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## Towards a balanced *E*-Participation Index: Integrating government and society perspectives



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### ABSTRACT

Since 2003, the United Nations has introduced the *E*-Participation Index (EPI), the first index to evaluate e-participation initiatives worldwide. This index has been subject to criticism for not representing the society side of e-participation initiatives. The EPI assesses e-participation initiatives on the government side only and neglects the society side, which includes all kinds of civil e-participation initiatives. In this work, the society side is included by incrementally extending the EPI with the Human Development Index and the Democracy Index. To identify the weights of the index, the best–worst method (BWM) is used while surveying 23 experts. The results show that political rights and civil liberties are viewed as the most important criteria with which to evaluate e-participation initiatives. Using this ranking, the Balanced EPI (BEPI) is created, giving weight to both the government and society sides. The new index concerns the willingness and empowerment levels of citizens so that the public can influence policy and political decision-making. Dedicated e-participation measures should be developed in further research.

### 1. Introduction

Digital technologies, such as the Internet and social media, are changing traditional participation concepts. These technologies have overcome the time and distance limitations of physical participation. For example, decision-making no longer requires citizens to be in one location.

In recent years, the concept of electronic participation (e-participation) has been investigated by various scholars and international organisations (cf. Viborg Andersen et al., 2007; Baller, Dutta, & Lanvin, 2016; Islam, 2008; Grönlund, 2011; Sæbø, Flak, & Sein, 2011; Susha & Grönlund, 2014; OECD, 2009; UN, 2018). Macintosh (2004) defined e-participation as “the use of information and communication technologies (ICTs) to broaden and deepen political participation by enabling citizens to connect with one another and with their elected representatives” (p. 365). UNDESA (2013)<sup>1</sup> described e-participation as “the process of engaging citizens through information and communication technologies in policy, decision-making, and service design and delivery in order to make it participatory, inclusive, and deliberative” (p. 61). According to UNDESA, e-participation is recognised as a political action that is facilitated by digital technologies in order to revive citizens' sovereignty, through participation in the processes of

policy and political decision-making. Additionally, digital technologies are seen as a catalyst for the civil democratic processes of citizen consultation and participation (Coleman, 1999; Noveck, 2000; Shirazi, 2008). Although digital technology supports the engagement of citizens in direct democratic decisions, its materialisation depends on other factors, such as democratic structures, politicians, governments, and citizens.

It is all too often assumed that democratic governments are more disposed than authoritarian governments to creating online environments that engage citizens in decision-making and to influence the development of policies that affect their society. However, this might not be the case, as the input from e-participation can remain unused, and online environments may be used to exercise greater control rather than to enable democratic involvement. Repression can be facilitated by knowing who says what in the online environment (Rhoads & Fowler, 2011; Tufekci & Wilson, 2012; Whittaker, 2011; Wolfson, 2014). Nevertheless, there is a consensus that democratic governments should have higher e-participation rankings than authoritarian governments (Åström, Karlsson, Linde, & Pirannejad, 2012; Linde & Karlsson, 2013).

Various studies have introduced measures to assess progress and compare e-participation efforts at an international level (cf. Cantijoch & Gibson, 2011; Lappas, Triantafyllidou, Yannas, & Klefodimos, 2015;

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<sup>1</sup> United Nation Department of Economic and Social Affairs

UN, 2018). Yet, measurement practice is all too often focused on low-cost measurement and remains at a generic level (Bannister, 2007). Measurement is driven not by the problem but by the data which is available (Kromidha, 2012); numbers can be presented and interpreted in different ways (Petrović, Bojković, Anić, & Petrović, 2012); there is no 'best' approach (Kunstelj & Vintar, 2004) and thus far success has been limited (Ojo, Janowski, & Estevez, 2011).

The United Nations (UN) has developed the E-Participation Index (EPI), which is used to evaluate e-participation initiatives in countries around the world. The index has been updated nine times since 2003. Although the EPI is the index most referred to by policymakers and scholars in the field of public participation, it has been subject to criticism. In particular, Åström et al. (2012) have argued that the bottom-up (society-led initiatives) aspect of e-participation is absent from the measurement method used in the index. They claim that if e-participation aims to measure aspects of democratic government that promote democratisation, then government-led and society-led initiatives should be taken into account. In a similar vein, Islam (2008) stated that "the EPI of [the] UN is not supplemented with a quantitative index and focuses only on the supply side of e-participation" (p. 5). Government efforts are included, while society initiatives are neglected. Coleman and Norris (2005) emphasised that e-participation has a key role to play in e-democracy and that it should contain both government-led and society-led approaches. They wrote that "it is both about the institutional processes of hierarchies and the more fluid arrangements of networks" (p. 32). Katchanovski and La Porte (2005) concluded that not including society-led e-participation initiatives leads to a higher ranking of non-democratic countries over democratic countries. Parra Beltran (2015) stated that "the EPI generated by [the] UN is only a supply-side assessment that does not take into account the citizen perspective" (p. 25).

As discussed above, the exclusion of the society side has led to some criticisms and ambiguities regarding the use of EPI. An example in the latest version of the EPI (2018) is that Bahrain outranks Belgium, Russia beats Canada, China overtakes Switzerland, and United Arab Emirates ranks higher than Ireland. The expectation that democratic countries rank higher is not met. Such counter-intuitive examples can be found in all versions of the index published to date.

According to the literature (e.g., Åström et al., 2012; Coleman & Blumler, 2009; Islam, 2008; Katchanovski & La Porte, 2005; Qiang, 2011), one of the main reasons for such results is including government-led and excluding society-led initiatives. The *government-led side*, which is evaluated by the EPI, refers to government-driven attempts to facilitate citizen participation through digital technologies. This side is directly visible and easy to measure and, as a result, typically included in measurements (Maheshwari & Janssen, 2013). The *society-led side* refers to civil society's readiness to develop citizens' participation and their ability to influence the processes of policy and political decision-making that affect their society. This side is not considered by the EPI. Macintosh and Whyte (2006) emphasised the need to address both sides of e-participation simultaneously and highlighted the synergy between government-led and society-led engagement. Coleman and Blumler (2009, p. 91) emphasised that these initiatives should not be seen as a binary choice but as two extremes of a spectrum of e-participation initiatives. The risk of only considering government-led e-participation initiatives is that e-participation can appear to be enabled when, in fact, it is not. E-participation instruments may be used by governments to put forward and to disseminate their views and to identify and control those who do not agree with them (Tufekci & Wilson, 2012; Wolfson, 2014). In this way, e-participation could be used as a tool of suppression (Rhoads & Fowler, 2011; Whittaker, 2011) instead of a participation tool. There are several examples of this misuse of digital technologies such as smartphones and social networks sites in China, Russia, Bahrain, and Saudi Arabia, countries that all have sought to suppress citizens' involvement and participation in the public realm while they have high EPI values on the global scale (Astrom et al., 2011; Bunkov,

Bolgov, & Chugunov, 2013; Jones, 2015; Qiang, 2011).

In this study, we incrementally extend the EPI with society-led measures and develop a Balanced EPI (abbreviated as BEPI) which takes account of governmental and societal aspects of e-participation initiatives. The paper proceeds as follows. We briefly review the literature on e-participation initiatives from the government and society perspectives in Section 2, followed by conceptualizing the BEPI and explaining all three indexes which were used in the BEPI in Section 3. In Section 4 we describe the research methodology which clarifies the construction of BEPI, followed by illustrating the results of developing the new index in Section 5. We proceed with discussing different aspects of using the BEPI instead of EPI and also clarifying the similarities and differences in Section 6, whereas in Section 7 we provide our concluding remarks, identify the limitations of the study, and offer avenues for future research.

## 2. Background

### 2.1. E-participation

E-participation emerged as a key concept in the fields of ICT and political science in the early 2000s. The origins of the concept lie in both e-government and e-democracy (Axelsson, Melin, & Lindgren, 2010; Islam, 2008; Sharma, Bao, & Peng, 2014; Vogt, Förster, & Kabst, 2014), resulting in two dimensions, namely *society to administration* and *society to politics*. The first concerns the interaction between citizens and public servants, and the latter how citizens interact with politicians.

*Society to administration* emanates from e-government and refers to the government's desire to increase citizen participation through technology-facilitated government initiatives such as e-information, e-consultation and e-service delivery (Campbell, 1995; Haque & Pathrannarakul, 2013; Sharma, 2004; Siskos, Askounis, & Psarras, 2014). In this perspective, citizens are considered to be customers and users of digital public services as provided by e-government projects (Zuurmond, 2001), and are regarded as stakeholders among businesses, private agencies, or corporations (Gil-García & Pardo, 2005). According to the literature, there are various stakeholder groups in e-government projects with different interests, benefits, and power levels. Rowley (2011) categorised the stakeholders into eight groups: 1) people as service users, 2) people as citizens, 3) businesses, 4) small-to-medium sized enterprises, 5) public administrators (employees), 6) other government agencies, 7) non-profit organisations, and 8) politicians. Accordingly, citizens are merely seen as two groups of stakeholders among the other stakeholders of e-government projects (Axelsson, Melin, & Lindgren, 2013; Rowley, 2011).

The second direction, *society to politics*, emanates from e-democracy and emphasizes the inherent democratic values of e-participation. In this perspective, citizens are seen as participating in the processes of policy and political decision-making through direct and indirect technology-facilitated initiatives, such as e-voting, e-campaigning, e-consultations, e-petitioning, e-polling and e-lobbying (Coleman & Blumler, 2009; Edelenbos & Klijn, 2005; Macintosh, 2008; Norris, 2003).

Macintosh (2004) explains both directions from another viewpoint and introduces three levels of e-participation: e-enabling, e-engaging, and e-empowering. As seen in Fig. 1, she acknowledges e-participation as a continuum which aims towards the e-empowerment level where citizens actively participate and exert influence on policy formulation and political decision-making.

