

E-participation within the context of e-government initiatives: A comprehensive systematic review

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ABSTRACT

Context: The e-government concept has gained significant interest from academics and practitioners. E-government projects have altered how government institutions communicate, share content, collaborate, and interact with citizens. Nowadays, e-government systems are crucial resources for facilitating government work and interaction with other people and organizations to co-operation with each other. Despite the availability of authentic research studies on the trend of e-government, there is still a need to conduct a comprehensive review and combine findings from earlier studies, as well as to define the current issues surrounding e-participation in the context of e-government initiatives.

Objective: The main aim of this study is to review the previous literature to explore and understand the issues surrounding e-participation within the context of e-government initiatives, and to what extent these issues impact the success of these initiatives.

Method: In this study, a systematic review method has been used to gather, analyze, and synthesize data regarding the accuracy and value of previous articles. This method followed a predefined review protocol and used both automated and manual research methods to find all the relevant research papers that were published in digital databases between 2010 and 2020.

Results: According to the review study, we extracted 211 articles that addressed the key issues that negatively affected the level of e-participation, which were analyzed by following a systematic mapping method that collected significant information to fulfill the research aim. We classified and investigated the published papers that addressed a broad range of topics, including three crucial issues: user acceptance, interaction, and participation. As a result of the weight analysis, computer self-efficacy and perceived ease of use were found to be the best predictors of whether people want to use e-government systems. Performance expectancy, effort expectancy, facilitating conditions, and service quality were also found to be promising predictors of satisfaction with e-government services that need more study.

Conclusions: This systematic review found a high need for more research on this vast topic, as e-participation is critical to e-government performance and is evolving with ICT. Finally, this study will help academics understand current limitations, obstacles, and gaps, as well as future research opportunities in e-participation.

Introduction

In the last two decades, almost all governments have spent emphasizing the use of information and communication technologies (ICTs) as a means of increasing performance and efficacy. The e-government initiatives seek to increase the efficiency of all government services through employing official websites and platforms, hence fostering a more interactive environment between citizens and government agencies.

The strategy of e-government outlined several anticipated benefits, including increased work efficiency, improved public trust, better openness, the elimination of administrative and financial corruption, and eventually, the promotion of democratic governance. [1,2]. Therefore,

from the point of view of all stakeholders involved, it would be necessary to investigate whether e-government projects are meeting their goals [3].

According to Schuppan [4], e-government deployment allows governments to operate their institutions more efficiently and effectively. Governments have been headed towards implementing e-government initiatives due to a lack of citizen interaction, distrust of institutions, and dissatisfaction with government performance [5,6]. However, many governments continue to struggle with the acceptance of e-government solutions and fail to meet user expectations [7,8]. Among the efforts made to overcome the challenges is the engagement of stakeholders in the development and decision-making processes for e-services. Elec-

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tronic involvement (e-participation), for example, can be critical in fostering larger participation in decision-making and public policy [9].

An early description of the e-participation concept defines it as "ICT-supported participation in processes involved in government and governance" [10]. According to Sæbø et al. [11], E-participation includes all aspects of technology-mediated interaction between civil society and each of the formal political and administrative spheres. Wirtz et al. [12] say that e-participation is "a participatory process that is made possible by modern information and communication technologies and that allows stakeholders to actively participate in public decision-making processes through active information exchange and thus promotes fair and representative policy-making."

During the past decade, the e-participation subject has become increasingly prominent [13]. E-participation studies have demonstrated a multitude of successes and failures, but they lack systematic frameworks interpreting the causes of failure and how they occur [14]. Indeed, with technological advancements and globalization, participatory processes are being challenged where technological innovations make it vital that stakeholders keep pace with the digital wave [15], and promote "creative citizenship" [16]. So far, no consensus has been formed or widely adopted among scholars on the concept of e-participation [17,11,18], which may impact the growth and maturity of the research field [19].

Even though governments are dealing with more and more complicated social-technical issues, they are trying to come up with new strategies that relied on advanced information technology (ICTs) [20]. In most cases, these strategies are emerging from the democratic theory, which is based on the deliberative procedures and ongoing talks between agencies and the people they serve [16]. Nevertheless, the necessity to develop structures based on the active participation of many public and private partners is at the heart of progressing the e-government initiatives and creating public benefit [21,22].

In this sense, it appears that there is no argument that e-participation platforms are one of the most significant features of democracy [23]. The level of e-participation is one of the integral monitoring indicators used by the United Nations' Department of Economic and Social Affairs (UN-DESA) to assess the development of e-government initiatives. According to annual UN reports, the e-participation rate is still low in most developing countries and also oscillates in the top-ranked countries [24–26].

The e-government initiatives, particularly within the aspect of e-participation, are moving forward in parallel with the growth of ICT. Governments around the world invest significantly in digital initiatives to build knowledge communities with linked and actively involved citizens, but issues such as a lack of sustained interaction and participation quality still afflict them [27]. This study tries to explore the dispersed literature to figure out the themes that affect the success of digital projects provided by e-government initiatives and how these themes relate to e-participation.

