that would assist in understanding, and later enabling, the successful achievement of social sustainability in the studied local context.

**Keywords** Social sustainability, Delphi technique, Sustainability barriers, Local context, Urban development, Urbanisation

## Introduction

The urban environment is a domain that predefines a number of key indicators, including the quality of the physical environment, the economies of sustaining urban life, and the well-being of citizens and residents, among other aspects. Accordingly, this area has undergone increasing improvement and development demands along with increasing local and global challenges (Hiremath et al. 2013), among the most important of which is the sustainability challenge. Sustainable urbanisation is a

key influencer of successful sustainable urbanisation. A key definition of sustainable urbanisation according to Dizdaroglu (2015) entails the achievement of an ethical, effective, zero-waste, self-regulating, resilient, flexible, psychologically fulfilling, and cooperative community, resulting in an ecosystem that secures health, equity, and self-renovation. Hiremath et al. (2013), on the other hand, identify sustainable urbanisation as the systematic development that enables a city to achieve internal balance manifested on its triple bottom line.

Although sustainable urban development, in principle, comes with the promise of introducing improvement in most, if not all, of the earlier aspects, underlying challenges are bound to surface. Understanding and achieving urban sustainability is usually faced with multiple barriers that would stand in the way of achieving its most

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essential purposes and objectives. This matter has been addressed by academics and practitioners across the globe, being a current issue of essence. Whereas the focus would most probably be recognisable addressing environmental and economic aspects of such barriers, social barriers are not as frequently addressed, which hinders the balance between the three pillars of sustainability and undermines their connectedness and dependency (Vallance et al. 2011). This stems mostly from the relative intangibility and contestation of social aspects and measures compared to the more quantitative and rather direct approaches for addressing other sustainability barriers. This has stimulated the key purpose of this research, aiming at structuring a framework of barriers to social sustainability to address such gap in current literature.

The subject of the research has been addressed in previous research, although in a fragmented and indirect manner, where a comprehensive and direct account is considered rare. Part of the previous studies addressed the barriers to sustainability in general and was restricted to the construction sector (Djokoto et al. 2014; Durdyev et al. 2018; Marsh et al. 2020; Tafazzoli et al. 2019; Tokbolat et al. 2020; Williams and Dair 2007). Others tackled social sustainability but were confined to theoretical research (Guzman et al. 2017; Sampson 2017; Soma et al. 2018; Verma and Raghubanshi 2018), or practically restricted to particular cases (Ryu et al. 2018; Zhang and Lu 2016; Zhu et al. 2020) with limited involved parties (Ohene et al. 2019; Zhang and Lu 2016).

The contribution of this study resides in providing a contextualised, yet potentially generalisable, account of the barriers to social sustainability in the urban context, supported by a multi-stakeholder approach to properly unpack the matter at hand. This is supported by the fact that social sustainability resides within the multiplicity and variance of contributions of social scientists (Vallance et al. 2011) and the contested views of local communities and key stakeholders to ensure the fulfillment of their needs and requirements (Herd-smith and Fewings 2008). Tackling these contributions and views complements and bridges the current gap in the current literature, where earlier studies, as shall be detailed going forward, provided particular practical examples with a limited base of stakeholders. The key inquiry of the research is whether such a detailed account of the contextually-driven barriers to social sustainability in the urban context can be sought through such a diversified base of participants, considering their potential interrelations and differences, in a manner that would support a potentially generalisable framework of assessment. This concern is considered important as it aims to untangle an underlying challenge of understanding and achieving social sustainability that is, by nature, hard to directly

measure and embedded with complexity, which eventually affects the proper fulfilment of true sustainability.

The study focuses on developing a framework of social sustainability barriers in the context of Jordan. The country has been facing a number of key challenges, with rapid urbanisation being one of the most critical. With the lack of resources being faced in Jordan, excessive movements were witnessed towards its central cities, which challenged the provision of services, accommodation, and economic opportunities, reshaping peoples' lives and the ways through which they dealt with what surrounded them (Ali et al. 2009). The country has also witnessed rapid population growth resulting from a number of emigration and refugee waves from nearby countries, such as Palestine, Iraq, and Syria, which have made the faced realities even more critical (Ali et al. 2021).

### **The challenge of social sustainability in the urban context**

Social sustainability is a key pillar along with economic and environmental pillars that together define what urban sustainability is about. Research studies have aimed previously to unpack urban sustainability theoretical definitions and practical implications, through which its enablers and barriers were repeatedly investigated and questioned, modified and upgraded, to reach a better comprehension. Despite the universally increasing levels of adoption of urban sustainability, the identification of social barriers remains quite significant, as their recognition is crucial for understanding sustainability and paving the way for its adoption.

The concept of urban sustainability has been developed through multiple attempts to standardise and define it in clearer form, criteria, or measurement. Sustainability rating schemes, such as LEED and BREEAM, served in providing criteria but they mostly emphasised environmental and economic factors over social ones (Khameneh 2022). The development of urban sustainability indicators through various research provided similar criteria but with restrictions to environmental and economic aspects with the exception of few research, such as the works of Wan and Ng (2018), Shirazi and Keivani (2019), and Olukoya and Atanda (2020), who focused on social sustainability indicators on the urban level including aspects pertaining to equity, education, participation, cohesion, cultural value, health and wellbeing, safety and security, accessibility, and inclusion. The competition between the three pillars featured in the rating systems and the provided studies, where the majority of efforts focused less on social aspects which limits the potential in articulating a complete set of sustainability criteria that could balance the three economic, environmental, and social pillars (Verma and Raghubanshi 2018), undermining the

potential dependency and interconnectedness of these aspects (Vallance et al. 2011).

