This is a pre-copy-editing, author-produced PDF of an article accepted following peer review for publication in *Cities*.

Barriers to Employing e-Participation in the Iranian Planning System

Authors: Sina Shahab[1], Baran Bagheri[2] and Ruth Potts[1]

[1.] *School of Geography and Planning, Cardiff University, Cardiff, UK*
[2.] *Faculty of Art and Architecture, Tarbiat Modares University, Tehran, Iran*

E-mail: shahabs@cardiff.ac.uk, baran.bagheri@modares.ac.ir, pottsr1@cardiff.ac.uk

Abstract

e-Participation has been employed by many planning authorities across the world to facilitate the engagement of people in decision-making processes. Previous studies on e-participation have shown that this form of participation can increase the level of flexibility and inclusiveness of public engagements, make government interventions more responsive to citizens' needs, and increase government accountability. While there is a growing use of e-participation in the planning systems of developed countries, its application in developing countries has remained very limited. This paper explores the barriers to employing e-participation in the context of a developing country's planning system, using Iran as a case study. We have conducted interviews with different planning actors, including both public- and private-sector planners, to investigate what they perceive as such barriers. The results of this study show that the primary barriers to e-participation in Iran are attitudes towards participation, the structure and culture of the planning system, and staff capacity to engage the public through e-participation. The paper concludes with a series of recommendations regarding how these barriers can be overcome.

Keywords: e-Participation, Planning, Information and Communication Technologies, Barriers, Iran.

1. Introduction

Information and communication technologies (ICTs) have become an integral feature in the practices of planners in recent decades. Technological advances in combination with increased dispersion of the internet mean that a plethora of ICTs now exist that enable planners to better communicate, collaborate, and consult, but also collect, analyse, and interpret data (Riggs and Gordon, 2015, Stratigea et al., 2015, Ahmadpoor and Shahab, 2019, Allam and Newman, 2018, Shahab and Allam, 2020). While evidence suggests that planners have been historically uneven in their adoption of various ICTs, there is a large body of literature extolling the potential and measured benefits of using ICTs in planning practice (Afzalan and Evans-Cowley, 2015, Ahmadpoor and Smith, 2020, Russo et al., 2018, Saad-Sulonen, 2014). Beyond argued improvements in bureaucratic speed, efficiency, legitimacy, and transparency (Thakuriah et al., 2016, Amati, 2011), the planning literature particularly emphasises the role of internet-enabled ICTs in reducing barriers to public participation and increase the number, type, and interactivity of stakeholders with planning issues (Fredericks and Foth, 2013, Kahila-Tani et al., 2019, Wilson et al., 2017).

At its core, e-participation is characterised by the use of ICTs to connect individuals with each other, governance processes, and their elected representatives (Macintosh, 2006). The ubiquity of the internet and mobile ICTs in contemporary society has not only opened the gates for decision-makers to better connect with their constituents, but also empowered stakeholders to interact and engage with planners and planning issues more than ever before (Wilson et al., 2017). Internationally, the adoption of e-participation has steadily increased

as a result of growing potential engagement opportunities with heterogenous and disparate communities in real time combined with the low cost of digitally engaging with communities and individuals (Firmstone and Coleman, 2015, Fredericks and Foth, 2013). Despite increasing availability and usefulness of e-participation, communities embracing the internet as a new way to engage with each other and local planning authorities on urban issues, and numerous potential benefits, the implementation of e-participation remains uneven (Ertiö and Bhagwatwar, 2017, Lin and Geertman, 2019, Slotterback, 2011).

e-Participation has proliferated globally and there has been a rapid increase in its applications. However, a survey conducted by United Nations (2018) on e-government found that there is a significant disparity in the use of e-participation in developed and developing countries. Moreover, while there is an abundance of literature focussed on e-participation applications in developed countries such as Australia, Finland, and the USA (Pilvi et al., 2018, Cleland et al., 2012, Legard et al., 2019, Zolotov et al., 2018), the findings of these studies are often not relevant or applicable to the very different socio-political contexts of developing countries. The implementation of e-participation in developing countries is only beginning to be explored in depth (Ransome et al., 2018, Åström et al., 2012, Wahid and Sæbø, 2014). Consequently, there remains a limited and incomplete understanding of the current levels of use of e-participation, and the challenges involved in implementing them in the context of developing countries.

The employment of ICTs in general, and e-participation in particular, in order to achieve planning objectives has gain a considerable attention in the discourse of urban planners and managers in Iran. However, other than limited and temporary applications, for example in Isfahan and Semnan Municipalities, this form of public participation has not been systematically applied to the process of decision-making in Iran. This paper explores: a) the barriers to employing e-participation in the context of urban planning in Iran, with an emphasis on Tehran, the capital city; and b) the ways in which decision-makers can tackle these barriers.

As an upper-middle-income economy (World Bank, 2020), Iran is a particularly interesting case, as it has a highly central and top-down planning system, in which the major decisions for planning and designing cities are often made without significant public engagement. With planned interventions into urban environments that date back to 1920s, Iran has a relatively long history of modern urban planning, compared to many other developing countries (Habibi, 2006). To develop a better understanding of the opportunities as well as the barriers to implementing e-participation in such a planning system, we conducted in-depth interviews with 43 planning stakeholders in Tehran, Iran. The paper begins with a discussion of e-participation as an application of ICTs in planning practice and its related advantages and challenges. This is followed by a brief discussion of public participation in the context of urban planning and development in Iran. Then, the utilised empirical methodology is presented. Using the qualitative data extracted from the in-depth interviews, the paper goes on to analyse the factors that the interviewed stakeholders perceive as the barriers to employing e-participation in the Iranian planning system. Finally, the paper concludes with recommendations on the ways in which planners can tackle the identified barriers and implement e-participation to achieve planning objectives.

2. e-Participation: An Application of ICTs in Planning Practice

The rapid evolution of web technologies in the 1990s and 2000s set the scene for the progressive transition of many traditionally face-to-face planning activities online with the emergence of e-government and e-planning (Amati, 2011, Horelli, 2013, Allam and Dhunny, 2019). The rapid evolution of web-based platforms and diffusion of the internet revealed new opportunities for planners to communicate and interact with communities in

completely new ways (Houghton et al., 2014). A plethora of e-participation platforms, tools, and frameworks are outlined in the literature as available to planners and communities, and range from simplistic website forms to social media, complex planning support systems, and virtual reality-based e-participation (Porwol and Ojo, 2019, Pelzer et al., 2014, Kleinhans et al., 2015). While traditional face-to-face public participation methods (e.g. town hall meetings) are often limited spatially, temporally, and in the number of participants, e-participation enables participants to engage with planning issues flexibly when and where it suits them (Wallin et al., 2012). e-Participation is also frequently framed in the planning literature as a means of engaging with traditionally underrepresented stakeholder groups and enhancing the scope and scale of stakeholders' engagement with planning issues, whilst simultaneously reducing the costs associated with face-to-face public participation (Wirtz et al., 2018, Shahab and Viallon, 2020, Evans-Cowley and Manta Conroy, 2006).