There are several scientific articles that debate different thematizes within this field. Even though there have been reviews of the literature on similar topics before, these studies had different goals. For instance, Gupta et al., [28] analyze various theoretical frameworks that have been applied to research citizen adoption of e-government, but it does not investigate how they are related to one another. Another review of the literature aimed to determine the scope of e-participation considering citizens' participation in e-government [29]. While Twizeyimana & Andersson, [30] focused their research on the results of the public value effect of e-government research in their other studies. Moreover, Singh et al., [31] also perfectly described models and theories to evaluate different constructs and their relations to measure the performance of e-government projects. However, the scope of their study was limited to one "resource" database. Finally, S. Sharma et al., [27] explored the literature and reviewed theories and models from different fields of political, social, and information science that are based on the theoretical foundations of the concept of digital citizen empowerment. They looked at how these theories affect the development of information societies and

the participation of active citizens to give practitioners and researchers concrete action and policy points.

The current study has three main aims. The first aim is to collect, summarize, analyze, and organize data on the accuracy and significance of the previous studies published in the literature between 2010 and 2020. The second aim is to provide a comprehensive vision of the findings and the relationship between the thematizes that surround e-participation. The third aim is to define the obstacles and gaps which need to be addressed by conducting further research in the future. This work is conducted systematically to provide the practitioners and academics who work within the field of e-government and e-participation with a clear picture and solid evidence of the current state of the research. To achieve the objectives of this research, four research questions (RQs) have been set, which are:

RQ1. What are the issues/problems surrounding e-participation?

RQ2. Are there already available theories/models that address these issues or the root cause?

RQ3. What are the factors that cause the issues?

RQ4. Is there any correlation between the identified factors that causes the issues?

The answers to these questions will lead the reader to a better understanding of how the current projects that are delivered by e-government initiatives are advancing in terms of stakeholder engagement in line with evolving ICT. Furthermore, by carefully analyzing selected papers, this review provides a concise analytical overview for the academic researchers and practitioners, trying to inform them of aspects in which research is lacking or where additional exploration is necessary to identify previously unresearched issues.

Background

Definitions and Classifications of E-government

E-Government is one of the initiatives that aim to facilitate management functions and activities of governments. It started to appear in the 1990s and was part of a management covenant called the New Public Administration [32]. The e-government initiative is considered one of the government strategies that aim to strengthen citizen-government communication by providing government projects. Al Gore, the former U.S. Presidential candidate, was the first to put forward the issue of e-government to interact between citizens and government agencies and benefit from e-government services [33]. E-government can offer high-level, effective, and appropriate public services for both service managers and service users [34].

Governments are known to contribute to e-government by adopting information and communication technology (ICT) in delivering services to businesses, citizens, and governmental or non-governmental entities [35]. Therefore, e-government is classified into three main types based on the nature of stakeholders. The most common type is **government-to-citizens (G2C)**, in which the citizen is the targeted user; thus, this type aims to provide governmental services to a citizen in an electronic form and uses website technology as a strategic tool to present services and facilitate contacts between government institutions and citizens [36, 37].

The second type is **government-to-business (G2B)** which provides e-services for businesspeople and private-sector companies. In this type, the government focuses on facilitating transactions between government agencies and private companies electronically. For example, publishing business information, getting business licenses online and providing e-tax services [38]. In contrast, the **government-to-government (G2G)** type provides e-transactions between various government institutions and departments that work within the same domain [36]. Moreover, Behzadi et al., [39] stated that G2G aims to integrate government data from local, federal, and state governments into one database, which is the basic concept of the systems of e-government framework. G2E is

considered an essential part that belongs to the G2G type. In terms of developing the e-government strategy with all its classifications, most governments focused on how to improve the e-government models and the natural flow of their work and gave more attention to web services' features and capabilities.

The generations of E-government

The early 90s were the foundation of the announcement of e-government initiatives. A series of development stages produced **e-government 1.0 (e-gov1.0)**, which is the first generation of e-government that seeks to provide the government with information and data conveniently and facilitate transactions in the public sector [40, 41]. It is aimed at creating an electronic framework to perform transactions between the government and stakeholders by providing information via the internet. In other words, the connection in one direction or web1.0-based e-government [40].

At the beginning of the first decade of the 21st century, new frameworks were proposed to develop generation e-gov1.0 in line with the massive development of ICT capabilities. These models support the second generation of e-government, known as **e-government 2.0 (e-gov2.0)** or citizen-centric government [42, 43]. This generation focuses on enhancing the beneficiary's participation and promoting the relationship with a government agency by improving the beneficiary's involvement [40][44].

E-gov2.0 aims to raise the level of e-participation and change the modality of participation by adopting Web 2.0 technology such as weblogs, social networking platforms, content creation, sharing, and microblogging tools [45]. It is different from the previous generation in that it uses Web 2.0 rather than Web 1.0's traditional way of delivering content, where projects of e-government 0.2 are built in ways for people to interact and take a more active part [46].

For example, Stieglitz and Brockmann, [47] mention how politicians' behavior appears to change when they use smartphones, and how social media platforms are being used to engage citizens and interact with politicians. Besides, this generation aims to improve governmental decisions, raise trust, and enhance accountability, transparency, and collaboration with the public, such as citizens, NGOs, and private sector companies looking for new methods to face challenges [48].