*E-enabling*, as the first level of e-participation, concerns a one-way relationship in which the government produces and delivers information for use by citizens. At this level, government has a monopoly on the flow of information. The main concern of government at this level is enhancing citizens' accessibility to information. This level has been labeled in the digital government literature as information level, e-information, or emerging web presence (Layne & Lee, 2001; Reddick, 2004). According to the directions that were discussed earlier, e-

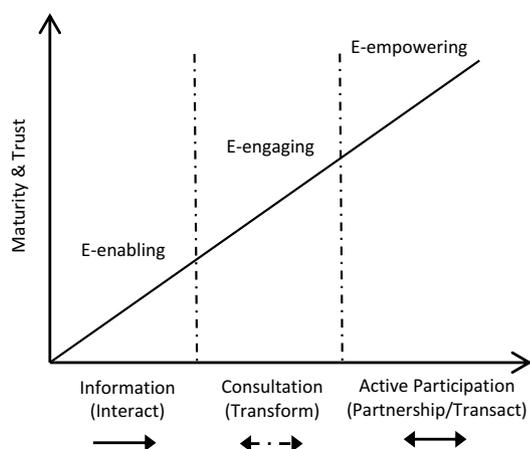


Fig. 1. Levels of e-Participation (Macintosh, 2004).

enabling can be associated to the direction *society to administration* which focuses entirely on the informational role of government in the process of participation.

*E-engaging* and *e-empowering* are the second and third levels respectively of e-participation in Macintosh's maturity model (2004). In contrast to the first level, which illustrates the passive role of citizens, these two levels are primarily concerned with returning a sovereignty role to citizens, the main focus of the *society to politics* direction.

At the *e-engaging* level, citizens are invited to present their views and opinions to government, thus becoming active stakeholders in the process of participation. In other words, at the second level of participation, there is a two-way relationship between citizens and government that allows for deep contributions and supports deliberative debate on policy issues by consulting citizens (Fedotova, Teixeira, & Alvelos, 2012; Layne & Lee, 2001; Reddick, 2004). At this level, the success of the consultation is largely dependent upon the willingness and commitment of citizens (Coleman & Blumler, 2009; Olphert & Damodaran, 2007).

At the *e-empowering* level, as the third and ultimate level of e-participation, citizens actively engage in defining the processes and content of policy and political decision-making. Achieving this level of participation is heavily dependent upon the political system of a society. In other words, if the political system is more democratic, the probability of reaching this level of participation will be higher (Amichai-Hamburger, McKenna, & Tal, 2008; Åström et al., 2012; Fedotova et al., 2012). According to Scullion, Gerodimos, Jackson, and Lilleker (2013), this level refers to the acquisition of power by citizens with a view to restoring, strengthening or serving a model of democratic governance, usually based upon the normative conceptualisation of the relationship between government and citizens.

Regardless of the different views, the notion of e-participation concerns the movement towards online collaborative environments that support interaction between citizens and political and administrative systems. Governments can initiate e-participation initiatives as government-led initiatives, and civil society is responsible for society-led initiatives.

## 2.2. Government-led initiatives

The dominant focus in academic literature is on the democratic roots of e-participation. Several scholars have emphasised the bottom-up process of e-participation initiatives. This viewpoint focuses on the process of citizen empowerment towards engagement in the processes of policy and political decision-making. However, other studies focus on the top-down approach and concentrate on government-led initiatives. In the literature, government-led e-participation initiatives are labeled as supply side (Islam, 2008; Kuhn, 2006), government-driven (Al-Dalou & Abu-Shanab, 2013; Avdic, Hedström, Rose, & Grönlund,

2007; Sæbø, Rose, & Flak, 2008) or government-centric initiatives (Dini & Sæbø, 2016; Parra Beltran, 2015). The main questions concerning government-led initiatives are: why and how governments attempt to develop citizen participation through digital technologies?

Although promoting government-led initiatives in a democratic setting would seem to be a logical or even an inevitable prerequisite for a well-functioning democratic system, it might not be the case with authoritarian regimes and non-democratic countries. Democratic values – such as freedom, equality, accountability, transparency, and civic engagement – are not usually embraced by non-democratic governments. In the EPI, however, some non-democracies outperform countries with long-standing democratic traditions. An explanation was provided by Åström et al. (2012), p. 148, who investigated the effect of national and international factors on e-participation development among UN member states in the period 2003–2010. They concluded that internal factors – such as the level of development or socio-economic modernisation, technological diffusion, and the level of democracy or democratisation – are the most influential national factors that drive e-participation initiatives in democratic countries. Economic globalisation, as an international factor, and technological development, as a national factor, are also strong drivers of e-participation initiatives in authoritarian regimes at any level of democratisation. They concluded that although e-participation development in non-democratic countries does not reflect the process of democratisation in those countries, global socioeconomic pressures steer such countries towards e-participation. Similarly, Stier (2015) reviewed e-government development in autocracies and highlighted the role of e-participation in economic development and regime legitimacy as the key drivers of IT development in non-democratic settings. He claimed that “an autocratic regime such as Kazakhstan legitimises itself internationally and attracts foreign investment by advertising with its good ratings in the UN Index” (p. 272).

## 2.3. Society-led initiatives

The democratic orientation of e-participation is noted by several scholars in the academic literature and also in the prominent publications by international organisations that highlight the critical role of citizen engagement in decision-making process (Viborg Andersen et al., 2007; (Anderson and Henriksen, 2005); Macintosh, Davenport, Malina, & Whyte, 2001; Macintosh, 2004; Mahrer & Krimmer, 2005; UN, 2018).

In the literature, the bottom-up approach to e-participation is labeled as demand side (Benz & Stutzer, 2004; Klandermands, 2004; Norris, 2003), citizen-driven (Al-Dalou & Abu-Shanab, 2013; Avdic et al., 2007; Sæbø, Rose, & Nyvang, 2009), citizen-centric (Ahmed, 2006; Alomari, Woods, & Sandhu, 2012) or civil society initiatives (Moore, 2001). The main ideas of the approach are to take society participation initiatives into account, to enable citizens to put topics on the agenda that are not covered by government-led initiatives and to provide citizens with an environment that is not controlled by government.

Society-led initiatives refer to the efforts that are independent of government-led initiatives. The initiatives provide information and improve citizens' awareness about social and political issues, provide insights and affect the citizens' ability and readiness to participate. Society-led initiatives have two major driving factors that have been explored by a number of scholars. The first is related to citizens' *willingness* to participate in policymaking and political decision-making, in order to take on an active role in their society (Boudjelida, Mellouli, & Lee, 2016; Dahl, 1989; Neubauer, Vuga, & Iic, 2012; Orihuela & Obi, 2012; Parra Beltran, 2015). No real participation occurs if citizens have no desire to participate and to be involved in the community. The second is related to *empowering* citizens (the process of awareness and capacity building), which leads to greater participation and vastly increases their decision-making power and control (Galston, 2001; Karl, 1995; Macintosh, 2004; Orihuela & Obi, 2012; Pirannejad, 2011; Ravitch, 2001). The major driving factors will be explained below.

### 2.3.1. Citizens' willingness to participate

The multidimensional nature of 'willingness' and especially the psychological roots of the concept have led researchers to present a number of factors, such as civic education (Finkel, Sabatini, & Bevis, 2000; Galston, 2001, 2004; Pasek, Feldman, Romer, & Jamieson, 2008), social media (Ellison, Steinfield, & Lampe, 2011; Gustafsson, 2012; Kwak, Poor, & Skoric, 2006; Shah, Cho, Eveland Jr, & Kwak, 2005; Wellman et al., 2003; Wellman, Haase, Witte, & Hampton, 2001), social capital (La Due Lake & Huckfeldt, 1998; Zhang, Johnson, Seltzer, & Bichard, 2010), political efficacy (Finkel, 1985; Karp & Banducci, 2008; Kenski & Stroud, 2006; Yackee, 2014) and political trust (Fennema & Tillie, 1999; Hooghe & Marien, 2013; Vigoda-Gadot, 2006; Zmerli, 2010), in an attempt to explain how willingness to participate is influenced. For example, some scholars have emphasised the crucial role of civic education in promoting citizens' willingness to participate (Galston, 2001; Milner, 2002). Print and Milner (2009) stated that "the development of general knowledge and skills that accrue broadly from education, in such areas as mathematics, science, reading, and writing, increase citizen capacity, perceived efficacy and willingness to engage in political processes" (p. 5). Other scholars have focused on the important role of social media in citizens' willingness to be active in social and political matters. They believe that social network sites, particularly Facebook and Twitter, encourage citizens to act as social or political activists (cf. Enjolras, Steen-Johnsen, & Wollebaek, 2013; Harlow, 2013; Loader & Mercea, 2011; Stieglitz & Dang-Xuan, 2012; Warren, Sulaiman, & Jaafar, 2014). For example, Gil de Zuniga, Puig-I-Abril, and Rojas (2009) argued that the informational use of social media can make citizens more inclined to discuss political matters and that in the long run, it increases their social and political engagement and participation levels. Similarly, Taveesin and Brown (2006) provided evidence that online information-seeking is linked to increased online interaction, which supplements interpersonal relations and ultimately results in higher levels of group membership, community involvement, and political activity.

Other researchers have insisted on the fundamental role of social capital in citizens' willingness to participate (cf. Gil de Zuniga et al., 2009; La Due Lake & Huckfeldt, 1998; Valenzuela, Park, & Kee, 2009). According to this viewpoint, political participation is the consequence of social capital and is strongly related to the level of trust in society. Advocates of this viewpoint believe that when social capital increases in a community, the level of trust between citizens or between an individual and social and political institutions increases accordingly, and that ultimately they are more likely to cooperate with others to solve community problems and participate in social and political matters (Carpini, 2004; La Due Lake & Huckfeldt, 1998; Zhang et al., 2010).