Despite the hype around e-participation in the planning literature, applications in practice remain uneven, and many challenges remain engaging with the public online (Wilson et al., 2017). Table 1 presents a summary of these challenges discussed by different scholars. The e-participation literature categorises such challenges as either planning-authority or citizen oriented, reflecting the primary two directions of information flow and instigation of e-participation in planning processes (Evans-Cowley, 2010, Williamson and Ruming, 2015). Planning authorities face a host of barriers limiting their engagement with e-participation such as institutional support, cost of software/hardware, staff skills, availability of data, and the usefulness of available software to the tasks required in e-participation (Slotterback, 2011, Pelzer, 2017). The anonymity of the internet combined with the rapid rate of information creation and distribution also provide useful explanation for planners' limited applications of e-participation and other ICTs in practice. Users of social media platforms such as Twitter do not have to verify their identity and can present themselves with pseudonyms leading to questions of the legitimacy of certain users and their inputs (Williamson and Parolin, 2013). The real-time production of dialogue also risks planners being overwhelmed by the size of datasets, and the rate at which they can be created, whilst also leading to a disconnect between the discourses that evolve online, and communities offline (Galbraith et al., 2013, Cleland et al., 2012).

Table 1: Summary of challenges in using ICTs for e-participation

	Challenge	Case Studies	Sources
Planning Authorities	The capacity of individuals to use ICTs	USA, Australia	Slotterback (2011), Williamson and Parolin (2012)
	Lack of upper management support for e-participation	USA, Northern Ireland	Cleland et al. (2012), Slotterback (2011)
	Availability of ICT infrastructure in the municipality	Sweden, Nepal, Indonesia, South Africa	Åström and Granberg (2008), Sæbø et al. (2008), Sharma et al. (2014), Sri and Melissa (2012), Thakur and Singh (2012)
	Monetary cost of purchasing/ developing/maintaining software/ hardware	USA, Northern Ireland	Cleland et al. (2012), Slotterback (2011)
	Data availability	Australia	Pettit et al. (2018)
	Usefulness of e-participation (fit for purpose)	Netherlands	Pelzer (2017)
	Time cost associated with preparing to use software/ hardware/ data resources	USA,	Slotterback (2011)

	Determining useful responses from a large number of responses	USA, Northern Ireland	Cleland et al. (2012), Galbraith et al. (2013), Romsdahl (2005)
	Lack of awareness of online issue-based community groups	USA	Evans-Cowley and Hollander (2010)
	Ability to judge the legitimacy of submissions due to high levels of anonymity	USA	Williamson and Parolin (2013)
	Engaging users actively rather than passively in e-participation (lack of participation)	Europe	Bicking et al. (2011), Koussouris et al. (2011)
	Disconnect between online discourses and those developed through face-to-face channels	Sweden	Sæbø et al. (2008)
The Public	Digital divide	UK, Brazil, Greece, Thailand	Maia Ribeiro et al. (2018), Gounopoulos et al. (2020), Setthasuravich and Kato (2020), Philip et al. (2017)
	Awareness of e-participation used by different authorities/groups for engagement	Germany	Vignoli et al. (2015)
	Feeling disconnected from decision-making due to low levels of meaningful responses from governments when communities engage	Sweden, Northern Ireland,	Cleland et al. (2012), Åström et al. (2013), Jensen (2003)
	User-friendliness and complexity of e-participation	Sweden	Åström et al. (2013)
	Privacy	USA	Romsdahl (2005)
	Information overload	USA	Romsdahl (2005)

The e-planning literature also warns that e-participation is not be the panacea to the limitations of face-to-face public participation. It warns that depending on the e-participation approach it can support exclusion, manipulation, and therapy just as much as it can support citizen empowerment, and democratisation of planning processes (Yigitcanlar, 2006). Mirroring this, empirical studies show that citizens are wary to participate in e-participation where they feel their voices are likely to be ignored, or meaningfully engaged with by planning authorities (Cleland et al., 2012, Åström et al., 2013). Critically, citizen engagement with e-participation is primarily driven by their access to ICTs that would enable their participation, and the skills needed to use such ICTs (Maia Ribeiro et al., 2018, Gounopoulos et al., 2020).

While there is a considerable body of literature espousing the democratic benefits and opportunities associated with e-participation, the use of ICTs in participation processes remains controversial and disputed. Post-political planning scholars raise concerns about the legitimacy, transparency, and genuine intentions of engagement through e-participation by planning authorities (Van Wymeersch et al., 2018, Legacy et al., 2019, Inch, 2014). Other scholars argue that there is a risk e-participation processes could be manipulated by individuals or groups with alternate and possibly nefarious interests (Bessi and Ferrara, 2016, Hegelich and Janetzko, 2016), or authoritarian governments seeking to exclude certain groups or perspectives (He et al., 2017). Challenging the assumption that e-participation enhances democratic expression, Susha and Grönlund (2012, p.373) argue that e-participation can serve as 'an effective means for non-democratic purposes' and potentially reduce the transparency, accountability and validity of planning processes. This builds on critiques of government-led public participation, which argue democratic and

communicative framings of planning processes often fail to acknowledge or resolve power inequities (Legacy et al., 2019, Clifford, 2013, Arnstein, 1969). Thorpe (2017) also suggests that participation processes can be carefully managed to give the perception of legitimacy to decisions made by planning authorities ahead of and outside formal public participation processes, whilst also 'minimising the potential for those with conflicting views to be heard' (p. 568). Ultimately, the political and social context of a planning system, and the degree to which there is a genuine commitment by planning authorities to engage with communities meaningfully will influence the degree to which e-participation is democratic and genuine.

A review of the e-participation literature also reveals a clear bias towards exploring e-participation applications and challenges faced in developed countries, and a much more limited but emerging body exploring applications and challenges using e-participation in developing countries (See Table 1). The digital divide is cited frequently as a barrier to undertaking e-participation in both developed and developing countries, reflecting socio-economic conditions, education, and demographics (Philip et al., 2017, Setthasuravich and Kato, 2020, Maia Ribeiro et al., 2018). The term digital divide is used to describe uneven skills and/or access to ICTs (and therefore exclusion from digital activities and processes), and remains a major barrier for planners and the public to engage with e-participation (Yigitcanlar, 2006). The increased prevalence and distribution of internet-connected mobile phones has decreased the digital divide for many, however the cost of and skills required to use such devices may prove inhibitive for certain socio-economic and age groups, further perpetuating exclusion (Ertiö et al., 2016, Maia Ribeiro et al., 2018). Moreover, while citizens in certain areas within developed countries may struggle to access the internet and other ICTs, the reality in many developing countries is that digital infrastructure remains in many instances unreliable, unevenly developed, and expensive for the general population (Maia Ribeiro et al., 2018, Dini and Sæbø, 2016). Consequently, the digital divide may further exacerbate inequalities and exclusion in planning systems where access to and skills using ICTs are uneven.

3. Public Participation in the Context of Urban Planning and Development in Iran

Iran has a centralised and top-down planning system (Rasoolimanesh et al., 2014, Dienel et al., 2017). Despite minor changes and developments over the last few decades, the highly centralised nature of planning system in Iran has remained relatively unchanged. The dominant approach to planning is still a top-down approach, in which the Ministry of Roads and Urban Development commissions private-sector planning consultants, mostly based in Tehran, to prepare development plans for different cities and towns in the country. The prepared plans are provided to municipalities for implementation. Municipalities consult development plans when considering development applications, and any changes to the plan or zoning is subject to the approval of a committee, known as 'Article 5 Commission of the Urban Planning Supreme Council', in each city that consists of local, provincial, or national authorities as well as the relevant private-sector planning consultants.