In line with the rapid expansion of the technology world, the third-generation **e-government 3.0 (e-gov3.0)** has emerged. This generation focuses on supporting and promoting higher-level policymaking and functions by taking advantage of modern technologies as well as new innovative technologies such as Artificial Intelligence (AI), Internet of Things (IoT), and big data analytics [49,50]. This generation aims to customize two-way communication, which means adapting the services according to the citizens' needs using semantic web technology [51].

As a result, the three generations of e-government initiatives focused on two key elements, including the nature of human participation and the capabilities of ICT. As shown in Fig. 1, the nature of these two elements has evolved from one generation to the next. Based on the above, it can be stated that the success of the e-government initiative depends heavily on the level of e-participation, which varies by generation.

E-participation

E-government is the superior term for e-democracy and refers to the adaptation of digital media for governmental institutions to improve the interaction between citizens and public administrations and enhance processes [47]. E-democracy means the use of information systems to support decision-making processes [52]. There are two subclasses of e-democracy: e-voting and e-participation [47]. E-government is used in the literature to refer to e-participation [53]. People and communities are associated with the concept of participation, as well as engagement, empowerment, and involvement, which are all synonyms for this concept [54].

According to Macintosh, [52], the e-participation framework has three main components, which are e-information, e-consultation, and e-decision making. Therefore, the United Nations defines e-participation as: "providing citizens with more e-information for decision-making, promoting e-consultation for participation and deliberation processes, and strengthening e-decision-making by improving citizen input" [26]. Moreover, the Organization for Economic Cooperation and Development (OECD) defines e-participation as the use of ICT for publishing information to citizens regarding public policies and government activities [55].

Social media considers one of the electronic platforms that significantly affects citizens' and politicians' e-participation [17]. User-generated content on social media platforms has an impact on how people form political opinions [56]. Social media platforms like Twitter, Facebook, YouTube, and Instagram make citizen-government interaction more efficient, practical, and effective. They also support government efforts to increase transparency by providing low-cost, real-time multimedia information dissemination [57].

A growing body of studies on the government's initiatives to adopt social networks as a media for citizen-government communication [58]. For instance, Hubert et al., [46] studied government-citizen interactions on Twitter for Mexico, Colombia, Chile, Uruguay, and Argentina, five Latin American nations with mature e-Participation, using emotion analysis. In a similar study by Neogi et al., [59], they examined tweets about the farmers' protest in India and discovered that most of them were neutral, followed by tweets with positive sentiments, and tweets with negative sentiments came in last.

Even though adopting social media to support citizens' e-participation, governments often have trouble getting enough people to take part, and this is confirmed by the evaluation of the e-participation index for all countries in the world that was conducted by the UN [60]. As shown in Table 1, the United States, the Republic of Korea, and Estonia have the highest rates of e-participation among the top ten countries. On the other hand, the e-participation rate for most Middle Eastern countries ranges between 0.30 and 0.75, which means these rates are considered weak compared with the rates of e-participation in developed countries, which indicates that Middle Eastern countries still need to boost e-participation.

The review methodology

A systematic review is an integrated methodology that aims to review existing studies that are relevant to clearly stated research questions that are conducted using standardized approaches to determine existing studies, critically appraise relevant research, and collect, report, and analyze data [61]. Having a clearly defined methodology is a sign of a strong integrated literature review [62]. Therefore, to fully cover the issues surrounding e-participation within the context of e-government initiatives and answer all the research questions, the current study has adopted the same method used by [63] and [64], which they followed Kitchenham and Charters' guidelines [65].

According to these guidelines, a review should be divided into three main phases: planning, execution, and analyzing the findings. As shown in Fig. 2, within the main phases the review process is divided into five major steps, including (1) identifying objectives and research question; (2) the strategy of search; (3) search process; (4) data extracting; and (5) synthesis of the finding and reporting.

Identifying the objectives and research questions

The following four research questions are developed to achieve the objectives of this study that had mentioned in the previous sections.

RQ1 What are the issues/problems surrounding e-participation?