In addition to civic education, social media, and social capital, political efficacy is another variable that can affect citizens' willingness to participate. Political efficacy refers to the feeling that social and political changes are possible and that citizens can play a decisive role in bringing about these changes (Balch, 1974; Campbell, Gurin, & Miller, 1954; Olsson, 2014). Some scholars have argued that the perception of political efficacy is a prerequisite for social and political participation (Abramson & Aldrich, 1982; Finkel, 1985; Vecchione & Caprara, 2009). When citizens do not feel that they are capable of effecting changes, they might not be interested in participating.

Finally, political trust influences citizens' willingness to participate and refers to the faith that they have in their government and political system to perform correctly, and their perception of government action as being in line with the public interest (Craig, 1979; Hooghe & Marien, 2013). Some scholars have emphasised the role of public trust in citizens' willingness to participate and argue that the perception of whether political authorities and institutions are performing in line with citizens' interests affects the tendency of citizens to participate in political matters (Craig, Niemi, & Silver, 1990; Kaase, 1999). Hooghe and Marien (2013) concluded that "those who trust the system and feel capable of understanding it, opt for this kind of participation repertoire

[institutionalised participation and voting], and they do so even more intensively if both feelings are present simultaneously" (p. 146).

### 2.3.2. Empowering citizens to participate

E-participation can influence the quality of decisions. Having the willingness to participate without having sufficient information about and awareness of social and political issues does not lead to real participation (Orihuela & Obi, 2012; Pirannejad & Janssen, 2017). The second driving factor of society-led initiatives is related to empowering citizens, which refers to, according to Karl (1995), "a process of awareness and capacity building leading to greater participation, to greater decision-making power and control, and to transformative action" (p. 14). The main concern of the scholars who have focused on this driver is related to the quality of decisions that are made by citizens in a democracy. They argue that good citizens are made, not born. Well-informed and well-educated citizens are the cornerstone of any democracy (Galston, 2001; Pateman, 1970). In this regard, Ravitch (2001) concluded that "[t]he school must teach youngsters about our history, our civic institutions, and our constitution [...] they must give students the intellectual tools to comprehend science, mathematics, language, the arts, literature, and history [...] Democratic habits and values must be taught and communicated through the daily life of our society [...] the best protection for a democratic society is well-educated citizens" (p. 28).

In summary, e-participation should be viewed as a dual side concept. One side (supply side) is related to government-led initiatives which represent the government's attempt to facilitate citizen participation using new technologies. The other side (demand side) is society-led initiatives that reflect the social and political readiness of societies for actual citizen participation and engagement. The current version of EPI only measures the first side of the concept (supply side) and ranks e-participation initiatives on the basis of a one-dimensional analysis. A one-sided evaluation might not be an accurate and appropriate assessment and does not provide a coherent view of e-participation initiatives neither at the national, nor at the international scale (Åström et al., 2012; Katchanovski & La Porte, 2005; Parra Beltran, 2015).

As a response to the uncovered earlier limitations of the EPI, we developed the BEPI, which is explained in the next section.

## 3. Conceptual framework

### 3.1. E-participation index (EPI)

The EPI is part of a comprehensive E-Government Survey of the online presence of all 193 United Nations member states, which assesses national government portals based on their availability for civic engagement, service delivery and public participation in decision-making processes (UN, 2018). The EPI has been updated nine times since 2003 and measures the public participation status of every member state at three levels: e-information, e-consultation, and e-decision-making. E-information refers to the flow of information about laws and regulations, policies and programmes, budgets and other information of public interest provided by governments via digital technologies (Åström et al., 2012; Evans & Yen, 2006; UN, 2018). E-consultation relates to what degree citizens are consulted on a particular policy, service, or project. Finally, e-decision-making refers to governments' willingness to consider citizens' opinions and input in their decision-making processes (Manoharan, 2012; Mutula, 2009; UN, 2018).

Since 2003, the UN introduced the first version of the EPI, several studies have used the index to evaluate e-participation progress at the national or international scale. The EPI was used in this study as a proxy for top-down approach which covers government-led e-participation initiatives.

To add a bottom-up approach, which refers to society-led e-participation initiatives to the EPI, two main extensions are proposed. The first considers the ability of citizens to participate. The question is related to the traditional concern that arose from Plato's and Aristotle's

perspectives on the need for well-informed and well-educated citizens for participation in a democracy, and is continued in the work of contemporary theorists such as Rousseau (1955) and Pateman (1970). In this context, Hansen and Reinau (2006) have stated that “for public participation to be effective at any level, it requires the public to be well informed” (p. 72). Hence, Nussbaum (2016) implied that “[t]he distribution of access to quality education is an urgent issue in all modern democracies” (p. 255).

The *second* extension considers the political context that influences the ability and readiness of citizens to participate. The question is related to democratic values such as equality, pluralism, transparency, individual autonomy and social equality, freedom of expression, freedom of information and the rule of law, which are prerequisites for real citizen participation (Breindl & Francq, 2008; Girish, Yates, & Williams, 2012; Macintosh, 2008; Wijnhoven, Ehrenhard, & Kuhn, 2015). For example, Bennett (2008) argues that requiring people to participate in bad institutions is mere propaganda. Porwol, Ojo, and Breslin (2013) emphasised citizen participation from the democratic perspective and stated that “before any e-participation project starts there has to occur a particular democratic activity that would form a relevant policy, secure sufficient funds and identify participation areas” (p. 228). Åström et al. (2012) connected e-participation in non-democracies to symbolism and stated that “as they [political systems] harbor greater opportunities for political pluralism, public debate, and political activism, democratic political systems are more prone to promoting e-participation than authoritarian regimes, which seek to suppress political and civil freedoms” (p. 144).

### 3.2. Human development index (HDI)

To evaluate the quality of citizens' decisions in the e-participation process, the *first* extension of the BEPI comprises the Human Development Index (HDI), which is provided by the United Nations Development Programme (UNDP, 2003–2016). As a composite index, the HDI measures the average achievements of a country in four basic dimensions of human development: (1) *a long and healthy life* measured by life expectancy at birth, (2) *adult literacy* refers to the percentage of the population at age 15 and over who can at least read, (3) *school enrolment* refers to the combined gross enrolment ratio for primary, secondary and tertiary schools, and (4) *standard of living* measured by gross national income per capita.

In addition to the important role of education in the improvement of the quality of citizen participation as discussed in the literature section, numerous studies reveal that income and welfare (e.g., Bartels, 2009; Lawless & Fox, 2001; Rosenstone & Hansen, 1993; Verba & Nie, 1972; Verba, Schlozman, & Brady, 1995) and a long and healthy life (e.g., Schur, Shields, Kruse, & Schriener, 2002; Schur & Adya, 2013; Pacheco & Fletcher, 2015; Ojeda, 2015) are linked to political participation. For example, Verba et al. (1995) argue that “income is a politically relevant and fungible resource that directly or indirectly facilitates activity; the affluent are more highly engaged with public affairs, as they typically have more at stake in a variety of policy areas; and higher-income individuals are more frequently recruited to political activity” (p. 17). The American Political Science Task Force on Inequality and American Democracy (2004) reported: “The privileged participate more than others and are increasingly well organized to press their demands on government... Citizens with low or moderate incomes speak with a whisper that is lost on the ears of the inattentive government, while the advantaged roar with the clarity and consistency that policymakers readily head” (p. 314). Bartels (2009) stated that “the views of constituents in the bottom third of the income distribution received no weight at all in the voting decisions of their senators. Citizens in the bottom third of the income distribution had no identifiable political influence, when it came to the votes of their senators” (p. 15). Additionally, Ojeda (2015) argued that being unhealthy reduces the motivation for participation. Unhealthy citizens often tend to experience

feelings of hopelessness and apathy. He suggested that “If a feeling of hopelessness or the lack of a perceived capability to derive pathways to desired goals extends to the political domain then [citizens] will express a lower level of internal efficacy (e.g., ‘I’m incapable of making a difference’) or a lower level of external efficacy (e.g., ‘government doesn’t care what I think’) or both. Political trust, which can be thought of as positive anticipation of government behaviour, might also be affected by feelings of hopelessness, which is fundamentally a negative expectancy about the future” (p. 5). Other studies focus on the required resources for political participation and explain how a long and healthy life can affect the participation process (e.g., Brady, Verba, & Schlozman, 1995; Chakraborty, Avasthi, Kumar, & Grover, 2012; Pacheco & Fletcher, 2015). For example, Schur et al. (2002) argued that political participation requires a sufficient level of mental and physical health in addition to the traditionally monitored resources of money, time, and civic skills. Ojeda (2015) concluded that being unhealthy “reduces the somatic capacity of an individual and therefore reduces the resources an individual has for political participation” (p. 7).

### 3.3. Democracy index (DI)

To evaluate the readiness of the political context for citizen participation, the *second* extension of the BEPI adds the Democracy Index (DI), which was developed by Freedom House (2003–2016), to the current index. The DI refers to both *political rights* and *civil liberties*, which are evaluated in each society based on the levels of freedom of expression and belief, free association and assembly rights, social and economic freedoms, and freedom to participate in the political process.

According to the political science literature, numerous studies reveal that civil liberties and political rights — such as freedom of expression, freedom of speech, freedom of assembly, freedom of information, freedom of media, the right to participate in public life, the right to vote in elections, and the right to stand for political office — are prerequisites for citizens' political participation (Balkin, 2004; Barendt, 2005; Beetham, 2004; Birkinshaw, 2006; House, 2014; Leeson, 2008; Lor & Britz, 2007; Mendel & Unesco, 2008). For example, Leeson (2008) argued that “where the government owns a larger share of media outlets and infrastructure, regulates the media industry more, and does more to control the content of news, citizens are more politically ignorant and apathetic. Where the media is less regulated, and there is greater private ownership in the media industry, citizens are more politically knowledgeable and active” (p. 155). Lor and Britz (2007) asserted that in the era of globalisation the right of access to information is one of the essential social rights that is a precondition for citizens' participation in the various political activities of a modern knowledge society.