Developing criteria or measurements for social sustainability has been difficult as it is described as a challenging mission of measuring the immeasurable (Bell and Morse 2008), considering its contested nature with the multiplicity of interpretations depending on the particular context and nature of stakeholders involved. Social sustainability features as a political and conflictual affair with power relations and struggles (Peet and Watts 2004). This can be primarily traced in the disputes between the developed and developing countries on how to define the concept of urban sustainability and what to prioritise (Sharif et al. 2022). The emphasis on matters such as biodiversity and global environmental change, as seen by the developed nations to support future generations, may well be countered by a developing nations perspective that better values facing poverty and social equity issues; matters that are more relevant to their current generations (Leach and Mearns 1996). Here, the concept of social sustainability in the urban context is realised when acknowledging the different social issues faced by the developing countries, the incompatibility of intergenerational and intragenerational equity in such contexts (Macnaghten and Jacobs 1999), the unfairness in applying similar sustainability concepts in these areas considering their less contribution to the environmental and economic crisis while being more affected by the consequences that turn, in these areas, into a social crisis.

### **Social sustainability barriers in the urban context**

Multiple barriers stand in the way of the proper adoption of sustainability; a matter that has attracted the attention of many scholars through previous research. Table 1 demonstrates some of the studies conducted within specific areas, the barriers identified, and the associated limitations. These studies contributed to unpacking these barriers by considering part of the complexity of social sustainability in the urban context through their focus on specific disciplines, geographies, or methods, where other aspects of such complexity are still to be revealed.

Social sustainability is not well served, literature-wise, when compared to economic and environmental sustainability, which includes its barriers as well as enablers (Sharif 2023). A primary challenge in establishing universal deliverables to implement and track sustainable practices is the lack of widely accepted criteria for sustainability (Pissourios 2013; Turcu 2013). This, in turn, can be associated with the fact that the goals of sustainability vary in different communities. From that respect, such matters must be referenced against specific spatial and temporal contexts. This context-specificity raises sustainability dilemmas when shifting through multiple

interpretations emerging from different stakeholders, concerns, and needs when taking the social dimension in more depth. Furthermore, social sustainability is a subject that generally lacks public awareness and is susceptible to misperception and conflict (Carter and Rogers 2008; Dart 2005). Unpacking social sustainability is bound to the daily lives of humans, where particular consideration of social aspects becomes mandatory.

### **Material and methods**

Considering the aims of the research, its methodology entailed a combined quantitative–qualitative approach that utilised the Delphi technique primarily, which was motivated by the availability of information sources on social sustainability aspects, where the requirement was in identifying the key barriers through sequential filtration and prioritisation by detecting the various participant views and the key concurrences and differences between them. The utilised methodology was aimed at building upon, and refining the approaches utilised by the previous researchers that were concerned with unpacking some facets of social sustainability barriers. This methodology considered the intangibility of the social sustainability concept through tackling more diversified contributions and the variety of stakeholders' views. It further reflected on the contestation of the concept by tracing the differences between these contributions and views. For this aim, the methodology of this research relied on extensive, expert-guided desk research, followed by using the Delphi technique to obtain the feedback of participating stakeholders. The diversification of stakeholders entailed the incorporation of academics, practitioners, and end users to share views and to provide different angles and dimensions for the matter.

### **Desk research**

The researcher started the project through extensive desk research to determine the key potential barriers to the success of social sustainability—globally and in consideration of the local context. This was guided by a series of informal discussions with members of academia, practitioners, and government officials who were selected and reached based on their knowledge, expertise, and interest in the sustainability area in order to enrich the initial inputs. The discussions were aimed at validating and clarifying the importance and relevance of the possible barriers and they were documented through note-taking of the main emerging terms. The conducted research combined peer-reviewed sources as well as grey literature to ensure the widening of the information sources and the reliability of the collected context-relevant data. In doing so, the grey literature sources utilised throughout the desk research were qualified as the ones that

**Table 1** Sample studies included in the desk research

#	Study	Geography	Identified social barriers	Limitations
1	Tafazzoli et al. (2019)	Global	Urban sprawl, lack of clarity of measures and standardisation, ineffective indicators	Lack of contextual focus, reliance on publication reviews
2	Sampson (2017)	USA	Inequalities, racial disparities, civic engagement, social involvement	Limitation of stakeholders
3	Zhu et al. (2020)	China	Public involvement, awareness of the environment, undemocratic systems	Focus on old neighbourhoods
4	Diugwu et al. (2021)	Nigeria	Lack of awareness, misunderstanding of the benefits, conflicting policies, limitation of measurement guidelines	Confined to experts
5	Al Surf (2014)	Saudi Arabia	Stakeholder interest and involvement, public awareness,	The focus was less focused on social sustainability
6	Tokbolat et al. (2020)	Kazakhstan	Lack of knowledge, lack of competence, awareness campaigns, inconvenience	Focus on the construction industry
7	Ohene et al. (2019)	Ghana	Accessible guidance, resistance to change, sustainability measurement tools, government policies	Restriction of stakeholders considered
8	Marsh et al. (2020)	South Africa	Lack of awareness/ interest, perceived cost, lack of community initiatives	Restricted to publication reviews/ Confined to construction
9	Durdyev et al. (2018)	Malaysia	Urbanisation, Lack of knowledge, unclear indicators measurements, unidentifiable benefits	Bias, limited stakeholders
10	McDonnell and Macgregor-Fors (2016)	Global	Urbanisation, government policy, knowledge and awareness	Less focus on social sustainability
11	Seto et al. (2012)	Global	Urbanisation, convenience of arrangements	Lack of focus on social sustainability
12	Williams and Dair (2007)	England	Unidentified indicators, involvement of stakeholders, misunderstanding of benefits	Emphasis on case studies
13	Mavrodieva et al. (2019)	Japan	Involvement, participation in decision and policy making	Case study specific
14	Ryu et al. (2018)	South Korea	Participation in decision and policy making, sense of community, community cohesion	Case study specific, limitation to social capital
15	Soma et al. (2018)	Global	Community participation, transparency, government policy, equity	Restricted to publication reviews
16	Zhang and Lu (2016)	China	Urban sprawl, sense of belonging, convenience	Case study specific, limited stakeholders
17	Zhuang et al. (2019)	China	Urbanisation, community participation	Case study specific
18	Power (2008)	Global	Unpredictable behavior, participation in decision and policy making	Case study specific
19	Djokoto et al. (2014)	Ghana	Public awareness, change resistance, government support	Limited stakeholders
20	Guzman et al. (2017)	Global	Clarity of indicators and measurements, awareness of heritage	Restricted to publication reviews
21	Verma and Raghubanshi (2018)	Global	Community participation, clarity of indicators and measurements	Restricted to publication reviews
22	Tanguay et al. (2010)	Global	Communal wellbeing/ convenience, services and amenities, community participation, health, diversity	Restricted to publication reviews
23	Wachsmuth et al. (2016)	Global	Equity, community participation, government policies	Restricted to publication reviews