In the process of preparing development plans, the engagement of the public, and even municipalities and city councils, remain rather limited. Plans and/or development proposals are not exhibited to citizens, and most people will only learn about the details of plans when they intend to develop their properties. In other words, urban development plans are prepared 'for people' and not 'with people' (Jahani Shakib et al., 2014). In addition, there is limited consistency and continuity in evaluating the outcomes of the plans. These issues have resulted in low degrees of implementation of development plans, with many of their proposals that have not realised 'on the ground' (Taghaddossi, 2010). For more information

on Iranian planning system see Mashhadi Moghaddam and Rafieian (2020), Farhoodi et al. (2009), and Dienel et al. (2017).

The 1979 constitution and relevant legal frameworks emphasise public participation in decision-making processes in Iran. However, scholars argue that the limited public participation is mainly a result of the reluctance of public authorities, rather than a lack of legal frameworks (Kahzadi et al., 2016). Farhoodi et al. (2009) argue that the demands and politics of central government seem to be the main priorities of urban planning and development in Iran, instead of the needs of the public and municipalities. In such planning system, the real role or contribution of the private-sector planners and the extent to which they can influence decisions is 'neither clear nor properly explained' (p.337). The studies also show that there is not a statistically meaningful difference between the participation of men and women (Sharepour et al., 2015). One of the most recent developments in this regard has been the introduction of participatory processes in the urban redevelopment of central and historical neighbourhoods of Tehran and other large cities. In these redevelopment projects, property owners are invited by private-sector planning consultants, which are assigned to each neighbourhood by municipalities, to participate in the physical improvements of their properties and surrounding urban blocks through a participatory land readjustment or assemblage (Erfani and Roe, 2020). Despite the engagement of property owners, other stakeholders often remain absent in these participatory processes.

In this context, several planning practitioners and urban managers advocate the potential of e-participation to improve the participatory dimensions of the decision-making processes in the planning system in Iran (Daneshpour and Daneshpour, 2012, Roudsaz et al., 2018, Modanlou, 2017). There have also been a few experiences with this form of participation in the country. For example, the municipality of Semnan has developed a mobile-based application, called 137[1], to facilitate the communication between municipal authorities and the citizens (Semnan Municipality, 2020). People can use this application to report any issues within their neighbourhoods, follow up their requests and applications, make payments, and give feedback on the municipality's proposals and activities. The municipality provides discounted public transport tickets and reduced bin collection fees for the mobile-based application users to encourage its use (IMNA, 2020a). Similarly, the local authorities in the city of Isfahan have attempted to receive people's inputs and opinions on the proposals of the new development plan using online platforms and social media (Isfahan Municipality, 2020). As of September 2020, the municipality has organised 45 online meetings with a total of 560 citizens who participated to discuss the future plans and proposals (IMNA, 2020b). Despite these attempts and the desire for employing this form of public participation, the use of e-participation has remained very limited in the real life and is indeed in its nascent stage.

There is a very limited body of academic literature exploring public participation in planning processes in Iran (Mahdavinejad and Amini, 2011, Farzaneh, 2011). This body of literature implies that there is a range of persistent barriers to public participation in the country. Barriers discussed include insufficient legal and institutional infrastructures to support public participation, political culture and will, costs of public participation, and anti-participation culture in communities (Dienel et al., 2017, Forouhar and Forouhar, 2020, Nodehi and Fouladinasab, 2017).There are currently no studies exploring the use of e-participation in an Iranian planning context, suggesting a clear research gap.

[1] . 137 is the telephone number to contact the municipality of Semnan and is known by citizens as a way to communicate with the municipal authorities.

4. Methodology

We used semi-structured interviews to collect qualitative data on the perception of planners regarding the barriers of implementing e-participation the context of urban Planning and development in Tehran, Iran. A semi-structured interview approach was chosen for this research, as this type of interview enabled the authors to tailor the questions to the participants' positions, experiences, and interview contexts (May, 2011, Galletta, 2013). Interviews were conducted with 43 participants between April and June 2020. Based on the normative concept of data saturation, data collection was continued until no new additional data or no more emergent patterns were being found (Green and Thorogood, 2013, Gaskell, 2000). Interviews lasted between 30 and 60 minutes. These participants included 19 public-sector planners, 15 private-sector planners, and 9 academic researchers. Among the participants, 27 people were senior planners with more than 10 years of professional experience, while the others had less than 10 years of experience in planning practice. Although all participants had a good level of familiarity with participatory processes in planning, only 9 participants had previous experience with e-participation. Also, 8 out of 43 interview participants were women. After identifying and interviewing a number of key stakeholders in the context of urban planning in Tehran, the snowball sampling technique was used to identify other potential interviewees. Thus, the interviewed participants were asked to provide information helpful for locating and contacting other members of the target populations (Sarantakos, 2012, Thompson, 2012).

Participants were asked open-ended questions to provide the maximum flexibility for structuring their comments (Aberbach and Rockman, 2002). All of the interviews were conducted over the phone, given the face-to-face interviews were not possible due to the COVID-19 pandemic. We first asked the interviewees about their general opinion on the role of participation in the planning decision-making processes. Then, we asked several questions regarding e-participation and the factors that the interviewees perceive as the barriers to successfully implementing e-participation in the planning system in Iran. Finally, the interviewees had the opportunity to discuss the ways to which decision-makers can tackle the identified barriers. The authors transcribed the audio-recorded interviews verbatim. The interviews were coded and analysed using thematic analysis via the qualitative data analysis software MAXQDA. Thematic analysis is suitable for this study as it is a useful method for understanding the perspective of different interview participants and emphasising the similarities and differences within their responses (Nowell et al., 2017). An inductive approach was used, in which the researchers first searched for patterns and relationships in the collected interview responses and then compared the identified patterns with the existing theories in the literature (Woiceshyn and Daellenbach, 2018, Gioia et al., 2012). Using this approach not only helped the researchers to avoid generalising the existing theories, which are largely developed based on the developed countries' contexts, to the context of a developing country, but also allowed to form new theories and explanations that are most relevant to the Iranian planning system.

5. Barriers to Employing e-Participation in the Iranian Planning System

The factors that the interviewed stakeholders perceive as the barriers to utilising e-participation in the Iranian planning system can be grouped into seven main categories: structure of the planning system, trust and confidence, knowledge and awareness, interests, infrastructure, leadership, and costs. An outline of these barriers concerning both planning authorities and the public is presented in Table 2 and explored further below.

Table 2: Summary of barriers to employing e-participation in the Iranian planning system

Category of Barriers	Planning Authorities	The Public
Structure of the planning system	• General attitude towards (lack of) public participation • Godfathering and top-down attitude • Conservative attitude towards the use of ICTs	• Lack of previous experience of formal public engagement • Strong preference for face-to-face interactions and follow ups • Relational approach towards problem-solving
Trust and Confidence	• Potential opportunistic behaviour of public participants • Lack of confidence regarding the effectiveness of e-participation • Concerns surrounding creating more inequalities	• Privacy concerns • Lack of confidence regarding their effectiveness • Misunderstanding surrounding the genuine aims of e-participation
Knowledge and Awareness	• Lack of guidelines and instructions • Lack of trainings and educational workshops • Limited capacity of individuals to use ICTs	• Lack of trainings and educational workshops • Limited capacity of individuals to use ICTs, particularly among elderly people
Interests	• Reluctancy towards increasing the transparency of decision-making processes • Reluctancy to be responsive to the public	• Conflict of interests between people's need and manager's desire
Infrastructure	• Issues surrounding access to reliable internet	• Issues surrounding access to reliable internet
Costs	• Direct monetary costs • Time-related costs	
Leadership	• Lack of upper management support • Short-term attitude of urban managers who prioritise short and quick projects • Lack of enabling legislation	