### 3.4. The balanced E-participation index (BEPI)

As EPI is the only index that evaluates e-participation globally, the need for a new index that considers e-participation initiatives from both bottom-up and top-down perspectives is highlighted. Based on the criticisms of the current version of EPI as discussed in the introduction section of this paper, we incrementally extended the EPI by adding two extensions (HDI and DI) to the BEPI, in order to simultaneously evaluate e-participation initiatives from the bottom-up and top-down perspectives. In the BEPI, the current version of EPI represents government-led initiatives (top-down perspective), and HDI and DI represent society-led initiatives (bottom-up perspective). The two extensions result in the BEPI shown in Fig. 2.

## 4. Methodology

### 4.1. Construct validity

To evaluate the measurement properties of the new index (BEPI) and the constructs (EPI, HDI, and DI), nomological validity, face

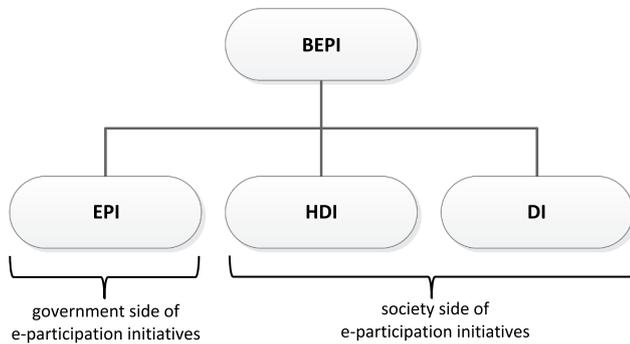


Fig. 2. The proposed balanced E-Participation Index (BEPI).

validity, expert judge validity, and confirmatory factor analysis are examined in the study. Nomological validity addresses whether theory supports the correlation between different latent constructs. Face validity shows if theory supports the correspondence between measurement items and their corresponding latent constructs. Expert judge validity examines whether the index is measuring what it purports to measure. Confirmatory factor analysis is used to identify the underlying constructs that do characterize the data response and to investigate the convergent and discriminant validity of the emerging factors (Hair, Black, Babin, Anderson, & Tatham, 2006; Newman, Newman, & Newman, 2010).

There is strong theoretical support which emphasizes the effects of the constructs of EPI, HDI, and DI on e-participation initiatives. Additionally, the experts from different areas (political science, public administration, and ICT) participated in this study in order to facilitate data combination and cross testing and permit “evidence triangulation” to guarantee construct validity of the new index (Yin, 2013). These are supporting the nomological and face validity of this study.

Additionally, the content validity of the new index was reached through expert judge validity. The validity of the indexes, and the entire questionnaire and the conceptual model were reviewed and checked by two experts in the area of digital technologies, two experts in the field of political science and two experts in the area of public administration.

In this study, construct validity was evaluated using confirmatory factor analysis. As shown in Table 1, all items loaded properly on their expected factors. All the factor loadings exceed the 0.40 cut-off employed in social science research (Costello & Osborne, 2005).

After factor analysis, which confirmed that all indexes (EPI, HDI, and DI) had acceptable values and, consequently, the internal consistency was appropriate, the constructs were retested for convergent validity and discriminant validity. Convergent validity shows the extent to which the measurement items of a construct converge or share a large common variance. Convergent validity was assessed by Construct Reliability (CR) and Average Variance Extracted (AVE). CR shows the extent to which the measurement items all consistently together represent the latent construct. CRs greater than 0.6 are acceptable and above 0.7 show good reliability. AVE shows the convergence and AVEs

Table 1  
Factor analysis of the constructs (EPI, HDI, and DI).

Item	EPI	HDI	DI
e-INFO	0.789		
e-CONS	0.917		
e-DECI	0.702		
LHL		0.619	
KNOW1		0.630	
KNOW2		0.596	
STLIV		0.850	
PR			0.939
CL			0.964

Table 2  
The convergent validity of the constructs (EPI, HDI, and DI).

Construct	CR	AVE	Variable
EPI	0.84	0.65	E-Information E-Consultation E-Decision-Making
HDI	0.74	0.51	Life expectancy at birth Expected no of years of schooling Mean no of years of schooling
DI	0.95	0.90	Gross national income (GNI) per capita Political Rights Civil Liberties

greater than 0.5 shows adequate convergent validity (Hair, Sarstedt, Ringle, & Mena, 2012).

To fulfil the convergent validity test, the CR of each construct was calculated. As shown in Table 2, all constructs meet the acceptable CR criteria (more than 0.6). Furthermore, AVEs for all the constructs are greater than 0.5, suggesting adequate convergent validity.

Constructs that passed the convergent validity test are examined for discriminant validity. Discriminant validity is achieved if square roots of AVE are greater than the inter-factor correlations between constructs (Hair et al., 2006). Table 3 demonstrates the discriminant validity between each pair of constructs, as the square root of AVE is greater than the correlation estimation between constructs. In other words, this validity test implies that components of each indexes are not related with components belonging to other indexes which were used in the study.

#### 4.2. Construction of the balanced E-participation index (BEPI)

The BEPI contains three international indexes, namely the EPI, the HDI, and the DI. The EPI is a weighted average of three normalised scores on these dimensions: (1) e-information (eINFO), (2) econsultation (eCONS), and (3) e-decision-making (eDECI).

$$EPI = 1/3 eINFO + eCONS + eDECI.$$

The HDI is a weighted average of four normalised scores on these dimensions: (1) Long and Healthy Life (LHL), (2) Adult Literacy (AL), (3) School Enrolment (SE), and (4) Standard of Living (STLIV).

$$HDI = 1/4 LHL + AL + SE + STLIV.$$

The DI is a weighted average of two normalised scores on these dimensions: (1) Political Rights (PR), and (2) Civil Liberties (CL).

$$DI = 1/2 PR + CL.$$

To facilitate the interpretation of our analyses, we transformed all indexes and all variables into the scale of 0 to 1. Prior to the normalisation of the component indicators, the Z-score standardisation procedure was implemented for each component indicator to ensure that the overall EPI, HDI, and DI are equally decided by the component indexes, i.e. each component index presents comparable variance subsequent to the Z-score standardisation. In the absence of the Z-score standardisation treatment, the EPI, HDI, and DI would mainly depend on the component indexes with the greatest dispersion. After the Z-

Table 3  
Discriminant validity of the constructs.

Construct	EPI	HDI	DI
EPI	<b>0.91</b>		
HDI	0.65	<b>0.87</b>	
DI	0.37	0.57	<b>0.88</b>

The values in diagonal cells in bold correspond to the square root of AVE and should be larger than the off-diagonal cells which are the indicators of the discriminant validity.

score standardisation, the arithmetic average sum becomes a good statistical indicator, where “equal weights” truly means “equal importance”.

### 4.3. Weighting the indexes

Whereas in existing literature items constituting an index (EPI, HDI, DI) are treated with equal significance, we postulated that the items might be of differing importance and that this might also apply to the index level when integrating the three indexes to make the proposed BEPI. However, when the BEPI was first developed, the weights to be given to the indexes and to the components of each index were not yet clear. To establish the importance of the different indexes, data were collected from experts who know the three indexes very well. A questionnaire was developed comparing the indexes and their sub-categories, and experts with a good knowledge of the field of e-participation were then asked to compare the importance of the indexes and their subcategories. The questionnaire was sent to 45 experts between October and December 2016. We received a total of 23 complete and valid responses, which is a response rate of 51%. Table 4 shows the expertise and the country of residence of the experts.

There are several weighting methodologies (e.g., Greco, Figueira, & Ehrgott, 2005; Triantaphyllou, 2000). In this study, we used the best–worst method (BWM) (see Rezaei, 2015 for more details) as it uses a structured pairwise comparison method, which is more compatible with how human beings judge and decide, and as such, is easier to comprehend. Compared to other pairwise comparison-based methods such as the analytic hierarchy process (AHP), BWM is more efficient with respect to the amount of data that has to be collected to arrive at the weights and has been shown to have a higher reliability (Rezaei, 2016). The BWM has been applied to several real-world problems in other domains including technology management (Gupta & Barua, 2016), logistics (Rezaei, van Roekel, & Tavasszy, 2018; Rezaei, van Wulfften Palthe, Tavasszy, Wiegman, & van der Laan, 2019), supplier selection and segmentation (Haeri & Rezaei, 2019; Rezaei et al., 2015; Rezaei, Nispeling, Sarkis, & Tavasszy, 2016), assessing the quality of scientific outputs (Salimi, 2017), energy (Kheybari, Kazemi, & Rezaei, 2019), and risk management (Torabi, Giahi, & Sahebjamnia, 2016).

Using BWM and the data collected from the 23 experts, we obtained the optimal weights of the indexes ( $w_1^*, w_2^*, \dots, w_n^*$ ) (see Table 5). Of the three indexes used in the study, the Democracy Index received the largest weight (0.368), and the Human Development Index (0.317) and the EPI (0.314) came second and third respectively (the sum of weights is one). Although the difference between the weights of the indexes is small, political rights and civil liberties (the subcategories of the Democracy Index) have high priority in comparison to the subcategories of the other two indexes, according to the experts who participated in the study.