entailed clear methodologies and reliable findings that were free of evident bias or influence, including dissertations, conference proceedings, white papers, and government-issued documents (Adams et al. 2017; Kepes et al. 2012). While conducting the desk research, emphasis was

first on the studies providing more focus on social sustainability as a subject of the research, followed by the ones who addressed it as part of the complete indicators and barriers to sustainability at large, where the specific parts on social sustainability were extracted. In light of

**Table 2** Identified barriers and their categorisation

Category	Meaning	Barrier
Awareness	The level of knowledge and awareness created among the key stakeholders, which would hinder the effective adoption of social sustainability	Misunderstanding or different understandings of social sustainability Lack of previous research on the concept Lack of public general awareness of the concept Over-emphasis on environmental (other) aspects No understanding of the benefits of social sustainability Lack of training and education Indirect influence over other sustainability aspects
Convenience	Barriers that negatively impact the wellbeing of the key stakeholders	Housing quality Unemployment Uncontrollable conditions (such as climate) Safety and security/terrorism Pollution Lack of healthcare
Equity	Barriers related to the just and equitable implementation of social sustainability measures across different communities, reducing the level of its adoption in the process	Heterogeneity and exclusion of users Different community interests Inequity in sustainability implementation (putting one community before another, resulting in lower adoption levels) Increased racial disparity Unfair and undemocratic system
Involvement	The level of stakeholder engagement in the promotion and support plans that target the further adoption of social sustainability, including the plans and initiatives driven by the government, NGOs, and other entities	Lack of public participation Different users' priorities, needs, and requirements Technological influence (internet, entertainment, ...) Impact of different backgrounds, education levels, and beliefs Cultural change resistance Lack of interest in green initiatives Associated cost Lack of societal cohesion
Measurement	A key supporting factor for proper implementation in a manner that guarantees the detection of positive results. This addresses the barriers posed by the lower measurability of social sustainability	Lack of sustainability measurement tools Intangibility of social sustainability High context sensitivity Lack of a universally accepted definition Lack of other demonstration projects and successful models Availability of data to support a long-lasting measurement system Unpredictable resident behaviour Unpredictability of human response and change over time
Policy	Resulting from ongoing regulations and guidelines issued that enable the institution of social sustainability practices, where the lack, or inadequacy, of such efforts, constitutes a barrier to the required levels of belief and conviction of the stakeholders	Limited sustainability guidelines Lack of government support Lack of government promotion and incentives Conflict between public policies and regulations Change of government authorities and shifting directions Pandemics and natural forces
Urbanisation	Focuses on the barriers related to urban sprawl and the detrimental changes associated with it	Residents' instability/displacement Housing deficiency Uncontrolled surroundings Population growth and spread Lack of preservation of historic and cultural sites

the conducted discussions and desk research, a long list of barriers was identified (as shown in Table 2). These barriers were distributed over a number of key categories, which were inspired by the themes emerging from the review of the existing literature in order to facilitate the thinking process of the participants at the later stages of the research.

### The Delphi technique

The Delphi approach offers a combination of cumulative panel experts' knowledge to support a consistent decision-making process for evaluating and rating components of a multi-faceted issue. It is well suited as a research method when the overall knowledge on the matter at hand is seen as incomplete (Skulmoski et al. 2007). The Delphi technique requires a number of relevant expert participants, who respond to a series of questionnaires on the subject matter within two to three rounds.

The decision to incorporate three groups of participants was to diversify knowledge, experience, interest, and power relations and stand on the different, overlapping, or contradicting views and angles. While academics and practitioners would be valuable to the subject matter by merit of their profound knowledge and expertise, the users were believed to provide insights from their lived experiences, an angle that cannot be underestimated within this area of interest and can add to the diversified views (Table 3). A non-random selection was utilised to source academics and practitioners in light of their relevant experience and level of interest, which were informed by their academic profiles on social media or at their workplaces, or through the recommendations of other relevant participants, followed by personalised email invitations and/or phone calls. On the other

hand, random targeting was used for sourcing the end users through snowballing, focusing on participants that were living, or had lived, in a neighbourhood identified as socially sustainable (whether old or new), where the participants were sourced through direct approach or referrals from other recruited participants. During the initial communication with the participants, they were informed about the project, nature, aims, the participants' roles, and the time and effort expected from them. They were encouraged to provide any queries that might help in such understanding before obtaining their consent to participate in the project.

The collection of participants' views was done through distributed questionnaires, which targeted standing on the validity and level of importance of the proposed barriers. A two-round Delphi approach was utilised to gather relevant views from the three groups of participants. While the first round was used to validate, add or remove some of the barriers based on their relevance, the second was used to identify the relative importance of each barrier in light of its impact on social sustainability. The first stage of Delphi included 25 invited academics, from whom 19 responded in the first round (76%) and 16 in the second (64%). Thirty-two practitioners were similarly invited, with 22 responding in the first round (69%) and 18 in the second (56%). As for users, 57 were sourced, out of which 28 responded in the first round (49%) and 20 in the second (35%). The participants were encouraged to ask questions, provide suggestions, or raise any concerns during the project's progress and were asked to respond transparently and honestly. The participants were assured about the availability of the researcher for any project-related inquiries and the transparency of the project's progress. With the conclusion of each round, the researcher provided a summary of findings and outcomes for the participants to feed in the process with further feedback. The anonymity of the contributions was also ensured throughout the research process and the confidentiality of data was maintained throughout data collection, storage, and processing.