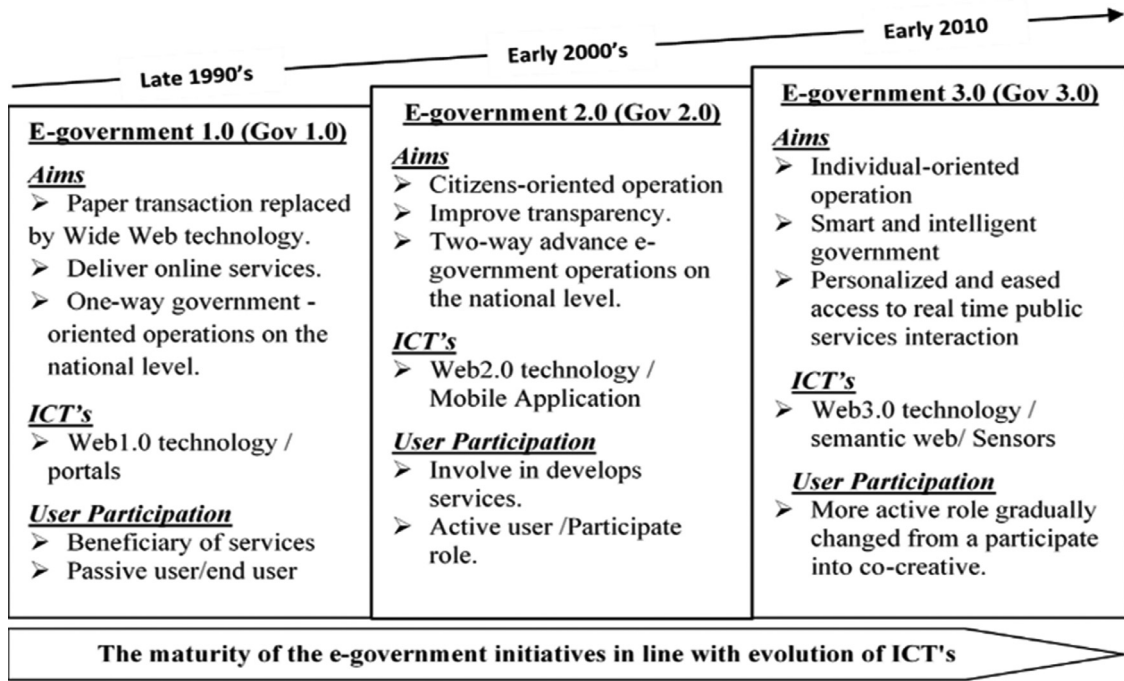


Fig. 1. The emergence of e-government generations over the years

Table 1
E-participation Index (EPI) for Top Ten ranking countries and Middle East countries [60]

Country	Rank	E-Participation Index (EPI)	(EPI) level	Total Utilisation	
Top Ten Countries	United States (USA)	1	1	Very High EPI	100.00%
	Republic of Korea	1	1	Very High EPI	100.00%
	Estonia	1	1	Very High EPI	100.00%
	Japan	4	0.9881	Very High EPI	98.84%
	New Zealand	4	0.9881	Very High EPI	98.84%
	Singapore	6	0.9762	Very High EPI	97.67%
	United Kingdom (UK)	6	0.9762	Very High EPI	97.67%
	Denmark	9	0.9643	Very High EPI	96.51%
	Netherlands	9	0.9643	Very High EPI	96.51%
	Poland	9	0.9643	Very High EPI	96.51%
Middle East Countries	United Arab Emirates	16	0.9405	Very High EPI	94.19%
	Kuwait	18	0.9048	Very High EPI	90.70%
	Turkey	23	0.8929	Very High EPI	89.53%
	Oman	38	0.8333	Very High EPI	83.72%
	Bahrain	51	0.7738	Very High EPI	77.91%
	Saudi Arabia	66	0.7143	High EPI	72.09%
	Qatar	77	0.6548	High EPI	66.28%
	Egypt	106	0.5119	High EPI	52.33%
	Syrian Arab Republic	106	0.5119	High EPI	52.33%
	Iran	118	0.4643	Middle EPI	47.67%
Jordan	148	0.3333	Middle EPI	34.88%	
Lebanon	148	0.3333	Middle EPI	34.88%	
Iraq	158	0.3095	Middle EPI	32.56%	
Yemen	158	0.3095	Middle EPI	32.56%	

- RQ2 Are there already available theories/models that address these issues or the root cause?
- RQ3 What are the factors that cause the issues?
- RQ4 Is there any correlation between the identified factors that causes the issues?

The protocol of review

This review applies the search strategy adopted by Busalim and Hussin [66], which carries out searches according to two main stages:

automatic and manual searches. The next subsections explain the steps of this strategy.

Search keywords and research query formula

A string of search queries has been identified in the automatic search stage based on related keywords in the e-government domain. Table 2 showing the major keywords used in the research topics: ("e-government," "electronic government," "e-services," "e-participation," "acceptance," "adopting," "using," "interaction" and "influential factors"). The operators "OR" and "AND" were used to connect the major keywords,