The weights of the sub-criteria of each of the three indexes are

**Table 4**  
Expertise and country of residence of the experts.

Expert	Expertise/country	Expert	Expertise/country
1	e-democracy/UK	13	public administration/ Denmark
2	ICT & Politics/UK	14	public participation/Denmark
3	e-participation/UK	15	political science/Sweden
4	e-participation/UK	16	public participation/Sweden
5	e-participation/Germany	17	public administration/USA
6	political science/Germany	18	political science/USA
7	e-government/Turkey	19	e-service delivery/USA
8	ICT & Governance/ Netherlands	20	open government/USA
9	e-participation/Netherlands	21	e-democracy/USA
10	open Data/Netherlands	22	open government/ USA
11	e-democracy/Norway	23	e-government/Iran
12	e-government/Australia		

calculated in the same way as the weights of the three indexes. We call these weights local weights. It is clear that the sum of the weights of the sub-criteria under each index is one. Because the sub-criteria belong to different indexes with different weights, we cannot compare the local weight of a sub-criterion of one index to the weight of a sub-criterion of another index. This is why we multiply the weight of the sub-criteria by the weight of the main criterion they belong to. These weights are called global weights, and the sum of all the global weights over all the three indexes is one.

From external sources (UN, 2003–2016; UNDP, 2003–2016; Freedom House, 2003–2016), we also have  $x_{ij}$  (which is the evaluation of country  $i$  ( $i = 1, \dots, m$ ) with respect to its index  $j$  ( $j$  stands for the three indexes used to construct BEPI,  $j = 1$  (for index EPI),  $j = 2$  (for index HDI),  $j = 3$  (for index DI)). As these evaluations are of different scales, we first normalise the score of country  $k$ ,  $x_{kj}$  to  $\hat{x}_{kj} = \frac{x_{kj}}{\max_i \{x_{ij}\}}$  such

that for all  $i$  and  $j$  we have  $\hat{x}_{ij} \in [0, 1]$ .

To determine the overall BEPI score of country  $i$  (or  $BEPI_i$ ), we use the following formula.

$$BEPI_i = \sum_{j=1}^3 w_j^* \hat{x}_{ij}, i = 1, \dots, m.$$

After calculating the aggregated value of  $BEPI_i$ , we would be able to rank the countries. That is, a country with a larger BEPI is ranked higher.

## 5. Findings

Adding two extensions (HDI and DI) to the current version of the EPI to develop the BEPI, which covers the government and society sides of e-participation initiatives simultaneously, generates some changes to the evaluation results of e-participation initiatives on a global scale. Comparing the BEPI to the EPI, several major and minor changes occurred in the ranking of the UN member states (see Table 6). To provide a clear comparison between two indexes (EPI and BEPI), the values of the HDI and the DI as two extensions which were the main reason for these changes, are shown in Table 6.

There are similarities and differences between countries' rankings based on the EPI and rankings based on the BEPI (see Table 7). When a country has equal e-participation initiatives on both sides (government and society sides), the country has a similar rank in EPI and BEPI. In other words, if the government-led and society-led e-participation initiatives get similar values in a country, the results of EPI and BEPI will be the same. For example, comparing the ranking of the top 10 countries in both indexes shows that they are mostly equal, and massive changes did not occur in either index.<sup>2</sup> This shows that in the top-ranked countries, the society and the government sides are balanced, and no single side has the upper hand.

The bottom ten countries in the EPI and the BEPI are similar; however, they rank differently. Based on the HDI and DI, the bottom ten countries have the lowest level of democracy and human development in the world. Also, according to the EPI which evaluates the government's desire to increase citizen participation through technology-facilitated government initiatives, the governments of these countries have not made any attempt to promote either the government side of e-participation initiatives, or the society side. In other word, in these countries, the social and political contexts are not appropriate for citizens' participation and governments have no desire to encourage citizens' engagement.

In terms of regional analysis (see Table 8), European countries, on average, have the highest e-participation scores across both the EPI and the BEPI, and African countries have the lowest scores. Similarly,

<sup>2</sup> The exception is Singapore, which ranks 10th according to the EPI (2014), whereas according to the BEPI, Norway ranks 10th.

**Table 5**  
The weights and ranks of the main criteria and sub-criteria.

Main criteria	Main criteria weights	Sub-criteria	Local weights	Global weights	Rank
E-Participation Index	0.314	E-Information	0.253	0.08	7
		E-Consultation	0.304	0.096	4
		E-Decision-Making	0.443	0.141	3
Human Development Index	0.317	Life expectancy at birth	0.222	0.07	8
		Expected no of years of schooling	0.217	0.068	9
		Mean no of years of schooling	0.292	0.092	5
		Gross national income (GNI) per capita	0.269	0.085	6
Democracy Index	0.368	Political Rights	0.457	0.168	2
		Civil Liberties	0.543	0.2	1

European countries, on average, have the highest level of human development (HDI) and democracy (DI), while African countries have the lowest score on the HDI, and Asian countries have the lowest score on the DI on a global scale. Additionally, according to the BEPI, Oceanian countries have the most positive ranking change (+25.50), whereas Asian countries have the most negative ranking change (−34.73).

Sorted by income group (see Table 9), richer countries have the highest level, and low-income countries have the lowest score in all indexes (EPI, HDI, DI, and BEPI). Additionally, based on the BEPI, high-income countries have more positive ranking change (+6.15), whereas lower-middle-income countries have mostly a negative ranking change (−10.25). In contrast to the regional analysis where every regional category received different ratings based on each index, in income grouping, every category rating in all indexes is proportional to the income level.

The changes in ranking (see Table 7) can be attributed to taking the society-led initiatives into account. For example, Bahrain was ranked 13th in the EPI, whereas it ranks 101st in the BEPI. Inversely, Switzerland, one of the world's long-standing democracies, ranks 84th in the EPI and 17th in the BEPI. Based on the EPI, Switzerland is not ranked high, although this country has many society-led initiatives that were not considered (Lutz, 2012; Kobach, 1993; Setälä & Schiller, 2012) Switzerland is similar to the other top 10 countries in having a high level of democracy and human development. Table 10 lists the ten countries with the highest positive ranking change and the ten countries with the most negative ranking change.

To illustrate the differences between the EPI and the BEPI, four countries – non-democratic countries with high rankings in the EPI in comparison to democratic countries– were selected to show the trends of the EPI and the BEPI in the period 2003–14. As Fig. 3 clearly shows, the BEPI appears to make sense in terms of evaluating e-participation initiatives. Unlike the EPI, which shows drastic changes, especially in the period 2005–14, the BEPI shows a more stable development of e-participation. Similar results are shown in the period 2005–10 in Bahrain and the period 2010–12 in Saudi Arabia. In these countries, according to the dual sides of initiatives, especially society-led efforts, the process of e-participation development will be lengthy because it depends strongly on civil society development. Hence, although functionality in support of e-participation can be created quickly by governments, the society side lags behind.

## 6. Discussion

As the main purpose of the study, we incrementally extended the EPI, which evaluates e-participation initiatives exclusively from the government perspective, by adding two extensions (HDI and DI), which represent the society perspective, to assess e-participation initiatives. In other words, the EPI only evaluates government attempts to provide digital facilities for citizens to participate in policy and political decision-making processes. However, the realisation of real citizen participation requires social and political infrastructures which should be considered in order to obtain an accurate assessment of citizen participation.

According to the findings, in the new index (BEPI), DI has high priority compared to the other two indexes (EPI and HDI). In the BEPI, political dimensions such as political rights and civil liberties have a significant impact on the e-participation evaluation process. The basic idea behind this finding is that until political rights and civil liberties, two sub-criteria of the DI, have not been supported in a country, real and deep public participation will not occur. This finding is in line with other studies (cf. MCBride, 2013; Norris, 2003; Pirannejad & Janssen, 2017; Snider, 2010), that having active citizenship and qualified public participation strongly needs social and political infrastructures which facilitate appropriately modern form of political freedom encompassing both civil and political liberties.

Although the weight difference between the DI (0.368) and the other two indexes (EPI (0.314) and HDI (0.317)) is minor, the findings of this study emphasise that the concept of citizen participation is not mono-dimensional, and that an accurate assessment of the concept requires simultaneous attention to both government efforts and the political and social infrastructure of the countries. This finding has been highlighted by a number of researchers (cf. Astrom et al., 2011; Coleman & Blumler, 2009; Islam, 2008; Katchanovski & La Porte, 2005; Lee & Kim, 2014; Parra Beltran, 2015) who emphasised the social and political readiness, social norms, social trust, and social ties as key issues in the field of public participation.

Developing the BEPI changed the current position of all countries, except the Netherlands, which has the same rank (1) in both indexes (EPI and BEPI). These changes include a 51% rise and a 49% fall in ranking among the UN member states. Among the countries which have a positive ranking change (from +1 to +90), the significant rises are shown by countries that have a high level of human development and maturity of democracy such as Switzerland, Czech Republic, Lichtenstein, Cyprus and Dominica.

Additionally, based on the regional analysis, Oceania, Americas, and European countries have the most positive ranking changes on a global scale. The values of HDI and DI of the countries in these regions illustrate that most of the countries have effective social and political contexts for citizen participation. Examples are Norway, Sweden, Denmark, UK, USA, Canada, Australia, and New Zealand. In other words, in these groups of countries, we can see a good balance between government-led and society-led e-participation initiatives and as a result, the ranking of the countries rise significantly in the BEPI.

Inversely, the countries which experienced the strongest negative ranking change (from −1 to −97), do not have a good status of democracy and human development. Examples are China, Russia, Bahrain, Saudi Arabia, Kazakhstan, and Venezuela. Additionally, the regional analysis shows that Asian and African countries have the most negative ranking changes globally. Examples are Kuwait, Thailand, Uzbekistan, Azerbaijan, Pakistan, Rwanda, Ethiopia, Sudan, and Nigeria. The HDI and DI values of the countries in these regions illustrate that most of the countries suffer from a weakness of democracy. Although the Asian countries have a better status of human development than the African countries, the latter have fallen in rank in the BEPI because of the weakness in supporting democratic indicators.