**Table 3** Distribution of the panel involved (experts and users)

Academics sample distribution			
Gender	Male	Female	
	43.6%	56.4%	
Education level	Secondary or lower	Graduate	Postgraduate
	0%	41.3%	58.7%
Practitioners sample distribution			
Gender	Male	Female	
	57.2%	42.8%	
Education level	Secondary or lower	Graduate	Postgraduate
	7.7%	62.5%	29.8%
Users sample distribution			
Gender	Male	Female	
	52.3%	47.7%	
Education level	Secondary or lower	Graduate	Postgraduate
	32.4%	63.3%	4.3%

### Statistical analysis

In order to ensure the relevance of the outcomes obtained from the conducted rounds, a number of statistical tests were run. Other tests were used later on to identify the discrepancies between the three participant groups. The retrieved statistics included a mean score and standard deviation, which were used to rank the barriers based on how large the mean was, also taking into consideration how small the associated standard deviation was. The Cronbach's alpha reliability test was used to ensure the reliability of the used questionnaire. Other tests included the Shapiro–Wilk test of normality and the

Chi-square test to validate the significance and relevance of the findings.

The Kruskal–Wallis test was used to detect significant discrepancies between the three groups of participants regarding any of the barriers. It is a non-parametric test used in place of the one-way ANOVA when considering more than two independent samples (Grisham 2009). It is based on the assumptions about the data's distribution, where a p-value of less than the significance level of 0.05 was observed frequently enough to reject a null hypothesis that states that there is “no significant differences in the median values of the same barrier between the respondents of the three participant groups”. Once the null hypothesis was rejected, the test was repeated between each pair of groups to identify the particular diverging one.

### Findings and discussion

The findings and discussion were divided into two subsections to ensure that the conclusion provided an accurate and thorough account of the research. First, the findings would assess the cumulative outcomes provided by the participants in order to assign the relative importance of each considered barrier. This section then moves on to unpack the identified variance in opinion between the different participant groups, with a focus on barriers that received lower consensus.

### Validation and ranking

Table 4 and Fig. 1 show the level of importance of social barriers as assigned by the academics, practitioners, and users, where the top ranked barriers are highlighted. A misunderstanding or different understandings of social sustainability was the highest ranked barrier to social sustainability with a mean of 4.52. This high ranking was agreed upon among most of the academics and practitioners. Academics perceived that this barrier related to a semi-awareness as it is considered a discipline-based domain, which is developed through a discipline-focused approach through their own communities of practitioners and experts, their own educational curricula, their own specialist language and, above all, their own criteria for admission into a particular field of study. This process of educational and social alignment results in many academics closing themselves off from other disciplines. This makes it increasingly difficult for those who have not followed a particular discipline to benefit from the full depth of understanding enjoyed by its expert practitioners. As a result, the scientific worldview was broken into many academic disciplines (van der Leeuw 2020).

As for practitioners, and as concluded by Awuzie and Monyane (2017) in their study of the construction industry, they foresee that the lack of awareness concerning

social sustainability adversely affects its integration into ongoing social development efforts (Albarosa and Valenzuela Musura 2016). Such low levels of awareness have been attributed to the inability of practitioners, policy-makers, and academics to arrive at a consensus concerning the definition of the concept to start with (Awuzie and Monyane 2017).

Lack of previous research on the concept of social sustainability was ranked second, with a mean of 4.35. The three key groups on the panel were close in their assessment of the importance of this barrier. For academics, the prevailing sustainability research culture favoured natural sciences, which are perceived to be more authoritative than contributions of the social science community. This is exacerbated when considering the general lack of funding provided to social sustainability research, which promises fewer tangible results. Practitioners and users agreed with this reasoning, where the underserving of such discipline was seen clearly. “In a world governed by economic constraints, among other issues of effect, no one would give the required effort or dedicated budget to tackle social sustainability”, said one of the participating designers.

Lack of public general awareness of the concept of social sustainability was the third highest ranked barrier, with a mean of 4.32, as recommended by the academics and practitioners, followed by the users. Indeed, as a general concept, social sustainability is widely perceived to be more difficult to define and operationalise than the other sustainability pillars. Vallance et al. (2011, p. 342), for instance, argue that the concept of social sustainability is in chaos: “Many and varied contributions of social scientists have led to a degree of conceptual chaos and ... this compromises the term's utility”. Other academics accept that there is no overall definition because of “diverging study perspectives and discipline-specific criteria” (Colantonio 2010, p. 79). Regarding the practitioners, many obstacles arose from a general lack of knowledge—something that occurs regularly for most stakeholders in developmental projects.

Lack of sustainability measurement tools was the fourth highest barrier to social sustainability, with a mean of 4.27. Academics provided the highest rating, followed by practitioners and users. Indeed, this issue has been highlighted in earlier studies, where academics such as Magee et al. (2012) highlighted the methodological challenges in measuring social sustainability. Colantonio (2009, p. 897) referred to the complexity faced in identifying reliable social sustainability indicators that integrate “multidimensional and intergenerational issues” stemming from “a deliberative and reiterative participation process involving a wide array of stakeholders and local agents”. Such complexity becomes evident when