5.1. Structure of the planning system

Almost all interviewees mentioned the existing structure of the planning system in Iran as one of the major barriers to realising e-participation, and public participation in general. Such structural issues affect both planning authorities and the public. According to the interviews, the general top-down approach of the planning authorities to tackling urban planning issues does not welcome participatory initiatives, such as e-participation. One of the private-sector planners pointed out that "*some planners might think that as the elites of society, they know what is best for the public and city.*" Many of planning interventions in Iran are carried out without meaningful involvement on the public, and many planners have not yet acknowledged the importance of public participation in achieving planning objectives. 14 interviewees also mentioned path dependency, which refers to the tendency of planners to continue the existing processes and routines. Such path dependency has made planning authorities reluctant to commit to change for different reasons including the cost implications that are discussed in more details in the following sections. This reiterates the

findings of Nodehi and Fouladinasab (2017) regarding political culture, costs, and institutional frameworks within government limiting the uptake of public participation. While the e-participation literature recognises a lack of upper management support within planning authorities as a barrier to the adoption of e-participation (Cleland et al., 2012, Slotterback, 2011), this finding suggests that broader institutional structures and perspectives on the value of community contributions to planning processes are keystone elements in supporting the integration of meaningful participation, whether technologically supported or face-to-face.

The existing structure of the planning system in Iran does not offer many opportunities for the public to engage with the decision-making processes. Unsurprisingly in such a planning system, most planners and citizens do not have any previous experience with participatory decision-making processes. This lack of previous experience with formal public participation, which is the direct consequence of the top-down planning approach in the country, has been mentioned by nine interviewees as a barrier to employing e-participation. According to the interviews, people's preference for face-to-face interactions is another factor that hinders the implementation of e-participation in Iran. One of the interviewed public-sector planners stated that "*many people prefer face-to-face interactions over those online, as they believe such interactions are more effective in reaching what they are after*". Similarly, eight interviewees pointed out that culturally there is a tendency towards a relational approach to problem-solving. This relational approach requires face-to-face and direct interactions with planning authorities to ensure, for example, the delivery of certain services. Arguably this means that people who used to engage in direct and in-person interactions with planning authorities might not necessarily support online interactions that come with e-participation and may feel increasingly disconnected from decision-making, as opposed to engaged (Åström et al., 2013, Jensen, 2003).

5.2. Trust and Confidence

The issues surrounding trust between planning authorities and the public, as well as confidence in the effectiveness of e-participation, were frequently mentioned in the interviews as perceived obstacles to implementing e-participation in the Iranian planning system. From the perspective of planning authorities, there are concerns regarding the increased levels of potential for people's opportunistic behaviours. One of the interviewed planning authorities stated that

> "*people often only get engaged in participatory processes to achieve their own individual goals, rather than the collective ones. They might even provide misleading or incomplete information to pursue their individual interests.*"

This statement suggests that the participant frames opposition to planning as individualistic and selfish (in the vein of NIMBYism), undermining potentially legitimate arguments against planning policies or projects, and reinforcing the potential risk of planning authorities giving 'little attention to the preferences of citizens in participatory processes' (Thorpe, 2017, p. 568).

Moreover, six interviewees argued that planning authorities might not be confident regarding the effectiveness of e-participation practices in achieving their claimed objectives. For example, one of the interviewed planners reiterated commonly cited issues surrounding the digital divide reiterating one of the most commonly cited barriers to e-participation in the literature (Gounopoulos et al., 2020, Maia Ribeiro et al., 2018, Sæbø et al., 2008). Interviewees argued that e-participation might not be the most inclusive form of public participation, referring to low-income households, people living in informal settlements, and people with lower levels of electronic literacy. In other words, there are concerns around representativeness of people who can engage in e-participation, while other groups might be excluded or underrepresented. One of the interviewed urban managers also raised concerns

regarding the potential for systematic errors in e-participation that might lead to disappointment or frustration among participants, which Cleland et al. (2012) argued could further reduce people's inclination to engage with planning processes in the future.

From the perspective of the public, interviewees expressed concerns around the privacy of actions in e-participation. They argued that many people might associate e-participation with providing written texts or comments on an online platform that they do not necessarily know how and by whom will be addressed. In addition, there are concerns surrounding the genuine aims and/or effectiveness of e-participation. People might think of such initiatives as a form of fundraising, in which the urban managers hope to receive financial contributions from the public, for example, for urban redevelopment projects. One of the members of Tehran City Council stated that

> *"people have some misunderstandings regarding the participatory processes. Some might think we aim to collect their information for the purposes of taxation or city charges."*

Also, interviewees suggested people might not be entirely confident that their inputs or comments might really be incorporated into the decision-making processes and make a real change. The public thereby might not fully trust the e-participation process and take a rather conservative approach towards it. This emphasises the risk of e-participation processes being used to placate or manipulate people (Arnstein, 1969), rather than meaningfully engage with them and their perspectives, and requires consideration of how such processes can be not only inclusive, but also transparent in their purpose, intentions and use of data.

5.3. Knowledge and Awareness

Echoing the findings of Slotterback (2011) and Williamson and Parolin (2012), limited knowledge and awareness of e-participation was mentioned by several interviewees as a barrier to implementing this form of participation. The interviewees were not aware of any guidelines or instructions on how to execute e-participation in their decision-making processes. One of the interviewed planners in Tehran municipality highlighted this point by stating

> *"lack of clear guidelines on how to design, implement, and evaluate e-participation practices makes the use of such initiatives by public authorities almost impossible."*

In addition, there have not been any trainings and educational workshops on the use of ICTs in the planning practices or day-to-day urban management matters. It is thereby expected that the general awareness of ICTs and their potentials has remained rather limited among the planning authorities. One of the interviewed public-sector planners mentioned that "*given we do not have substantial previous experience with e-participation, we are not quite sure about the capacity of our team for running it.*" Five interviewees also argued that not all planning authorities might feel comfortable to use ICTs in a professional level. The same applies to the public, for example some elderly people might have a limited capacity to use ICTs, or access to digital devices (Gounopoulos et al., 2020, Komito, 2005, Maia Ribeiro et al., 2018, Sæbø et al., 2008, Yigitcanlar, 2006).

5.4. Interests

Five interviewed planners mentioned the issues surrounding the incompatibility of the concerns or aims of planning authorities and the public as another barrier. A private-sector planner, for instance, pointed out that

> *"e-participation like any other form of public participation increases the levels of transparency and accountability in planning and decision-making processes. This is not necessarily what the urban managers want. Therefore, they might not support it."*

In other words, given e-participation has the potential to make decision-makers more responsive to the public and show the shortcomings of the decisions clearer, there might be a degree of reluctancy on the side of public planning authorities to adapt and implement such initiatives. Such a challenge was not reflected in the e-participation literature, suggesting this may be particularly relevant in a developing context. In addition, a number of the urban managers perceive implementing e-participation as a time-consuming activity which adds up to their existing administrative workload and might find it more of an extra, than a necessity. One of the interviewed planning authorities stated that

> *"e-participation creates more work on our side and might negatively affect the speed of decision-making processes, whilst consequently leading to more issues."*

Similarly, an interviewee mentioned that "*we might receive too many comments, in which due to our limited capacity, we would be unable to respond to all. And that could reduce the satisfaction of the public.*" While this challenge is not unique to developing countries (Cleland et al., 2012, Galbraith et al., 2013), arguably the time and energy costs of interpreting and synthesising large volumes of responses are likely to be felt more heavily by planning authorities in developing countries such as Iran due to their already limited resources, and capacities.