**Table 6**  
UN members' scores on the EPI, HDI, DI and BEPI.

Country	EPI	HDI	DI	BEPI (Overall Score)	Country	EPI	HDI	DI	BEPI (Overall Score)
Netherlands	1.00	0.92	0.99	0.75	Seychelles	0.25	0.77	0.67	0.39
Australia	0.94	0.93	0.97	0.73	Suriname	0.14	0.71	0.77	0.38
United Kingdom	0.96	0.91	0.97	0.73	Ecuador	0.49	0.73	0.60	0.38
United States	0.92	0.91	0.92	0.72	United Arab Emirates	0.84	0.84	0.21	0.38
France	0.96	0.89	0.95	0.72	Benin	0.18	0.48	0.80	0.38
Japan	0.96	0.89	0.90	0.71	Russia	0.69	0.80	0.26	0.37
Uruguay	0.98	0.79	0.98	0.70	Thailand	0.55	0.73	0.54	0.37
Republic of Korea	1.00	0.90	0.85	0.70	Kenya	0.65	0.55	0.53	0.37
Chile	0.94	0.83	0.95	0.65	São Tomé and Príncipe	0.02	0.56	0.81	0.37
Norway	0.69	0.94	1.00	0.63	Tanzania	0.39	0.52	0.64	0.36
Finland	0.71	0.88	1.00	0.62	Indonesia	0.29	0.68	0.64	0.36
Canada	0.82	0.91	0.98	0.62	Ukraine	0.43	0.75	0.55	0.35
New Zealand	0.78	0.91	0.97	0.61	Malaysia	0.53	0.78	0.47	0.35
Germany	0.71	0.92	0.96	0.60	Sri Lanka	0.65	0.76	0.42	0.35
Estonia	0.76	0.86	0.95	0.60	Kuwait	0.43	0.82	0.39	0.34
Spain	0.78	0.88	0.96	0.60	Bosnia and Herzegovina	0.24	0.73	0.61	0.34
Switzerland	0.37	0.93	0.96	0.59	Lesotho	0.14	0.50	0.72	0.34
Sweden	0.61	0.91	0.99	0.58	Paraguay	0.25	0.68	0.61	0.34
Ireland	0.65	0.92	0.97	0.58	Bahrain	0.82	0.82	0.16	0.33
Greece	0.80	0.87	0.83	0.58	Bhutan	0.35	0.61	0.55	0.33
Costa Rica	0.82	0.77	0.90	0.58	Bangladesh	0.39	0.57	0.53	0.33
Luxembourg	0.55	0.89	0.99	0.58	Oman	0.71	0.79	0.26	0.33
Italy	0.78	0.87	0.90	0.57	Kazakhstan	0.76	0.79	0.25	0.32
Belgium	0.63	0.89	0.97	0.57	Armenia	0.53	0.73	0.43	0.32
Colombia	0.88	0.72	0.62	0.57	Mozambique	0.33	0.42	0.58	0.32
Austria	0.63	0.89	0.96	0.57	Venezuela	0.57	0.76	0.38	0.32
Slovakia	0.63	0.84	0.91	0.57	Malawi	0.24	0.45	0.60	0.32
Denmark	0.55	0.92	0.98	0.56	Honduras	0.33	0.61	0.51	0.32
Portugal	0.65	0.83	0.97	0.56	Sierra Leone	0.10	0.41	0.67	0.32
Iceland	0.49	0.90	1.00	0.56	Solomon Islands	0.08	0.51	0.65	0.31
Latvia	0.71	0.82	0.84	0.55	Lebanon	0.29	0.77	0.48	0.31
Liechtenstein	0.27	0.91	0.98	0.54	Zambia	0.18	0.59	0.59	0.31
Lithuania	0.65	0.84	0.90	0.54	Maldives	0.27	0.71	0.48	0.30
Poland	0.49	0.84	0.93	0.53	Nepal	0.29	0.55	0.50	0.30
Malta	0.47	0.84	0.97	0.53	Liberia	0.12	0.43	0.59	0.30
Andorra	0.43	0.84	0.96	0.53	Jordan	0.47	0.75	0.35	0.30
Mongolia	0.69	0.73	0.86	0.52	Nigeria	0.33	0.51	0.46	0.29
Slovenia	0.39	0.88	0.91	0.52	Nicaragua	0.10	0.63	0.54	0.29
Peru	0.71	0.73	0.71	0.51	Fiji	0.39	0.73	0.37	0.28
Cyprus	0.31	0.85	0.92	0.50	Kyrgyzstan	0.41	0.66	0.39	0.28
Singapore	0.90	0.91	0.51	0.50	Papua New Guinea	0.00	0.51	0.60	0.28
Hungary	0.45	0.83	0.88	0.49	Pakistan	0.33	0.54	0.42	0.27
Czech Republic	0.25	0.87	0.94	0.49	Comoros	0.04	0.50	0.55	0.27
Antigua and Barbuda	0.51	0.78	0.80	0.48	Burkina Faso	0.14	0.40	0.53	0.27
Romania	0.47	0.79	0.84	0.48	Saudi Arabia	0.57	0.84	0.10	0.25
Argentina	0.55	0.84	0.80	0.48	China	0.65	0.73	0.17	0.25
Montenegro	0.59	0.80	0.72	0.48	Haiti	0.18	0.48	0.43	0.25
Grenada	0.39	0.75	0.89	0.48	Cote d'Ivoire	0.18	0.46	0.45	0.25
Bahamas	0.20	0.79	0.96	0.47	Libya	0.06	0.72	0.41	0.25
Panama	0.49	0.78	0.82	0.47	Togo	0.10	0.48	0.47	0.24
Saint Lucia	0.27	0.73	0.92	0.47	Brunei	0.06	0.86	0.30	0.24
Croatia	0.33	0.82	0.86	0.47	Rwanda	0.51	0.48	0.26	0.24
Barbados	0.10	0.79	0.99	0.47	Mali	0.16	0.42	0.44	0.24
El Salvador	0.61	0.67	0.77	0.46	Gabon	0.22	0.68	0.34	0.23
Palau	0.24	0.78	0.92	0.46	Vietnam	0.49	0.67	0.20	0.23
India	0.63	0.61	0.77	0.46	Azerbaijan	0.43	0.75	0.22	0.23
Kiribati	0.29	0.59	0.91	0.45	Mauritania	0.08	0.78	0.34	0.22
Micronesia	0.25	0.64	0.93	0.45	Uganda	0.14	0.48	0.37	0.22
Dominica	0.12	0.72	0.95	0.45	Algeria	0.08	0.74	0.34	0.22
Belize	0.29	0.71	0.87	0.44	Guinea	0.02	0.41	0.41	0.21
Trinidad and Tobago	0.31	0.77	0.81	0.44	Cambodia	0.20	0.55	0.30	0.20
Serbia	0.41	0.77	0.78	0.44	Angola	0.24	0.53	0.29	0.20
Ghana	0.39	0.58	0.84	0.44	Yemen	0.27	0.50	0.26	0.20
Saint Kitts and Nevis	0.12	0.75	0.90	0.44	Iraq	0.14	0.65	0.25	0.19
Samoa	0.39	0.70	0.81	0.43	Belarus	0.35	0.80	0.14	0.19
Saint Vincent, Grenadines	0.16	0.72	0.89	0.43	Burundi	0.06	0.40	0.34	0.18
Tunisia	0.65	0.72	0.63	0.43	Cuba	0.35	0.77	0.12	0.18
South Africa	0.33	0.67	0.81	0.42	Guinea-Bissau	0.02	0.42	0.32	0.17
Georgia	0.59	0.75	0.63	0.42	Ethiopia	0.25	0.44	0.18	0.17
Albania	0.53	0.73	0.67	0.41	Myanmar	0.08	0.54	0.26	0.17
Bulgaria	0.25	0.78	0.78	0.41	Iran	0.20	0.71	0.16	0.17
Tonga	0.33	0.72	0.75	0.41	Congo, Democratic Rep	0.02	0.43	0.30	0.17
Morocco	0.80	0.63	0.42	0.41	Gambia	0.22	0.44	0.21	0.16
Dominican Republic	0.33	0.72	0.73	0.40	Uzbekistan	0.47	0.68	0.04	0.16

(continued on next page)

Table 6 (continued)

Country	EPI	HDI	DI	BEPI (Overall Score)	Country	EPI	HDI	DI	BEPI (Overall Score)
Turkey	0.49	0.76	0.60	0.40	Swaziland	0.16	0.53	0.20	0.16
Philippines	0.57	0.67	0.63	0.40	Congo, Republic of	0.10	0.59	0.20	0.16
Botswana	0.31	0.70	0.74	0.40	Lao	0.20	0.58	0.12	0.13
Guyana	0.33	0.64	0.72	0.39	Sudan	0.27	0.48	0.07	0.13
Qatar	0.61	0.85	0.28	0.39	Turkmenistan	0.12	0.69	0.07	0.12
Jamaica	0.20	0.72	0.74	0.39	Equatorial Guinea	0.02	0.59	0.08	0.10
Vanuatu	0.18	0.59	0.79	0.39	Syria	0.10	0.59	0.01	0.09
Bolivia	0.41	0.66	0.67	0.39					

The analysis of ranking changes based on the income level of the countries also reveals interesting findings. Social and political researchers emphasise the fundamental role of economic development in social and political development (e.g., [Diamond, 1992](#); [Huber, Rueschemeyer, & Stephens, 1993](#); [Rueschemeyer, Stephens, & Stephens, 1992](#)), and the findings of this study consistently demonstrate more positive changes in high-income countries group such as Switzerland, Norway, Sweden, Belgium, and Denmark, and more negative changes in low-income countries group such as Tanzania, Nepal, Republic of Congo, Nepal, and Rwanda. In other words, the analysis of countries' ranking changes based on income level illustrates that countries with high incomes also get a high value in EPI, HDI, and DI. In these countries, not only are the social and political contexts appropriate for citizens' participation, but governments are making more efforts to encourage citizens' engagement. Inversely, with declining levels of income in especially lower-middle and low-income countries such as Yemen, Afghanistan, Tajikistan, Tanzania, Nepal, and Mali, the social and political status of the countries also declines, lowering the support to citizen participation. Additionally, the reduction of income levels and economic equality can negatively affect citizen engagement ([Oliver, 1999](#); [Solt, 2008](#)). This finding is consistent with the findings of several studies (cf. [Acemoglu, Johnson, Robinson, & Yared, 2008](#); [Benhabib, Corvalan, & Spiegel, 2013](#); [Dufrechou, 2016](#); [Epstein, Bates, Goldstone, Kristensen, & O'Halloran, 2006](#)) which emphasised the critical role of economic globalisation, economic development, and related variables on public participation.