**Table 4** Barriers to social sustainability as per participants' feedback

#	Category	Barrier	Acad		Practitioners		Users		Avg Wght
			Mean	StdDv	Mean	StdDv	Mean	StdDv	
1	Awareness	Misunderstanding of Social Sustainability	4.62	0.57	4.71	0.45	4.26	0.7	4.52
2	Awareness	Lack of previous research on the concept	4.48	0.72	4.35	0.58	4.26	0.54	4.36
3	Awareness	Lack of public general awareness	4.51	0.58	4.45	0.6	4.05	0.86	4.32
4	Awareness	Over-emphasis on other aspects	4.41	0.65	4.23	0.63	3.95	0.8	4.18
5	Awareness	No understanding of the benefits	4.05	0.71	3.78	0.85	3.77	0.83	3.86
6	Awareness	Lack of training and education	3.95	0.64	3.67	0.67	3.82	0.68	3.81
7	Awareness	Indirect influence over other aspects	2.95	0.64	2.82	0.76	2.68	0.79	2.81
8	Convenience	Housing quality	3.14	0.62	3.26	0.73	3.42	0.97	3.28
9	Convenience	Unemployment	2.38	0.93	1.12	0.31	2.45	0.92	1.99
10	Convenience	Uncontrollable conditions	2.32	0.97	2.21	1.08	1.32	0.56	1.91
11	Convenience	Safety and security/ terrorism	1.77	0.85	1.59	0.76	1.82	0.81	1.73
12	Convenience	Pollution	1.78	0.90	1.43	0.83	1.61	0.86	1.60
13	Convenience	Lack of healthcare	1.45	0.66	1.25	0.45	1.54	0.67	1.42
14	Equity	Heterogeneity and exclusion of users	4.34	0.77	3.82	1.01	4.53	0.97	4.24
15	Equity	Different community interests	3.35	0.71	3.57	0.6	3.62	0.73	3.52
16	Equity	Inequity in sustainability implementation	3.12	0.62	1.88	0.31	2.02	0.38	2.30
17	Equity	Increased racial disparity	1.22	0.42	1.19	0.37	1.06	0.3	1.15
18	Equity	Unfair and undemocratic system	1.16	0.39	1.05	0.23	1.08	0.3	1.09
19	Involvement	Lack of public participation	4.16	0.81	3.92	0.97	4.52	0.81	4.21
20	Involvement	Different users' priorities and needs	4.09	0.60	3.89	0.74	4.32	0.56	4.11
21	Involvement	Technological influence (e.g. internet)	3.49	0.58	3.62	0.76	3.75	0.83	3.63
22	Involvement	Impact of backgrounds and beliefs	3.69	0.70	3.62	0.68	3.45	0.8	3.58
23	Involvement	Cultural change resistance	2.92	0.79	3.03	0.52	2.79	0.68	2.91
24	Involvement	Lack of interest in green initiatives	2.7	0.87	2.81	0.53	2.58	0.86	2.69
25	Involvement	Associated cost	1.45	0.66	3.13	0.57	3.22	0.51	2.67
26	Involvement	Lack of societal cohesion	1.78	0.60	2.02	0.75	1.67	0.73	1.82
27	Measurement	Lack of sustainability measurement tools	4.53	0.78	4.39	0.68	3.96	0.86	4.27
28	Measurement	Intangibility of social sustainability	4.52	0.78	4.21	0.63	3.78	1.09	4.14
29	Measurement	High context sensitivity	4.11	0.67	4.22	0.53	4.07	0.8	4.13
30	Measurement	Lack of a universally accepted definition	4.11	0.60	3.89	0.74	3.82	0.51	3.93
31	Measurement	Lack of other demonstration projects	3.87	0.55	3.72	0.8	3.69	0.84	3.75
32	Measurement	Availability of data	3.85	0.55	3.69	0.47	3.57	0.58	3.69
33	Measurement	Unpredictable resident behaviour	4.04	0.56	3.93	0.52	1.87	0.57	3.20
34	Measurement	Unpredictability of human response over time	2.77	0.60	2.62	0.59	1.23	0.43	2.15
35	Policy	Limited sustainability guidelines	4.15	0.90	4.38	0.95	3.77	0.83	4.09
36	Policy	Lack of government support	3.86	0.81	4.23	0.63	4.08	0.74	4.06
37	Policy	Lack of government promotion and incentives	3.49	0.84	3.37	0.68	3.52	0.74	3.46
38	Policy	Conflict in between public policies and regulations	2.69	0.92	2.52	0.83	2.38	0.65	2.52
39	Policy	Change of governmental authorities directions	2.18	0.65	2.08	0.7	2.12	0.62	2.12
40	Policy	Pandemics and natural forces	1.18	0.39	2.12	0.74	1.92	0.7	1.77
41	Urbanisation	Residents' instability/ displacement	4.53	0.58	4.39	0.68	3.91	1.09	4.25
42	Urbanisation	Housing deficiency	2.71	0.62	2.61	0.49	2.58	0.5	2.63
43	Urbanisation	Uncontrolled surroundings	2.69	0.63	2.66	0.67	2.51	0.5	2.61
44	Urbanisation	Population growth and spread	2.69	0.63	2.49	0.5	2.57	0.5	2.58
45	Urbanisation	Lack of preservation of historic and cultural sites	1.39	0.49	1.31	0.47	1.19	0.4	1.29



**Table 4** (continued)**Analysis of participant groups' feedback**

#	Acad	Practitioners	Users
<i>Delphi 2nd round statistics</i>			
Cronbach's $\alpha$	0.945	0.912	0.874
Significance (p)	0.000	0.000	0.001
Number of respondents	16	18	20
Chi-square		380.294	
Kruskal Wallis (H)		10.565	
df		2	
Significance (p)		0.00142	

Top ranked barriers are highlighted in italics

comparing the characteristics of social sustainability indicators with traditional social indicators. From that perspective, traditional 'hard' social sustainability themes such as employment and poverty alleviation are being increasingly complemented or replaced by 'soft' and less measurable concepts such as happiness, well-being, and sense of place. This adds further complexity to the analysis, especially from an assessment point of view.

From the practitioners' perspective, four common dilemmas were identified in the measurement of social sustainability. The first relates to what is measured by indicators—whether they measure objective conditions of a community, or subjective conditions experienced by community members (Diener 2006). A second dilemma concerns the ontological status of the community itself; whether it is an entity reducible to the sum of its parts or constituted as an integrated object beyond them (Sirgy 2010). A third dilemma concerns the temporal orientation of assessment. An important distinction is proposed between well-being and quality of life on the one hand, and sustainability studies on the other. While notions of quality of life and well-being tend to assess past and present states of communities and individuals, sustainability can be conceived broadly as being orientated towards future states. The fourth dilemma, epitomised in the distinction between the global (or 'top-down') and local (or 'bottom-up') assessment approaches, concerns whether to apply universal indicators—which lead to comparability but tend to ignore local, community-based meanings of sustainability—or whether to devise context-specific indicators, selected by and relevant to the communities themselves, but requiring interpretation and translation in order to compare communities meaningfully (Agger 2010).