5.5. Infrastructure

Issues surrounding access to reliable internet were mentioned by eight interviewees as a barrier to employing e-participation in the Iranian planning system. While planning authorities and most people living in major cities have access to internet and digital devices, this is not necessarily the case for all areas of the country. Many people who live in informal settlements and low-income neighbourhoods do not have the infrastructure required for internet connections or the financial resources to purchase digital devices, perpetuating the digital divide between cities and rural areas described by (Maia Ribeiro et al., 2018). One of the interviewed private-sector planners pointed out that

> *"some [public-sector] planners in marginal and small towns might not even have the basic digital equipment like computers. In such a context that still operates a traditional paper-based bureaucracy, the digital initiatives like e-participation are not feasible."*

In addition, as four of the interviewees mentioned, a number of main social media, such as Facebook and Twitter, are not available in the country, which has limited the capacity of such media to be used by urban planners and managers. The most commonly used social media platforms in Iran are Telegram and Instagram[2], which provide considerable potential to be used for e-participation purposes.

5.6. Costs

Seven interviewees argued that the costs associated with designing and implementing e-participation is another obstacle to realising this form of participation. Such costs include both direct monetary costs and time-related costs (Shahab et al., 2018a, Shahab et al., 2018b). The direct monetary costs are those costs that arise from the purchase of required services and products, for example when the design and support of a mobile application is outsourced to a private digital company. The time-related costs concern the costs arising from the staff hours which deals with the design and implementation of e-participation. As mentioned previously, eight interviewees argued that incorporating e-participation into planning decision-making processes can increase the time required for preparing urban development projects and thereby make them more costly. Concerns surrounding the costs of engaging with communities are not unique to discussions of e-participation, and in fact

2. As of October 2020

Forouhar and Forouhar (2020) similarly found that the cost of public participation remains a barrier to its application in Iran.

5.7. Leadership

Incorporating e-participation into planning decision-making processes requires leadership. So far, there has not been any strong top-down support for implementing e-participation in the Iranian planning system. This is evident in the lack of enabling legislation or guidelines and instructions for the use of this form of public participation. The general attitude of urban managers was also mentioned by 13 interviewees in this regard. One of the interviewees pointed out that

> *"the turnover of the urban managers in Iran is high. This has led to a short-term attitude of managers; they prioritise shorter and quicker projects over longer and more fundamental interventions."*

In this context, initiatives like e-participation are seen as a hassle that makes the delivery of urban projects more time-consuming or difficult. Such findings underscore the need to consider the usefulness of different tools for engaging with the public through e-participation, and whether they are appropriate for the questions being asked, user-friendly for the public and planning authorities, and produce relevant outputs to feed back into decision-making processes (Pelzer, 2017).

6. Summary and Conclusion

Information and communication technologies have increasingly been used by planning practitioners in both public and private sectors across the world. One of the applications of such technologies in urban planning and management is e-participation that facilitates the connection of individuals not only with each other but also with planning authorities and/or their elected representatives in the local level. While there is an increasing number of studies on the application of e-participation in the context of planning in developed countries, there has been very limited research on e-participation and its potentials and barriers in developing countries. This research is an attempt to address this gap through exploring the barriers to implementing e-participation in urban planning and development in Iran. We conducted interviews with public- and private-sector planners and classified the factors that they perceive as such barriers into seven main categories, including structure of the planning system, trust and confidence, knowledge and awareness, interests, infrastructure, costs, and leadership. Overall, the participants were supportive of implementing e-participation in urban planning and development in Iran and identified various benefits of such implementation. However, they put more emphasis on the challenges and barriers to employing e-participation, particularly in relation to the structural issues within the Iranian planning system.

The findings above reiterate many of the known challenges of adopting e-participation discussed in developed country case studies, such as staff skills, concern for how to best analyse and utilise large, rapidly produced data sets, and potentially poor or ineffective engagement with communities. This study reveals a number of challenges that are currently not well discussed in the existing e-participation literature, such as concerns surrounding likely increased transparency of planning processes through e-participation, planning system structure and the degree to which it supports the use of e-participation, and cultural barriers that limit the number of participants in novel and new e-participation processes. This study also highlights concerns found in other studies specific to using e-participation in a planning system of a developing country, particularly surrounding the digital divide, and the transaction costs of staff learning and integrating new forms of technology into existing planning processes. Cumulatively, the above findings suggest that the primary barriers to e-participation in Iran reflect a planning system with limited capacity (i.e., resources, time,

staff, leadership), rather than low levels of interest or awareness of e-participation. Arguably, these barriers stem from the planning system's historic lack of engagement with communities through participatory planning processes, as well as its developing context (particularly relating to infrastructure and issues of accountability and transparency).

While some of these barriers will be overcome as Iran continues to develop its economy and society more generally, others will require a concerted effort to overcome, particularly leadership in e-participation and planning authority and public perceptions of participation and e-participation. To tackle the barriers to implementing e-participation in the Iranian planning system, we suggest four interventions in both national and local levels. First, planning authorities should put further emphasis on capacity building through providing relevant trainings for planning practitioners and the public. Such training can not only change the general perceptions towards the importance and effectiveness of participatory mechanisms, but also increase knowledge and awareness on how to integrate such mechanisms into the decision-making processes. This should include integrating relevant technologies and e-participation training into tertiary planning education and professional development training in Iran. Second, enacting enabling legislation and/or designing guidelines and instructions can be helpful to guide urban planners and managers on when and how to use e-participation. Third, allocating required resources in terms of staff, time, and budget will better enable the successful design and implementation of e-participation processes. Finally, there is a need for improvements regarding digital infrastructure in Iran to ensure planners and the public have access to high-speed and reliable internet, as well as the equipment that support this form of participation. This paper identified the barriers to implementing e-participation in the Iranian planning system; however, more work will need to be carried out to determine how such barriers can be overcome in Iran and other developing countries. Also, the current COVID-19 pandemic, which has driven more government activities to move online, has provided new opportunities for implementing e-participation in Iran and other countries. Future research will show whether planners and decision makers have been successful in using these opportunities to enhance public participation and community engagement.

References

ABERBACH, J. D. & ROCKMAN, B. A. 2002. Conducting and Coding Elite Interviews. *Political Science & Politics,* 35**,** 673-676.

AFZALAN, N. & EVANS-COWLEY, J. 2015. Planning and Social Media: Facebook for Planning at the Neighbourhood Scale. *Planning Practice & Research,* 30**,** 270-285.

AHMADPOOR, N. & SHAHAB, S. 2019. Spatial Knowledge Acquisition in the Process of Navigation: A Review. *Current Urban Studies,* 7**,** 1-19.

AHMADPOOR, N. & SMITH, A. D. 2020. Spatial knowledge acquisition and mobile maps: The role of environmental legibility. *Cities,* 101**,** 102700.

ALLAM, Z. & DHUNNY, Z. A. 2019. On big data, artificial intelligence and smart cities. *Cities,* 89**,** 80-91.

ALLAM, Z. & NEWMAN, P. 2018. Redefining the Smart City: Culture, Metabolism and Governance. *Smart Cities,* 1**,** 4-25.

AMATI, M. 2011. Utopian aspirations and dystopian realities: The many faces of e-Planning in NSW. *State of Australian Cities Conference 2011.* Melbourne: SOAC.

ARNSTEIN, S. R. 1969. A ladder of citizen participation. *Journal of the American Institute of planners,* 35**,** 216-224.