In addition to the countries with major ranking changes (positive or negative) in the BEPI, there were some cases where the changes were minor. These cases can be distinguished in two situations: i) the value of the EPI, HDI, and DI are approximately the same in each case. In other words, when the country has similar EPI, HDI, and DI values, the status of the country will not change greatly in the new index (BEPI). For example, for Canada, Japan, France, Peru, Italy, UK, USA, Greece, South Korea, and Chile the values of EPI, HDI, and DI are almost identical. In these cases, the concept of citizen participation has been implemented in a balanced perspective from both government and society sides. ii) where the value of HDI and DI vary considerably. In some countries, such as Bahrain, Saudi Arabia, Algeria, Iraq, United Arab Emirates, Myanmar, Maldives, Equatorial Guinea, and Mauritania, the HDI has a higher value than DI. Conversely, in some other countries such as Ghana, Uruguay, and Costa Rica where the DI has a higher value than HDI, there is not sufficiently mature political or social infrastructure to support and facilitate citizens' participation.

Examining the current EPI illustrates that these categories of countries, which have low value in HDI, or DI, or both of them, do not even have an acceptable status in EPI. It shows that not only are the political and social contexts not ready for citizen participation in these countries, but the governments are also deficient in the development of public participation in the processes of policy formulation and political decision-making. In other words, desirable social and political conditions put pressure on governments to facilitate citizen participation in the process of decision-making ([Kahne & Bowyer, 2019](#); [Pirannejad, 2017](#); [Van Speier, 2009](#)), and can prevent governments from manipulating the EPI by introducing participation instruments (ignoring

society-led initiatives) simply to rank high on the index ([Astrom et al., 2011](#)). Such an index can stimulate society-led initiatives and allow people to feel free to express their opinion and offer alternative arguments.

The risk of only taking the government-led side into account is that it provides a picture in which e-participation might appear to be taking place when it is not. Politicians and policymakers favouring one side (government side) might not want to adopt this approach. In this condition, government-led initiatives might only be used to communicate propaganda or as a means to identify and repress people who hold non-conformist views. In such a case, no actual e-participation is held non-conformist views. In such a case, no actual e-participation is held non-conformist views.

E-participation initiatives are not limited to government and need to be complemented by efforts from civil society. Society-led initiatives can create awareness for citizens about social and political issues, can provide different insights, give more freedom for providing arguments, and positively affect the citizens' ability and readiness to participate. Society-led initiatives can create different views on government, policy-making and decisions, and can be essential for allowing people to feel free to participate and to express their real opinions about what is going on. These initiatives are harder to measure, however, there is a need to develop dedicated measurement tools to refine the BEPI.

It should be noted that participation is not only a building block of all democratic systems but can also be used to improve the effectiveness of policies, resulting in lower costs, higher productivity, better security and so on. Creating an e-participation environment purely for the sake of scoring higher on the EPI ranking does not generate these kinds of outcomes. Therefore, politicians and policy makers should actively stimulate the involvement of the public and ensure that the public is empowered to participate by providing the necessary technology, capabilities, time and resources. As discussed by [Janowski \(2015\)](#), in this condition, the digital government goals should connect to the development goals and address the policy-relevant problems. Our balanced index (BEPI) reveals the need for these kinds of goals and can be used by policymakers as an argument to invest in participation willingness and participation abilities of the general public.

## 7. Conclusions and future research

The object of this study was to develop a Balanced E-Participation Index (BEPI) in order to evaluate e-participation initiatives from both the demand side (bottom-up) and the supply side (top-down) simultaneously, on a global scale. The study adds the society perspective, as a representative of the demand side of e-participation initiatives, to the E-Participation Index (EPI) which was developed by the United Nation (UN) and evaluates e-participation initiatives among the UN member states purely from the government's perspective.

Neglecting the society perspective in the current version of the EPI has led to ambiguities and counter-intuitive results, which negatively affect accuracy and, in some cases, the validity of the index. For example, based on the nature of the e-participation concept which aims to develop the participation of citizens in policy formulation and political decision-making and ultimately to promote democracy in society, it is expected to find that long-standing democratic countries have a higher

**Table 7**  
The ranking of the countries based on BEPI.

Country	Rank (BEPI)	Rank (EPI)	Ranking Change	Country	Rank (BEPI)	Rank (EPI)	Ranking Change
Netherlands	1	1	0	Seychelles	83	110	+27
Australia	2	7	+5	Suriname	84	134	+50
United Kingdom	3	4	+1	Ecuador	85	59	-26
United States	4	9	+5	United Arab Emirates	86	12	-74
France	5	4	-1	Benin	87	126	+39
Japan	6	4	-2	Russia	88	28	-60
Uruguay	7	3	-4	Thailand	89	50	-39
Republic of Korea	8	1	-7	Kenya	90	31	-59
Chile	9	7	-2	São Tomé and Príncipe	91	157	+66
Norway	10	28	+18	Tanzania	92	77	-15
Finland	11	23	+12	Indonesia	93	100	+7
Canada	12	13	+1	Ukraine	94	70	-24
New Zealand	13	18	+5	Malaysia	95	54	-41
Germany	14	23	+9	Sri Lanka	96	31	-65
Estonia	15	21	+6	Kuwait	97	70	-27
Spain	16	18	+2	Bosnia and Herzegovina	98	116	+18
Switzerland	17	84	+67	Lesotho	99	134	+35
Sweden	18	42	+24	Paraguay	100	110	+10
Ireland	19	31	+12	Bahrain	101	13	-88
Greece	20	16	-4	Bhutan	102	85	-17
Costa Rica	21	13	-8	Bangladesh	103	77	-26
Luxembourg	22	50	+28	Oman	104	23	-81
Italy	23	18	-5	Kazakhstan	105	21	-84
Belgium	24	38	+14	Armenia	106	54	-52
Colombia	25	11	-14	Mozambique	107	88	-19
Austria	26	38	+12	Venezuela	108	47	-61
Slovakia	27	38	+11	Malawi	109	116	+7
Denmark	28	50	+22	Honduras	110	88	-22
Portugal	29	31	+2	Sierra Leone	111	143	+32
Iceland	30	59	+29	Solomon Islands	112	149	+37
Latvia	31	23	-8	Lebanon	113	100	-13
Liechtenstein	32	105	+73	Zambia	114	126	+12
Lithuania	33	31	-2	Maldives	115	105	-10
Poland	34	59	+25	Nepal	116	100	-16
Malta	35	65	+30	Liberia	117	139	+22
Andorra	36	70	+34	Jordan	118	65	-53
Mongolia	37	28	-9	Nigeria	119	88	-31
Slovenia	38	77	+39	Nicaragua	120	143	+23
Peru	39	23	-16	Fiji	121	77	-44
Cyprus	40	97	+57	Kyrgyzstan	122	74	-48
Singapore	41	10	-31	Papua New Guinea	123	162	+39
Hungary	42	69	+27	Pakistan	124	88	-36
Czech Republic	43	110	+67	Comoros	125	156	+31
Antigua and Barbuda	44	57	+13	Burkina Faso	126	134	+8
Romania	45	65	+20	Saudi Arabia	127	47	-80
Argentina	46	50	+4	China	128	31	-97
Montenegro	47	45	-2	Haiti	129	126	-3
Grenada	48	77	+29	Cote d'Ivoire	130	126	-4
Bahamas	49	122	+73	Libya	131	153	+22
Panama	50	59	+9	Togo	132	143	+11
Saint Lucia	51	105	+54	Brunei	133	153	+20
Croatia	52	88	+36	Rwanda	134	57	-77
Barbados	53	143	+90	Mali	135	131	-4
El Salvador	54	42	-12	Gabon	136	120	-16
Palau	55	116	+61	Vietnam	137	59	-78
India	56	38	-18	Azerbaijan	138	70	-68
Kiribati	57	100	+43	Mauritania	139	149	+10
Micronesia	58	110	+52	Uganda	140	134	-6
Dominica	59	139	+80	Algeria	141	149	+8
Belize	60	100	+40	Guinea	142	157	+15
Trinidad and Tobago	61	97	+36	Cambodia	143	122	-21
Serbia	62	74	+12	Angola	144	116	-28
Ghana	63	77	+14	Yemen	145	105	-40
Saint Kitts and Nevis	64	139	+75	Iraq	146	134	-12
Samoa	65	77	+12	Belarus	147	85	-62
Saint Vincent	66	131	+65	Burundi	148	153	+5
Tunisia	67	31	-36	Cuba	149	85	-64
South Africa	68	88	+20	Guinea-Bissau	150	157	+7
Georgia	69	45	-24	Ethiopia	151	110	-41
Albania	70	54	-16	Myanmar	152	149	-3
Bulgaria	71	110	+39	Iran	153	149	-4
Tonga	72	88	+16	Congo, Dem Rep	154	157	+3
Morocco	73	16	-57	Gambia	155	120	-35
Dominican Republic	74	88	+14	Uzbekistan	156	65	-91

(continued on next page)

Table 7 (continued)

Country	Rank (BEPI)	Rank (EPI)	Ranking Change	Country	Rank (BEPI)	Rank (EPI)	Ranking Change
Turkey	75	59	-16	Swaziland	157	131	-26
Philippines	76	47	-29	Congo, Republic of	158	143	-15
Botswana	77	97	+20	Lao	159	122	-37
Guyana	78	88	+10	Sudan	160	105	-55
Qatar	79	42	-37	Turkmenistan	161	139	-22
Jamaica	80	122	+42	Equatorial Guinea	162	157	-5
Vanuatu	81	126	+45	Syria	163	143	-20
Bolivia	82	74	-8				

Table 8

Regional averages for the EPI, HDI, DI and BEPI.