Indicators are problematised for being reductive, which is to say they are not what they represent. This mandates moving a couple of steps beyond the usual discussion of the 'problems' of indicators—particularly where

indicators are seen as instrumentally fallible measures of reality or attempts, in the context of sustainability assessments, to "measure the unmeasurable" (Bell and Morse 2008). We argue that, while indicators most certainly are problematic in the various pragmatic and instrumental ways that Bell and Morse describe, the development, deployment, and study of indicators are not simply technical, they are performative (Hale et al. 2019).

Residents' instability/displacement came fifth in the barriers to social sustainability, with a mean of 4.25 as highlighted by academics and practitioners. From a social stance, academics view the neighbourhood as a closed system with its own equilibrium. Therefore, changes may disrupt such an equilibrium with the arrival of new residents that would affect space distribution and result in social disorganisation through people movement (in/out/within the neighbourhood). Such actions may lead to the construction of new buildings or the demolition of existing structures along with the conversion of land use (physically and socially) until the neighbourhood adapts to the new changes and returns to equilibrium. Thus, neighbourhood change involves a considerable temporary turnover of residents, where restructuring the area is highly inevitable from both a physical and social perspective. Neighbourhood change is a complicated, dramatic set of physical, economic, and demographic variables. Changes are often visible through the arrival of new tenants, altered levels of investment, variation in amenity value along with quality of life connected with public facilities (such as neighbourhood schools and parks), change in the level of security and safety (associated with street gangs and criminal activities), and growing stress from higher rents and property taxes. Therefore, stakeholders need to track changes to be able to decide on effective strategies.

Abed (2020) noticed that, over the period of study, change was signified due to an influx of foreign citizens and segment losses of indigenous residents. Such



Fig. 1 Mean sustainability barrier ranks as per the key categories

disorder and chaos had a negative effect on community balance and stability, with residents forming social and cultural enclaves, thereby creating a lack of unity. Therefore, neighbourhood changes negatively affect social sustainability.

Practitioners, in the same manner, agreed with the challenge of displacement and instability of residents. Indeed, in the study of Yildiz (2015), through interviews with practitioners and users, the disruptive effect of

neighbourhood change on sustainability in general and social sustainability specifically was highlighted.

The heterogeneity and exclusion of users came next as a key barrier, with a mean of 4.24, acknowledged primarily by users and confirmed by the academics and, to a lesser extent, practitioners. From the academics' perspective, such an effect results from the structure of the design process, where Akrich (1992) argues that designers see users as homogenous entities, which is how they are represented, and envisage the design for overall groups that would experience the design in specific ways. The reason for this phenomenon is the assumed power of designers and the desire to overcome the complexity of accounting for heterogenous use (Sharif and Karvonen 2021). This silences some of the actors because their interests are not necessarily accommodated in the design process (Sharif 2016). The common thoughts of users were in line with this notion, with multiple participants stating the challenge of being situated in neighbourhoods where they had no involvement in the design or development, and in which their main option was to accommodate the local facilities offered in their daily social activities.

Among the barriers proposed to the participating groups, four were identified as the lowest and least relevant to social sustainability and were dropped from the list by unanimous agreement. These barriers included a lack of healthcare, which was not seen as a recurring issue in Jordan. Another was the lack of preservation of historic and cultural sites; the issues were found neither underserved in light of local preservation efforts, nor influential to the achievement of social sustainability. Increased racial disparity and the unfair and undemocratic political system were also dropped in consideration of the homogeneity of the Jordanian social fabric together with the political stability that the country has experienced for decades.

#### Comparison of different participant groups

Upon analysing the categorised feedback of the participating groups of academics, practitioners, and users, a comparison of their views was made to investigate areas where the feedback varied between the group(s) concerned. This was done by testing the null hypothesis "there is no significant variance in mean between the different participant groups" using the Kruskal Wallis test, and the barriers for which such hypothesis was rejected were placed under further investigation (as shown in Table 5).

From the total list of barriers, the null hypothesis was rejected for seven of them, with a significance value of ( $p < 0.05$ ). These included unpredictable resident behaviour, associated cost, inequity in sustainability implementation between different communities, unpredictability of

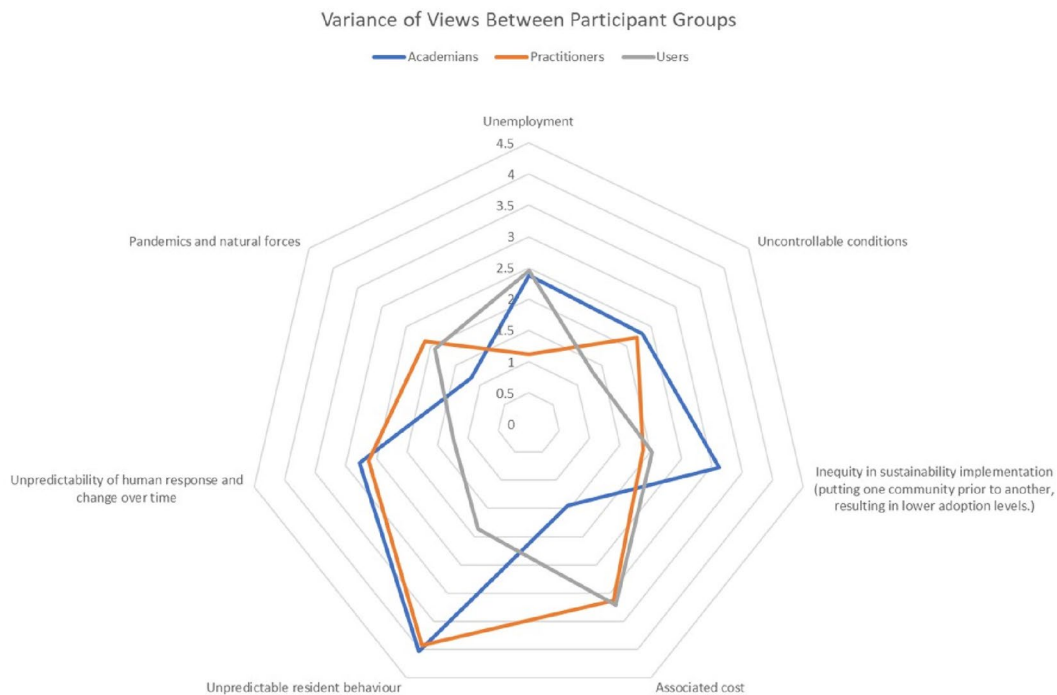
**Table 5** Barriers demonstrating difference in views between the three participant groups