ÅSTRÖM, J. & GRANBERG, M. 2008. Urban Planners, Wired for Change? *Journal of Information Technology & Politics,* 4**,** 63-77.

ÅSTRÖM, J., HINSBERG, H., JONSSON, M. E. & KARLSSON, M. 2013. Citizen centric e-participation - A trilateral collaboration for democratic innovation. Case studies on e-participation policy: Sweden, Estonia and Iceland. Tallinn: PRAXIS Center for Policy Studies.

ÅSTRÖM, J., KARLSSON, M., LINDE, J. & PIRANNEJAD, A. 2012. Understanding the rise of e-participation in non-democracies: Domestic and international factors. *Government Information Quarterly,* 29**,** 142-150.

BESSI, A. & FERRARA, E. 2016. Social Bots Distort the 2016 US Presidential Election Online Discussion. *First Monday,* 21.

BICKING, M., TRIANTAFILLOU, A., HENDERSON, F., KOUSSOURIS, S. & WIMMER, M. A. Lessons from monitoring and assessing EC-funded eParticipation projects: Citizen engagement and participation impact. 2011 IST-Africa Conference Proceedings, 2011. 1-8.

CLELAND, B., MULVENNA, M., GALBRAITH, B., WALLACE, J. G. & MARTIN, S. 2012. Innovation of eParticipation Strategies Using Living Labs as Intermediaries. *Electronic Journal of e-Government,* 10**,** 120-132.

CLIFFORD, B. P. 2013. Rendering reform: local authority planners and perceptions of public participation in Great Britain. *Local Environment,* 18**,** 110-131.

DANESHPOUR, A. R. & DANESHPOUR, H. R. 2012. New Opportunities for Participation in the Management of Electronic City *Manzar (in Persian),* 17**,** 82-86.

DIENEL, H.-L., SHIRAZI, M. R., SCHRÖDER, S. & SCHMITHALS, J. 2017. *Citizens' Participation in Urban Planning and Development in Iran,* London, Routledge.

DINI, A. A. & SÆBØ, Ø. The Current State of Social Media Research for eParticipation in Developing Countries: A Literature Review. 2016 49th Hawaii International Conference on System Sciences (HICSS), 5-8 Jan. 2016 2016. 2698-2707.

ERFANI, G. & ROE, M. 2020. Institutional stakeholder participation in urban redevelopment in Tehran: An evaluation of decisions and actions. *Land Use Policy,* 91**,** 104367.

ERTIÖ, T.-P. & BHAGWATWAR, A. 2017. Citizens as planners: Harnessing information and values from the bottom-up. *International Journal of Information Management,* 37**,** 111-113.

ERTIÖ, T., PETRA, RUOPPILA, S. & THIEL, S.-K. 2016. Motivations to Use a Mobile Participation Application. 8th International Conference on Electronic Participation (ePart), 2016-09-05 2016 Guimarães, Portugal. Springer International Publishing, 138-150.

EVANS-COWLEY, J. & HOLLANDER, J. 2010. The New Generation of Public Participation: Internet-based Participation Tools. *Planning Practice & Research,* 25**,** 397-408.

EVANS-COWLEY, J. & MANTA CONROY, M. 2006. The growth of e-government in municipal planning. *Journal of Urban Technology,* 13**,** 81-107.

EVANS-COWLEY, J. S. 2010. Planning in the age of Facebook: the role of social networking in planning processes. *GeoJournal,* 75**,** 407-420.

FARHOODI, R., GHARAKHLOU-N, M., GHADAMI, M. & KHAH, M. P. 2009. A Critique of the Prevailing Comprehensive Urban Planning Paradigm in Iran: the Need for Strategic Planning. *Planning Theory,* 8**,** 335-361.

FARZANEH, M. 2011. *Urban development planning, regeneration and public participation : a comparison between the UK and Iran.* Doctoral, Newcastle University.

FIRMSTONE, J. & COLEMAN, S. 2015. Public engagement in local government: the voice and influence of citizens in online communicative spaces. *Information, Communication & Society,* 18**,** 680-695.

FOROUHAR, N. & FOROUHAR, A. 2020. Evaluating the Role of Urban Planners in Participatory Urban Planning: A Conceptual Model of Success in Iran. *Archives of Business Administration and Management,* 3.

FREDERICKS, J. & FOTH, M. 2013. Augmenting public participation: enhancing planning outcomes through the use of social media and web 2.0. *Australian Planner,* 50**,** 244-256.

GALBRAITH, B., CLELAND, B., MARTIN, S., WALLACE, J., MULVENNA, M. & MCADAM, R. 2013. Engaging user communities with eParticipation technology: findings from a European project. *Technology Analysis & Strategic Management,* 25**,** 281-294.

GALLETTA, A. 2013. *Mastering the semi-structured interview and beyond: From research design to analysis and publication,* New York, NYU Press.

GASKELL, G. 2000. Individual and Group Interviewing. *In:* BAUER, M. W. & GASKELL, G. (eds.) *Qualitative researching with text, image and sound.* London: SAGE Publications.

GIOIA, D. A., CORLEY, K. G. & HAMILTON, A. L. 2012. Seeking Qualitative Rigor in Inductive Research: Notes on the Gioia Methodology. *Organizational Research Methods,* 16**,** 15-31.

GOUNOPOULOS, E., KONTOGIANNIS, S., KAZANIDIS, I. & VALSAMIDIS, S. 2020. The Impact of the Digital Divide on the Adoption of e-Government in Greece. *KnE Social Sciences,* 4.

GREEN, J. & THOROGOOD, N. 2013. *Qualitative Methods for Health Research,* London, SAGE Publications.

HABIBI, S. M. 2006. *Az Shar ta Shahr,* Tehran, University of Tehran Press.

HE, G., BOAS, I., MOL, A. P. J. & LU, Y. 2017. E-participation for environmental sustainability in transitional urban China. *Sustainability Science,* 12**,** 187-202.

HEGELICH, S. & JANETZKO, D. Are Social Bots on Twitter Political Actors? Empirical Evidence from a Ukrainian Social Botnet. ICWSM, 2016.

HORELLI, L. 2013. Participatory E-Planning Meets the Glocal. *In:* HORELLI, L. (ed.) *New approaches to urban planning : insights from participatory communities.* Espoo, Finland: Aalto ARTS Books.

HOUGHTON, K., MILLER, E. & FOTH, M. 2014. Integrating ICT into the planning process: impacts, opportunities and challenges. *Australian Planner,* 51**,** 24-33.

IMNA. 2020a. *Electronic City: From Words to Practice* [Online]. Isfahan: Iran's Metropolises News Agency. Available: https://www.imna.ir/news/403616/%D8%B4%D9%87%D8%B1-%D8%A7%D9%84%DA%A9%D8%AA%D8%B1%D9%88%D9%86%DB%8C%DA%A9-%D8%A7%D8%B2-%D8%AD%D8%B1%D9%81-%D8%AA%D8%A7-%D8%B9%D9%85%D9%84 [Accessed 23/10/2020].

IMNA. 2020b. *Preparing Isfahan comprehensive plan at perspective stage* [Online]. Isfahan: Iran's Metropolises News Agency. Available: https://www.imna.ir/news/444328/%D8%AA%D8%AF%D9%88%DB%8C%D9%86-%D8%A8%D8%B1%D9%86%D8%A7%D9%85%D9%87-%D8%AC%D8%A7%D9%85%D8%B9-%D8%B4%D9%87%D8%B1-%D9%85%D9%86%D8%B7%D9%82%D9%87-%D8%A7%D8%B5%D9%81%D9%87%D8%A7%D9%86-%D8%AF%D8%B1-%D8%A7%DB%8C%D8%B3%D8%AA%DA%AF%D8%A7%D9%87-%DA%86%D8%B4%D9%85-%D8%A7%D9%86%D8%AF%D8%A7%D8%B2 [Accessed 23/10/2020].