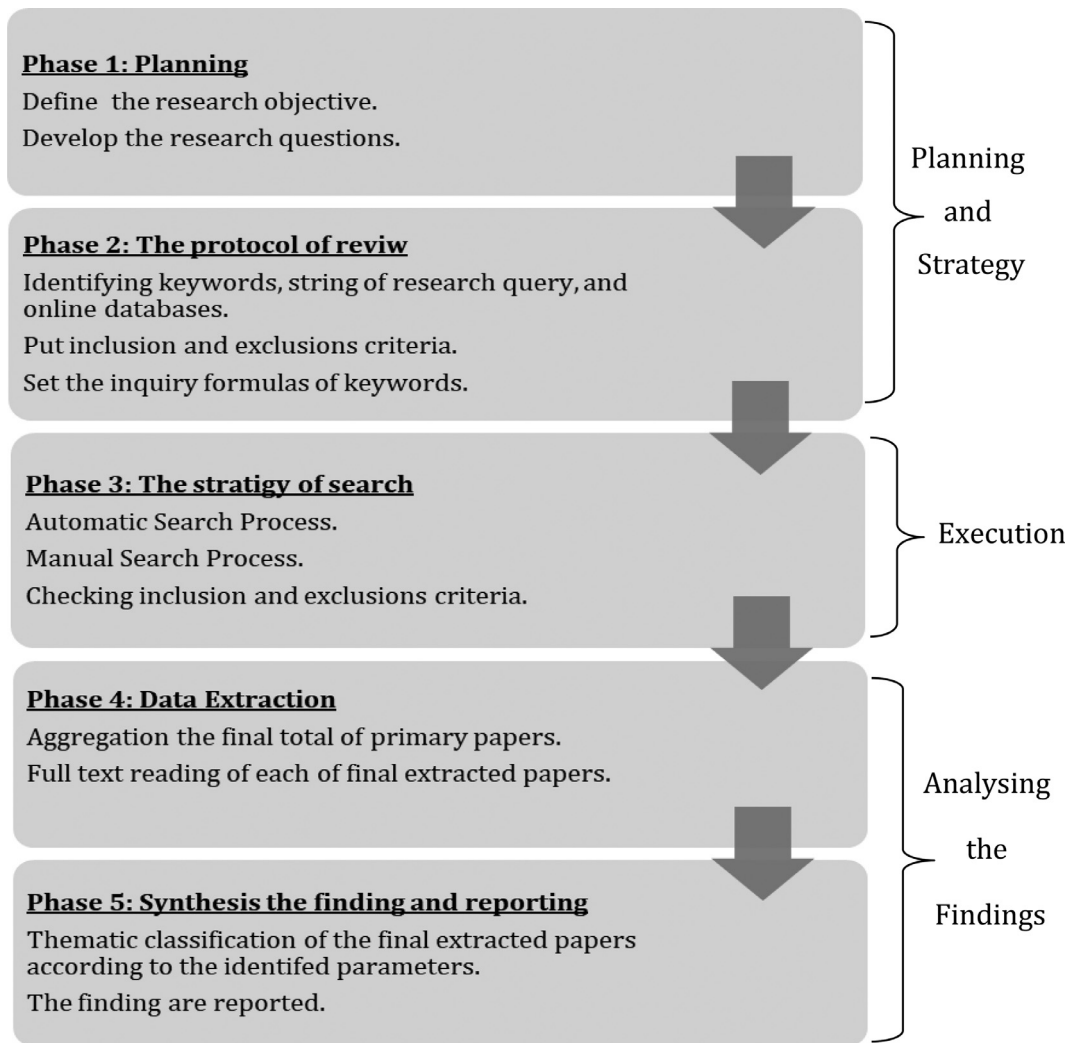


Fig. 2. Systematic review methodology

Table 2
Set of keywords and queries used in the search process

Subjects	Major Keywords	Main research query
E-government	"e-government", "e-services" "participation", and "e-participation"	("e-government" or "e-services" or "participation" or "e-participation") AND
Information System (IS)	"Adoption," "Acceptance," and "Behavioral Intention "	("adoption" or "acceptance" or "behavioral intention") AND ("accessibility" or
Human computing interaction (HCI)	"Usability", "Accessibility", and "Satisfaction"	"usability" or "satisfaction")

synonyms, and some associated important terms [67,68]. It should be noted that we used a variety of search queries by adopting the major keywords and adding more synonyms, as well as changing the order or dropping some of them, to find the most relevant papers.

Inclusion and exclusion criteria

Defining the exclusion and inclusion criteria ensures the selected articles are closest to the specific study and more relevant. The inclusion criteria are papers published from 2010–2020, written in the English language, and providing an understanding of e-government from an information system and human interaction perspective. The last ten years were chosen as a period because this review seeks to consider the most recent studies on e-government topics. Table 3 shows the inclusion and exclusion criteria for this review.

The search strategy

The review’s search strategy included both an automatic and a manual search, as shown in Fig. 3. Both methods were used to find content for the review, resulting in the inclusion of additional studies that can provide a more comprehensive view. Kitchenham [65] claims that after an automated search, a manual search for primary study references was conducted.

The automatic and manual search

The automated search, which was based on research keywords identified in the previous phase, was conducted as an electronic search using online scientific databases to answer the review’s research questions. The research’s primary sources were selected from seven online databases: Scopus, Web of Science, ScienceDirect, IEEE, ACM, Emerald,