#	Category	Barrier	H	Sig
1	Convenience	Unemployment	27.458	0.0000
2	Convenience	Uncontrollable conditions	17.074	0.0002
3	Equity	Inequity in sustainability implementation	21.998	0.0000
4	Involvement	Associated cost	28.137	0.0005
5	Measurement	Unpredictable resident behaviour	31.638	0.0000
6	Measurement	Unpredictability of human response and change over time	23.322	0.0001
7	Policy	Pandemics and natural forces	16.349	0.0003

human response and change over time, unemployment, uncontrollable conditions (such as climate), and pandemics and natural forces (refer to Fig. 2). The barriers for which the null hypothesis was rejected were tested through pair-wise correlations between the participant groups to check the particular reasons for such rejection.

Unpredictable resident behaviour featured varied views, with the academics and practitioners on one side, and the users on the other. Where the first two groups assigned a relatively high weight to such barriers, the users did not feel the same. Going through the qualitative views, it was seen that the first two groups focused on the long-term planning, futuristic stance over the achievement of social sustainability in terms of stability. One academic stated that "such matter requires a stability in requirements and expectations in order to be able to reliably understand and plan for social sustainability". The practitioners, in particular, were more concerned with how neighbourhood designs can cater to the long-term social sustainability, with the focus on user satisfaction, viewing the changing user behaviour as a key barrier to such proper planning and long-term alignment. The users were not in line with such a view, as their lower evaluation of this factor was influenced by two key notions. The first was the homogeneity between the user groups despite their individual differences, suggesting that the group should be viewed as one entity. The second was the responsibility of professional groups (such as planners and designers) to address the existing differences through more accommodating neighbourhood designs that can harmonise different needs and requirements, with the understanding of their susceptibility to change over time.

Associated cost was also a barrier of debate between the different participant groups. Academics regarded this barrier as less influential than the practitioners and users. This did not come as a surprise; the latter two groups would be expected to have more focus on the operational



**Fig. 2** Comparative importance of barriers with rejected hypothesis

aspects than the academics. One of the users stated, “It all sounds good, but in the end comes down to how much it costs to achieve and how it affects daily routines”. Furthermore, practitioners believed that achieving social sustainability, similar to any other form of sustainability, would entail more guidelines and regulations impacting the design and built environment, which would result mostly in cost implications that, in their view, should be controlled.

Inequity in sustainability implementation between different communities was a barrier of debate between the academics on one side, and the practitioners and users on the other. Academics placed a relatively high importance on such a barrier, focusing on a nationwide macro perspective that would not rule out the existence of social disparities in any community, driven by economic and social factors, which are bound to result in differences in sustainability implementation. “It is bound to happen and does not differ from one community to another. It is a fact that would always be there regardless of the particular reasons”, said one of the participants. Practitioners had a different view, downplaying this barrier, although by merit of the same factor. In their view, such differences, if they existed, would be contained within the different neighbourhoods, inside which they are less identifiable. This notion was close to the understanding of the user participants, who stated that individuals would care mostly about their immediate surroundings,

where a macro perspective is harder to be recognised and felt.

The unpredictability of human response and change over time was the key concern for practitioners, who ranked this barrier higher than the academics and users. Practitioners considered this factor to have a high correlation with the success of developed neighbourhood designs that would cater to the key needs of their residents. Such information would be researched by the designers in advance, where a long-term prediction of resident trends is considered important to ensure the longevity of the developed neighbourhood. As stated earlier, most users would be of the opinion that designers and regional planners are responsible for factoring any long-term change in behaviour into their designs and plans, whereas academics ruled out the unpredictability of behaviour, albeit not rejecting the concept of change over time in principle.

Unemployment was a barrier highly ranked by academics, seen as a factor that is bound to disrupt the social fabric and sustainability of the community, with detrimental effects on certain community indicators such as safety and crime rates. The practitioners and users were not of the same view, downplaying its importance for a number of reasons. Practitioners saw this as a pure economic aspect that should be viewed separately from social sustainability, whereas other indicators, such as community interests and green buildings, were more

influential. Users, on the other hand, expressed that the unemployment rate was already relatively high, due to current economic challenges. Yet, detrimental effects on the community, especially on the neighbourhood level, were seen unlikely. On the contrary, users believed that unemployment would, in some cases, raise a sentiment of support and care between the members of the same neighbourhood.

Uncontrollable conditions (such as climate), while receiving a generally lower rating among the participant group, still conveyed inter-group differences. Users placed less importance on the matter compared to academics and practitioners, reasoning that the practicality of such an element, in light of the mild weather conditions in Jordan, for example, did not pose a major barrier. Conversely, academics and practitioners considered that being part of the environment, such conditions are holistically relevant and therefore assigned a higher rating.