INCH, A. 2014. Ordinary citizens and the political cultures of planning: In search of the subject of a new democratic ethos. *Planning Theory,* 14**,** 404-424.

ISFAHAN MUNICIPALITY. 2020. *e-service Isfahan* [Online]. Isfahan, Iran. Available: https://isfahan.ir/Index.aspx?sub=73 [Accessed 22/06 2020].

JAHANI SHAKIB, F., ALMOHAMMAD, S. & SALEHI, E. 2014. Compatibility of urban development strategies within the Iranian urban planning system (A case study of Shahroud). *Geography and Environmental Studies (in Persian),* 3**,** 47-62.

JENSEN, J. L. 2003. Public Spheres on the Internet: Anarchic or Government-Sponsored – A Comparison. *Scandinavian Political Studies,* 26**,** 349-374.

KAHILA-TANI, M., KYTTA, M. & GEERTMAN, S. 2019. Does mapping improve public participation? Exploring the pros and cons of using public participation GIS in urban planning practices. *Landscape and Urban Planning,* 186**,** 45-55.

KAHZADI, O., PAIVASTEGAR, Y., TAZESH, Y., AMIR, B. & JAFARI, M. 2016. The role of citizen participation in urban sustainable development. *First International and Firsth National Conference on Architecture and Sustainable Urban Landspace.* Tehran.

KLEINHANS, R., VAN HAM, M. & EVANS-COWLEY, J. 2015. Using Social Media and Mobile Technologies to Foster Engagement and Self-Organization in Participatory Urban Planning and Neighbourhood Governance. *Planning Practice & Research,* 30**,** 237-247.

KOMITO, L. 2005. E-Participation and Governance: Widening the Net. *Electronic Journal of e-Government,* 3**,** 39-48.

KOUSSOURIS, S., CHARALABIDIS, Y. & ASKOUNIS, D. 2011. A review of the European Union eParticipation action pilot projects. *Transforming Government: People, Process and Policy,* 5**,** 8-19.

LEGACY, C., METZGER, J., STEELE, W. & GUALINI, E. 2019. Beyond the post-political: Exploring the relational and situated dynamics of consensus and conflict in planning. *Planning Theory,* 18**,** 273-281.

LEGARD, S., GIANNOUMIS, G. A., HOVIK, S. & PAUPINI, C. Variation in E-Participation Schemes and Strategies: Comparative Case Study of Oslo, Madrid, and Melbourne. The 12th International Conference on Theory and Practice of Electronic Governance, 2019 Melbourne. 144-147.

LIN, Y. & GEERTMAN, S. 2019. Can Social Media Play a Role in Urban Planning? A Literature Review. *In:* GEERTMAN, S., ZHAN, Q., ALLAN, A. & PETTIT, C. (eds.) *Computational Urban Planning and Management for Smart Cities.* Cham: Springer International Publishing.

MACINTOSH, A. 2006. e-Participation in Policy-making: The research and the challenges. *In:* CUNNINGHAM, P. & CUNNINGHAM, M. (eds.) *Exploiting the Knowledge Economy: Issues, Applications and Case Studies.* Amsterdam: IOS Press.

MAHDAVINEJAD, M. & AMINI, M. 2011. Public Participation for Sustainable Urban Planning in Case of Iran. *Procedia Engineering,* 21**,** 405-413.

MAIA RIBEIRO, M., CUNHA, M. A. & BARBOSA, A. E-participation, social media and digital gap: challenges in the brazilian context. Proceedings of the 19th Annual International Conference on Digital Government Research: Governance in the Data Age 2018 Delft, The Netherlands. 1-9.

MASHHADI MOGHADDAM, S. N. & RAFIEIAN, M. 2020. From the kingdom lash to participation: The tale of urban planning in Iran. *Social Sciences & Humanities Open,* 2**,** 100022.

MAY, T. 2011. *Social research,* Pennsylvania, McGraw-Hill Education.

MODANLOU, M. 2017. The Role Electronic Municipaly in the Development of Urban Space (Case study: 6 regional of Tehran city). *Geographical Planning of Space (in Persian),* 6**,** 192-208.

NODEHI, M. K. & FOULADINASAB, K. 2017. Communities of practice of planning in Iran and integration of residents into planning. *In:* DIENEL, H.-L., SHIRAZI, M. R., SCHRÖDER, S. & SCHMITHALS, J. (eds.) *Citizens' Participation in Urban Planning and Development in Iran.* London: Routledge.

NOWELL, L. S., NORRIS, J. M., WHITE, D. E. & MOULES, N. J. 2017. Thematic Analysis: Striving to Meet the Trustworthiness Criteria. *International Journal of Qualitative Methods,* 16**,** 1609406917733847.

PELZER, P. 2017. Usefulness of planning support systems: A conceptual framework and an empirical illustration. *Transportation Research Part A: Policy and Practice,* 104**,** 84-95.

PELZER, P., GEERTMAN, S., HEIJDEN, R. V. D. & ROUWETTE, E. 2014. The added value of Planning Support Systems: A practitioner's perspective. *Computers, Environment and Urban Systems,* 48**,** 16-27.

PETTIT, C., BAKELMUN, A., LIESKE, S. N., GLACKIN, S., HARGROVES, K. C., THOMSON, G., SHEARER, H., DIA, H. & NEWMAN, P. 2018. Planning support systems for smart cities. *City, Culture and Society,* 12**,** 13-24.

PHILIP, L., COTTRILL, C., FARRINGTON, J., WILLIAMS, F. & ASHMORE, F. 2017. The digital divide: Patterns, policy and scenarios for connecting the 'final few' in rural communities across Great Britain. *Journal of Rural Studies,* 54**,** 386-398.

PILVI, N., SUSA, E. & MAARIT, K.-T. 2018. Enhancing E-Participation in Urban Planning Competitions. *In:* CARLOS NUNES, S. (ed.) *New Approaches, Methods, and Tools in Urban E-Planning.* Hershey, PA, USA: IGI Global.

PORWOL, L. & OJO, A. 2019. Harnessing Virtual Reality for e-Participation: Defining VR-Participation Domain as extension to e-Participation. *Proceedings of the 20th Annual International Conference on Digital Government Research.* Dubai, United Arab Emirates: Association for Computing Machinery.

RANSOME, E. B., JEAN ROBERT KALA, K., SAMUEL FOSSO, W. & AIME FOBANG, N. 2018. E-Participation in Developing Countries: The Case of the National Social Insurance Fund in Cameroon. *In:* LAURA, A.-M. & FRANCISCO JOSÉ, A.-Q. (eds.) *Optimizing E-Participation Initiatives Through Social Media.* Hershey, PA, USA: IGI Global.

RASOOLIMANESH, S. M., JAAFAR, M. & BADARULZAMAN, N. 2014. Examining the contributing factors for the successful implementation of city development strategy in Qazvin City, Iran. *Cities,* 41**,** 10-19.

RIGGS, W. & GORDON, K. 2015. How is mobile technology changing city planning? Developing a taxonomy for the future. *Environment and Planning B: Urban Analytics and City Science,* 44**,** 100-119.