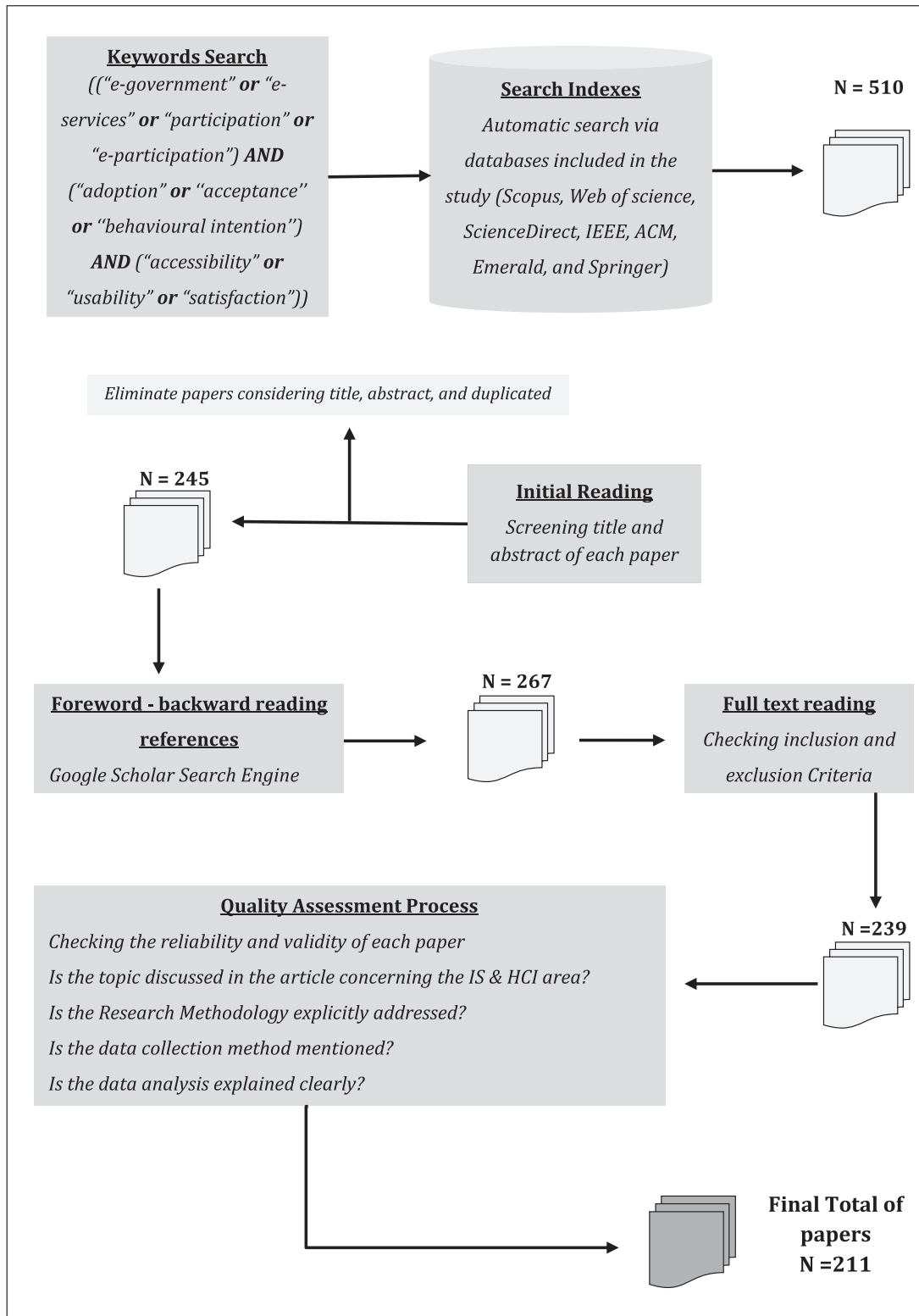


Fig. 3. The process of search

and Springer. These online databases were chosen as the most comprehensive and relevant resources on the subject of e-government [69].

In the second round of searching, a manual search method was used after the automatic search process. A forward-backward reading technique has been used in this work as proposed by Webster and Watson [70]. This manual search technique ensured that the search strategy

was completed and figured out whether the study had overlooked anything. Thus, this made it easier to ensure that the review met its goal and answered the research questions [70,71]. Besides that, Mendeley was used to organize, categorize, keep track of, and store all the studies that were done during both stages, making it easy to get rid of duplicate studies.

Table 3
Inclusion and exclusion criteria

Criteria	Rules
Inclusion Criteria	Full-text papers published from 2010 – 2020 Papers are written in the English language. Papers focused on the e-government from the IS and HCI perspective. Papers answer the defined research questions.
Exclusion Criteria	Uncompleted studies and out of the scope Non-English Duplicated studies

Study selection process

To select studies with as little bias as possible and to address any potential issues. Three independent reviewers conducted the review process. Two reviewers selected and screened papers for inclusion and extracted data from them, while a third reviewer validated the selected articles. Then, they examined the reliability and validity of each paper to determine if it met the quality assessment (QA) criteria.

Fig. 3 illustrates the whole search process and how the papers were selected. This process aims to collect papers relevant to the study’s main topic via an implemented set of steps. The automatic search is the first round which uses the keyword string that was previously defined. Initially, 510 articles have been obtained through the automatic search. The next step is initial reading and checking the titles, abstracts, and conclusions to drop unrelated studies of the topic and duplicate papers. After the initial reading, 245 articles were extracted and ready for forward-backward reading by using the Google Scholar search engine. Then, 267 articles are collected and become ready for full-text reading. Finally, 239 articles have been selected after the full-text scanning and are ready for final checking.

Quality assessment (QA)

The quality assessment (QA) process is the final check conducted within this phase. We aim to ensure the selected studies are reliable and valid [72]. In this study, four quality assessment (QA) criteria were adopted to assess the remaining 239 papers [66], which were formulated as questions as below.