In general, pandemics and natural forces were another lower-ranked barrier that demonstrated inter-group differences. Considering the recent developments of the COVID-19 pandemic, practitioners and users assigned a relatively high rate in light of the social constraints it posed. Academics, on the other hand, were more attuned to the priorities of barriers based on their longevity. COVID-19, from that respect, was not regarded as a long-term or potentially recurring peril.

## Conclusion

With urban sustainability becoming a recognised necessity worldwide, developing criteria or measurement for its understanding and achievability is regarded as a key challenge to reaching this mandate. Social sustainability, in particular, could be considered one of its most challenging aspects, as it entails massive effort in developing the necessary awareness among key stakeholders—the importance of societal involvement, the need for equitable implementation, the development of adequate measures, and the articulation of relevant policies and guidelines. This research was aimed at identifying the key barriers to achieving social sustainability by obtaining the combined views of a group of academics, practitioners, and end users in order to understand the relative importance of the investigated barriers. With the subject matter being an interdisciplinary concern, the views obtained from the different participants involved were bound to differ.

The multiplicity of the social sustainability concept, its measurability, and residents' displacement and movement were identified as the most influential barriers to social sustainability. Such matters were assigned a higher weight in light of the dynamics and requirements of the Jordanian local context, characterised by relatively early

identification of the concept, the lack of formalised and identified measurement indicators, and the rapid urban development witnessed during the past decade. On the other hand, aspects such as uncontrollable climatic conditions, pandemics, and natural perils were ranked as the least important. These can also relate to the localised social context of the country, where the local social fabric was seen as less influenced by such factors; more relevance was assigned to aspects pertaining to raising levels of awareness and strengthening ties among community members.

The investigated differences between the views of the three groups of participants provided a number of significant insights. First, the different groups inevitably attained diverse views with regard to the investigated social sustainability barriers, with academics' and practitioners' views aligning more frequently in comparison to end users. This revealed a more theoretical, macro view of the concept attained by academics and practitioners compared to the users, who appreciated aspects that resonated more with their daily life routines. Second, with the difference in views featuring between the considered participant groups, certain agreements were sought with regard to the key importance of aspects such as awareness among the key stakeholders, and the lowest importance of certain aspects, with some being eliminated eventually from aspects finally identified, such as the democratic practices as well as healthcare. These aspects provide insights on certain prevalent notions within the local context, featuring persisting barriers in the development of the necessary awareness and buy-in within the community for relatively new concepts; the lesser involvement in politics in comparison to everyday concerns; and the higher focus on practical aspects in favour of theoretical or abstract notions. This resonates mainly with the key issues currently faced in Jordan, with its lack of available resources; the need for further investment in uplifting the quality of life for the citizens and residents assumes prime focus. Third, regardless of the different opinions featured, the collaboration of the three participant groups resulted in the joint identification of a number of key aspects that are bound to affect the adoption of social sustainability in Jordan. Such a collective feedback approach proved to be significant in taking a further step in articulating potential country-wide criteria that can guide a rising adoption trend toward achieving social sustainability.

The previous research on the topic, while quite valuable in advancing the discussion on social sustainability barriers, have been faced with limitations pertaining to a lack of focus on social sustainability (Djokoto et al. 2014; Durdyev et al. 2018; Marsh et al. 2020; Tafazoli et al. 2019; Tokbolat et al. 2020; Williams and Dair

2007), confinement to desk research (Guzman et al. 2017; Sampson 2017; Soma et al. 2018; Verma and Raghubanshi 2018), focus on particular cases (Ryu et al. 2018; Zhang and Lu 2016; Zhu et al. 2020). Or restriction of involved stakeholders (Ohene et al. 2019; Zhang and Lu 2016). This research, while building on these studies, was able to achieve a number of advancements and contributions by realising the contestation of the social sustainability concept in an attempt to acquire a more comprehensive understanding of barriers of social sustainability in a specific urban context and to unleash other parts of the concept complexity. Firstly, it provided a detailed account of social sustainability barriers in the urban context in particular, a comprehensive and elaborate framework that has rarely been tackled in such detail, albeit within a particular context. Secondly, it facilitated the accumulated views and perspectives on the barriers to social sustainability from a variant base of stakeholders, rendering such views with less bias than previous studies that focused on experts or a particular stakeholder category. Thirdly, and for further diligence, the study attempted to probe the opinion trends in between the different categories of stakeholders and the forms of their alignment and differences, where such matters are considered informative to understanding the multi-dimensional, multi-faceted perspectives over social sustainability, bringing us closer to a more successful approach to its achievement.

While the research provided valuable insights pertaining to the barriers to social sustainability, it was nevertheless not free of limitations. The contestation of the social sustainability concept could be tackled through multiple attempts that will always strive to unleash part of its complexity while other aspects of such complexity are still to be revealed. One limitation was in situating the power issues that would potentially arise in this type of research, despite the effort exerted to minimise their effect as described in the methodology. Indeed, Flyvbjerg (2001, 2004) argued that, even when contextual-relevant knowledge is sought, power relations amongst the concerned stakeholders are bound to occur, which could directly or indirectly influence the eventual outcomes. While differences in opinion should be encouraged among different participant groups, one should remain aware of their power over participant views on matters subject to contestation. Further emphasis on such power issues could have provided more depth into understanding the underlying forces driving the different perceptions of social sustainability and its associated barriers. A second limitation resided in the contextual nature of the research which, although added value in exploring the specificity of the barriers to social sustainability and their dependence on the particular context investigated, does not provide a basis for generalising its preliminary outcomes. A

third limitation was the inability of the study to reflect on the interconnectedness of the aspects and barriers of social sustainability to the ones related to environmental and economic sustainability. Such interrelations, or sometimes conflicts, could have better addressed the multi-dimensionality of the research subject matter as a single aspect of sustainability, such as the social, cannot be seen in complete separation from its other crucial aspects. To support the sought generalisation and interconnectedness, further research is necessary and recommended to broaden its findings, covering more cases and participant groups and revisiting the interrelations of the social, environmental, and economic dimensions of sustainability to assist in reaching outcomes that can be further addressed, and potentially solved, within the context of Jordan.

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