Region	EPI	HDI	DI	BEPI	Rank changes
Africa	0.21	0.53	0.46	0.21	-2.79
Americas	0.43	0.73	0.75	0.44	+15.12
Asia	0.47	0.71	0.40	0.32	-34.73
Europe	0.57	0.85	0.86	0.53	+12.97
Oceania	0.35	0.68	0.79	0.43	+25.50
World average	0.40	0.7	0.65	0.38	+16.07

Table 9

Averages by income group for the EPI, HDI, DI and BEPI.

Income level	EPI	HDI	DI	BEPI	Rank Changes
High Income	0.61	0.85	0.79	0.52	+6.15
Upper Middle Income	0.38	0.73	0.59	0.37	-2.63
Lower Middle Income	0.34	0.61	0.53	0.32	-10.25
Low Income	0.18	0.47	0.45	0.25	-3.29
World average	0.37	0.66	0.59	0.36	-2.50

Table 10

Top and bottom 10 countries based on ranking change.

Country	Rank (BEPI)	Rank (EPI)	Ranking change
Barbados	53	143	+90
Dominica	59	139	+80
Saint Kitts and Nevis	64	139	+75
Liechtenstein	32	105	+73
Bahamas	49	122	+73
Switzerland	17	84	+67
Czech Republic	43	110	+67
São Tomé and Príncipe	91	157	+66
Saint Vincent	66	131	+65
Palau	55	116	+61
...	...	...	...
Azerbaijan	138	70	-68
United Arab Emirates	86	12	-74
Rwanda	134	57	-77
Vietnam	137	59	-78
Saudi Arabia	127	47	-80
Oman	104	23	-81
Kazakhstan	105	21	-84
Bahrain	101	13	-88
Uzbekistan	155	65	-90
China	128	31	-97

rank than other countries in the index. Yet in the current version of the index, we can see that Bahrain outranks Belgium, Russia beats Canada, China overtakes Switzerland, and the United Arab Emirates ranks higher than Ireland.

To include both government-led and society-led initiatives, we incrementally developed a balanced EPI. It comprises the Human Development Index (HDI) of the UN and the Freedom House Democracy Index (DI) as proxies for society-led initiatives, as well as the EPI, which evaluates government-led e-participation initiatives.

The analysis of the new index (BEPI) shows that all non-democratic countries such as Bahrain, China, Russia, Kazakhstan, United Arab Emirates and Saudi Arabia – who counteract the legitimacy deficit by promoting e-service delivery to citizens and introducing themselves as pioneers in e-participation development on a global scale – undergo a dramatic fall in the BEPI. Inversely, countries such as Switzerland, Sweden, Ireland, Belgium, Liechtenstein and the Czech Republic, who are at a high level in the HDI and the DI, are promoted to the top ranks in the new index.

The results show that most of the high-income countries rank highly in the HDI and the DI, and have more positive ranking changes in the new index (BEPI); however, lower-middle-income and low-income countries have the lowest ranks in the indexes and more negative ranking changes in the BEPI compared to the EPI on a global scale. Additionally, based on the regional analysis, the countries in Oceania, Americas, and Europe that have a high level of HDI and DI, have a significant positive ranking change, and most of the countries in Asian and African regions have a dramatic fall in the BEPI. The purpose of this study was not to address the regional comparison or evaluate the effects of economic factors on the e-participation initiatives. We encourage further studies to classify countries based on related economic variable such as income level, gross domestic product (GDP), and gross national income (GNI) in order to explore how the economic factors might affect the e-participation initiatives in each category of the countries. It also would be interesting to make a regional comparison to illustrate the differences and similarities in initiatives carried out by the countries in the same or different regions.

The BEPI is based on existing indexes and represents an incremental change. This served our purpose, as the data showed that including society-led initiatives results in other outcomes. In the BEPI, we had to add variables representing the level of willingness and empowerment of citizens to participate, in order to add society-led initiatives to the EPI. For this purpose, we found several political and social variables. However, to use them in the new index, we need to have the dataset of the variables on a global scale. Unfortunately, in several cases, the dataset is not available at the national or international level and the dataset used might not directly measure target variables such as the willingness and empowerment levels of citizens. Among the current global datasets, we found the HDI and DI as acceptable but not ideal datasets that respectively evaluate the social and political development of the UN member states globally. It should be mentioned that based on the broader and multidimensional nature of social and political development, in this study we used the full version of the HDI and DI in order to evaluate the social and political maturity of countries and accordingly it could make some limitations for the study. It might be argued that one or more items of HDI or DI do not fit ideally into the new index (BEPI). In the case of HDI, further research might find an alternative index, which better represents the willingness and empowerment of citizens, as two critical components of the society perspective of e-participation initiatives, and also addresses other related variables such as digital divide, freedom of internet, digital rights and privacy. In the case of DI, there are other data sets such as the Economist Intelligence Unit's Democracy Index, the Health Democracy Index, V-Dem Project, and World Governance Indicators which evaluate the level of political

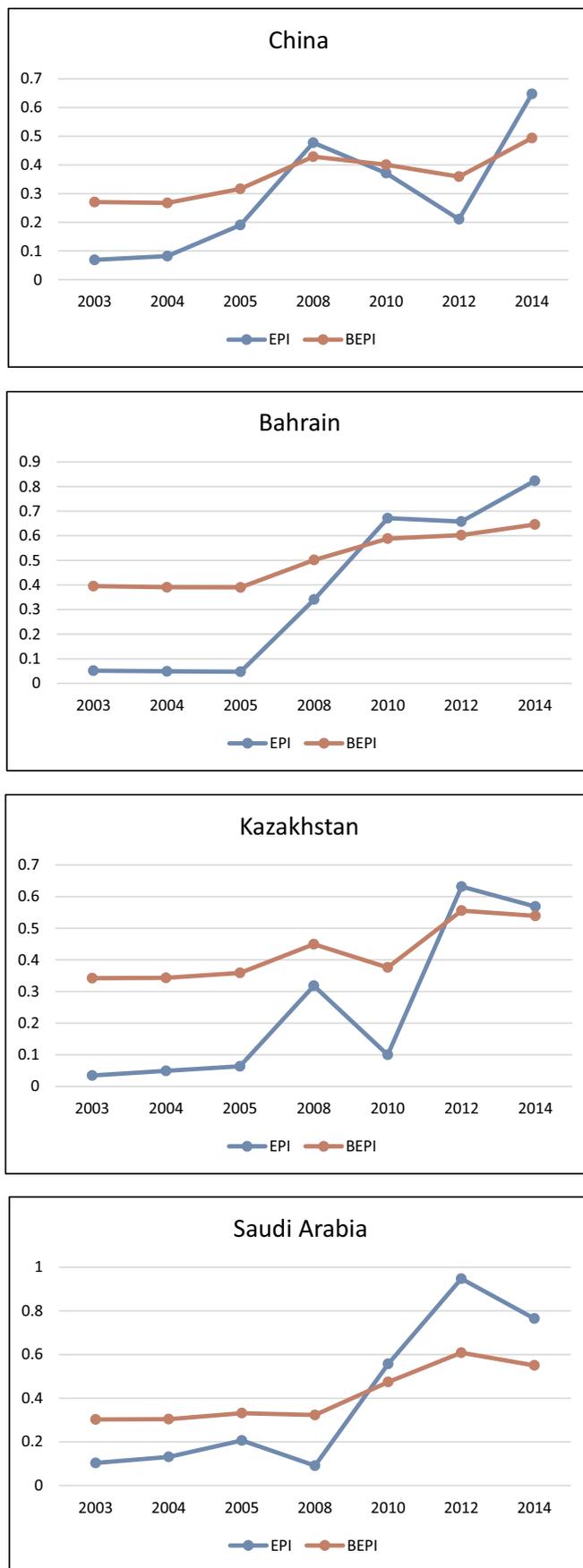


Fig. 3. Comparison of UN EPI and the BEPI in sample countries over the period 2003–14.

maturity of societies from other perspectives. We encourage further studies to replace other alternative indexes and compare the outputs with our results.

In this study, 23 experts participated and we used the best-worth method (BWM) as a structured pairwise comparison method to weight the components of the new index (BEPI) based on their opinions. There are two primary limitations to the generalization of the result of the study. First, most of the experts who participate in the study live in developed countries and their opinions about the weighting the components of e-participation initiatives may be affected by the current social, political and economy status of the location of their lives. Accordingly, it is recommended that future researchers prepare specific clusters of experts which include experts from developed, developing, and less developed countries and reweight the components of the new index (BEPI) based on their opinion. The second is related to the methodology which was used in the study. While the BWM is efficient with respect to the amount of data and also has high reliability, we recommend future researchers to use other pairwise comparison-based methods such as the analytic hierarchy process (AHP), fuzzy AHP, and analytic network process (ANP) and compare the results with our results.

Finally, it should be mentioned that although the new index (BEPI) has largely addressed some of the challenges and ambiguities of the current index (EPI), selecting the HDI and DI might not be the best option, and so the BEPI might not be the best index which covers all aspects of e-participation initiatives. We encourage further research by developing new indexes which might cover better the social and political aspects of e-participation initiatives to further refine the BEPI and related constructs to yield better performance.

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