- QA1 Is the topic discussed in the article concerning the IS & HCI area?
- QA2 Is the Research Methodology explicitly addressed?
- QA3 Is the data collection method mentioned?
- QA4 Is the data analysis explained clearly?

After examining the criteria, 28 publications were excluded, and 211 papers were selected as the final total in this review.

Data extraction and synthesis for SLR

This section explains the results of the systematic review and summarizes the outcomes of this work. In this study, we focus primarily on both the societal behavior and technical contexts which affected e-participation as pointed out in the previous literature.

The overview

The publication sources for the selected papers are shown in Fig. 4. Among the aggregate of the 211 articles, 137 papers were published in reliable journals, 69 research are conference papers, and only five papers are book chapters.

Fig. 5 shows the distribution of papers according to published years and classified based on the source type. The trends of studies start to rise gradually from 2013 to 2016 till they reached the highest level in 2017. Over the ten years between 2010-2020, among the 211 studies, most

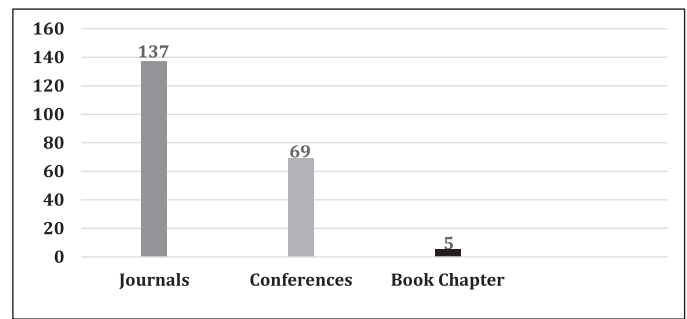


Fig. 4. Distribution of papers based on the publication source

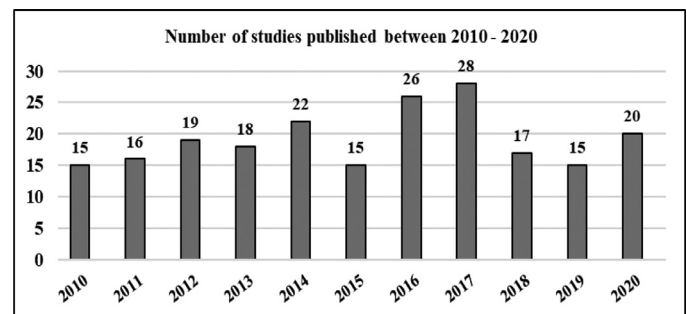


Fig. 5. Temporal view of the reviewed studies

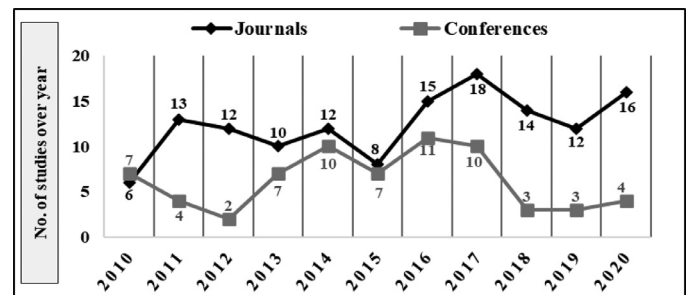


Fig. 6. Journal and conference trends from 2010 to 2020

articles have been published in 2017 (28 papers) and 2016 (26 papers), followed by 2014 (22 papers) and (19 papers) published in 2012. While 18 studies were released in 2013, seventeen in 2018, 16 studies were issued in 2011, and finally, fifteen in 2010, 2015, and 2019. According to the results, we see during the past ten years the number of published research is going up in some years and going down in others, which refers to a variance in researchers’ interest in e-participation issues over the years.

The publishing level was presented in Fig. 6 based on the holding conferences and publishing journals during the last ten years. As can be seen, the studies related to e-participation gradually increased between 2013 and 2016 and reached the highest level in 2017.

Fig. 7 shows the classification of the types of research methods applied by the reviewed studies. The results show that 71% of studies adopted the quantitative methods, 19% used the qualitative techniques, and only 14 papers combined the quantitative and qualitative methods. The most considerable proportion of the quantitative studies used questionnaires as a tool for collecting data. In contrast, the majority of the qualitative studies adopted the interview technique, and few of them used other means such as observations, and focused groups.

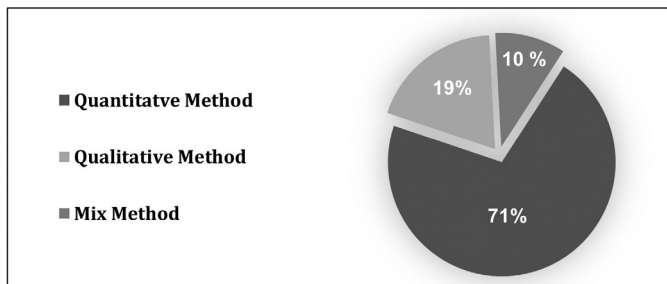


Fig. 7. Rating of the used research methodologies

Table 4
Extracted data from primary papers

Data	Description
Study ID	Unique identification code for each primary study
Source	Type of resources such as conference, proceeding, journals, or book chapter
Authors	Name of the authors
Year	The publishing year of the study
Title	The main title of each study appears in the searching stage.
Research theme	The topic addressed in the paper such as adoption and acceptance, user behavior, and design of user interface.
Country	The location where the empirical studies were conducted.
Objective	The main aim of the study
Methodology	Design Science, Quantitative, Qualitative, Mixed method, etc.
Theory	Models, Framework, Method, or Approach that the study used such as technology accepting models, usability testing method, accessibility testing method, etc.
Data Collection method	Interview, Questionnaire, Observation, Focus group, etc.
Factors	The measured factors in the empirical studies e.g., human factors, design features, etc.