ROMSDAHL, R. J. 2005. Political Deliberation and E-Participation in Policy-Making. *CLCWeb: Comparative Literature and Culture,* 7**,** 7.

ROUDSAZ, H., GHORBANZADEH, V., SHADMEHRI, N. & MOUSAVI, S. H. 2018. Explanation of Indigenized Model for E-Participation in Public Policy Making in Iran, Using Grounded Theory. *Public Policy (in Persian),* 4**,** 81-104.

RUSSO, P., LANZILOTTI, R., COSTABILE, M. F. & PETTIT, C. J. 2018. Adoption and Use of Software in Land Use Planning Practice: A Multiple-Country Study. *International Journal of Human–Computer Interaction,* 34**,** 57-72.

SAAD-SULONEN, J. 2014. *Combining Participations. Expanding the Locus of Participatory E-Planning by Combining Participatory Approaches in the Design of Digital Technology and in Urban Planning.* PhD, Aalto University.

SÆBØ, Ø., ROSE, J. & SKIFTENES FLAK, L. 2008. The shape of eParticipation: Characterizing an emerging research area. *Government Information Quarterly,* 25**,** 400-428.

SARANTAKOS, S. 2012. *Social Research,* London, Palgrave Macmillan.

SEMNAN MUNICIPALITY. 2020. *137 Platform for Urban Management and Communication* [Online]. Semnan, Iran. Available: http://137.semnan.ir/ [Accessed 22/06 2020].

SETTHASURAVICH, P. & KATO, H. 2020. The mediating role of the digital divide in outcomes of short-term transportation policy in Thailand. *Transport Policy,* 97**,** 161-171.

SHAHAB, S. & ALLAM, Z. 2020. Reducing transaction costs of tradable permit schemes using Blockchain smart contracts. *Growth and Change,* 51**,** 302-308.

SHAHAB, S., CLINCH, J. P. & O'NEILL, E. 2018a. Estimates of Transaction Costs in Transfer of Development Rights Programs. *Journal of the American Planning Association,* 84**,** 61-75.

SHAHAB, S., CLINCH, J. P. & O'NEILL, E. 2018b. Accounting for Transaction Costs in Planning Policy Evaluation. *Land Use Policy,* 70**,** 263–272.

SHAHAB, S. & VIALLON, F.-X. 2020. Swiss Land Improvement Syndicates: 'Impure' Coasian Solutions? *Planning Theory*.

SHAREPOUR, M., RAFATJAH, M. & RAHBARI, L. 2015. Citizens Position in Arnstein's Ladder: Gender Analysis of Participatory Dimension of Right to the City. *Social Welfare Quarterly,* 15**,** 177-203.

SHARMA, G., BAO, X. & PENG, L. 2014. Public participation and ethical issues on E-governance: a study perspective in Nepal. *Electronic Journal of e-government,* 12**,** 82.

SLOTTERBACK, C. S. 2011. Planners' Perspectives on Using Technology in Participatory Processes. *Environment and Planning B: Planning and Design,* 38**,** 468-485.
SRI, R. M. H. & MELISSA, E. 2012. Investigating the Potential of Mobile Phones for E-Governance in Indonesia. *CPRafrica 2012/CPRsouth7 Conference.* Port Louis, Mauritius.
STRATIGEA, A., PAPADOPOULOU, C.-A. & PANAGIOTOPOULOU, M. 2015. Tools and Technologies for Planning the Development of Smart Cities. *Journal of Urban Technology,* 22**,** 43-62.
SUSHA, I. & GRÖNLUND, Å. 2012. eParticipation research: Systematizing the field. *Government Information Quarterly,* 29**,** 373-382.
TAGHADDOSSI, R. 2010. Monitoring and evaluation in implementing urban development plans. *Manzar (in Persian),* 1**,** 42-45.
THAKUR, S. & SINGH, S. A study of some e-Government activities in South Africa. 2012 e-Leadership Conference on Sustainable e-Government and e- Business Innovations (E-LEADERSHIP), 4-5 Oct. 2012 2012. 1-11.
THAKURIAH, P., TILAHUN, N. Y. & ZELLNER, M. 2016. Big Data and Urban Informatics: Innovations and Challenges to Urban Planning and Knowledge Discovery. *In:* P., T., N., T. & M., Z. (eds.) *Seeing Cities Through Big Data.* Switzerland: Springer, Cham.
THOMPSON, S. K. 2012. *Sampling,* NewYork, Wiley.
THORPE, A. 2017. Rethinking Participation, Rethinking Planning. *Planning Theory & Practice,* 18**,** 566-582.
UNITED NATIONS 2018. United Nations E-government Survey: Gearing e-government to support transformation towards sustainable and resilient societies. New York: Department of Economic and Social Affairs.
VAN WYMEERSCH, E., OOSTERLYNCK, S. & VANOUTRIVE, T. 2018. The political ambivalences of participatory planning initiatives. *Planning Theory,* 18**,** 359-381.
VIGNOLI, M., KRAKER, P. & SEVAULT, A. 2015. *Paving the Way for Science 2.0: Top-down and Bottom-up Approaches,* Krems, Edition Donau-Universität Krems.
WAHID, F. & SÆBØ, Ø. Understanding eParticipation Services in Indonesian Local Government. *In:* LINAWATI, MAHENDRA, M. S., NEUHOLD, E. J., TJOA, A. M. & YOU, I., eds. Information and Communication Technology, 2014// 2014 Berlin, Heidelberg. Springer Berlin Heidelberg, 328-337.
WALLIN, S., SAAD-SULONEN, J. & AMATI, M. H., LIISA 2012. Exploring E-Planning Practices in Different Contexts: Similarities and Differences Between Helsinki and Sydney. *International Journal of E-Planning Research,* 1**,** 17-39.
WILLIAMSON, W. & PAROLIN, B. 2012. Review of Web-Based Communications for Town Planning in Local Government. *Journal of Urban Technology,* 19**,** 43-63.
WILLIAMSON, W. & PAROLIN, B. 2013. Web 2.0 and Social Media Growth in Planning Practice: A Longitudinal Study. *Planning Practice & Research,* 28**,** 544-562.
WILLIAMSON, W. & RUMING, K. 2015. Assessing the effectiveness of online community opposition to precinct planning. *Australian Planner,* 52**,** 51-59.
WILSON, A., TEWDWR-JONES, M. & COMBER, R. 2017. Urban planning, public participation and digital technology: App development as a method of generating citizen involvement in local planning processes. *Environment and Planning B: Urban Analytics and City Science,* 46**,** 286-302.
WIRTZ, B. W., DAISER, P. & BINKOWSKA, B. 2018. E-participation: A Strategic Framework. *International Journal of Public Administration,* 41**,** 1-12.
WOICESHYN, J. & DAELLENBACH, U. 2018. Evaluating inductive vs deductive research in management studies: Implications for authors, editors, and reviewers. *Qualitative Research in Organizations and Management: An International Journal,* 13**,** 183-195.
WORLD BANK. 2020. *World Bank Country and Lending Groups* [Online]. Washington, D.C.: The World Bank Group. Available:

https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups [Accessed 23/10/2020].

YIGITCANLAR, T. 2006. Australian local governments' practice and prospects with online planning. *URISA Journal,* 18**,** 7-17.

ZOLOTOV, M. N., OLIVEIRA, T. & CASTELEYN, S. 2018. E-participation adoption models research in the last 17 years: A weight and meta-analytical review. *Computers in Human Behavior,* 81**,** 350-365.