Data extraction

At this point, to accurately record all the details of selected studies, we created a data extraction form. This process was conducted by carefully managing and reading each paper using “Mendeley Desktop tools” and “Microsoft Excel sheets” to extract the relevant data. According to the framework proposed by Liang and Turban, [73], we adopt the framework to combine several components into e-government research.

Four key elements are included: (research theme, theories, research methods, and contextual factors). As to data collection, the following columns in the excel sheet (study ID, author(s), publication year, online database, research title, research theme, Objective, Country, Methodology, Data Collection Method, Data Analysis Method, Model/Framework, and Factors) considered as the extracted data in this systematic review. Based on the research questions and objectives, we identified these items in Table 4 below.

Results of research questions

This section displays the findings gleaned from closely reading the content of the primary papers, which are regarded as answers to the research questions.

(RQ1) What are the issues/problems surrounding e-participation?

Fig. 8 presents a variety of themes that have been found in the papers, such as user behavior, accessibility, usability, public acceptance, and user involvement. All these issues have been categorized under three principal research streams (i) acceptance (64 papers), (ii) interaction (97 papers), and (iii) participation (50 papers).

Acceptance of e-government: This theme includes studies investigating users’ attitudes towards accepting and adopting e-government as modern technology. Most of the articles on this theme examined the users’ beliefs, acceptance, and use of e-government. In addition, investigate citizens’ adoption behavior and explores the critical effecting factors. The majority followed the quantitative approach. For example, Almaiah and Nasereddin [74] identified the significant factors influencing the behavioral intention to use e-services by deploying survey-based questionnaires on 320 Jordanian citizens. The finding shows that trust in the internet and the government, the quality of the website, performance expectancy, facilitating conditions, and effort expectancy influence Jordanian citizens’ intention to use e-government services.

Some studies have used the qualitative method. In Brazil, de Moraes and de Souza Meirelles [75] examined the factors that influence the use of e-government based on an interview approach. The outcomes confirmed that perceived benefit, perceived ease of use, social influence, and trust in the government positively affect the intention of use. In another qualitative study, Alomari [76] investigated the reasons, fears, motivations, and factors related to adopting and using e-government by focus groups.

In addition, only four papers out of the total used a mixed-method to measure various factors affecting users’ perceptions toward acceptance and use of new e-government channels [77,78,79,80]. The findings appointed that lack of Information quality and trust in the internet lead people hesitate to use online services.

Interaction with e-government: Most of the papers in this theme examined the technical issues that focus on the interaction between users and e-government channels, such as exploring the design features, evaluating user satisfaction, accessibility, and usability from the design perspective, given the benefits offered by e-government such as web portals, mobile applications, and websites that contain the information and provide services anywhere and anytime.

Most of the studies focused on examining accessibility problems and usability by evaluating the design’s characteristics and user interface. For example, Barricelli et al. [81] examined Italian local governments web sites to identify the issues that prevent universal access to web content. They concluded that the evaluated websites did not meet the prerequisite for accessibility. Moreover, all the research that concern the accessibility of e-government websites seeks to check fully conformed with the Web Accessibility Guidelines (WCAG), which were designed by the Web Accessibility Initiative (WAI). Most studies indicated that most of the tested e-government websites do not conform to all criteria of the guidelines (WCAG 2.0 &1.0) [82,83,84,85].

In the context of user interface design, other authors addressed the usability dimensions and their impact on the usage of e-government websites. For instance, Chang and Almaghalsah [86] stated that the usability of e-government influences users’ satisfaction, perception, and belief. Therefore, they conducted an experimental study on the perceptions of users to evaluate the usability of e-government websites in Taiwan. The results showed that poor design has a major influence on ease to use. Another study was carried out by Fawareh and Al-Abed [87] to improve the usability of online services. The outcomes identified the fundamental failing causes such as lack of designers’ skills, lack of feedback from e-services managers, lack of awareness of usability concepts, and non-involvement of target users during the development process.

Besides, some of the usability literature in the context of e-government websites, such [88,89,90, 7,91,92], focused on the formulated set of heuristics known as Nielsen’s usability heuristics [93,94]. These heuristics include ten elements that were developed to evaluate the usability of user interfaces. Conversely, studies such as [95,96,97,98,99,100] adopted the six-dimensional framework that was developed particularly for usability evaluation of e-government webs [101].

Participation of e-government: The third addressed theme in the primary studies is the public participation issue in e-government development. In this theme, the studies were characterized by two types

Related e-government topics from the perspectives of information systems and human computing interaction

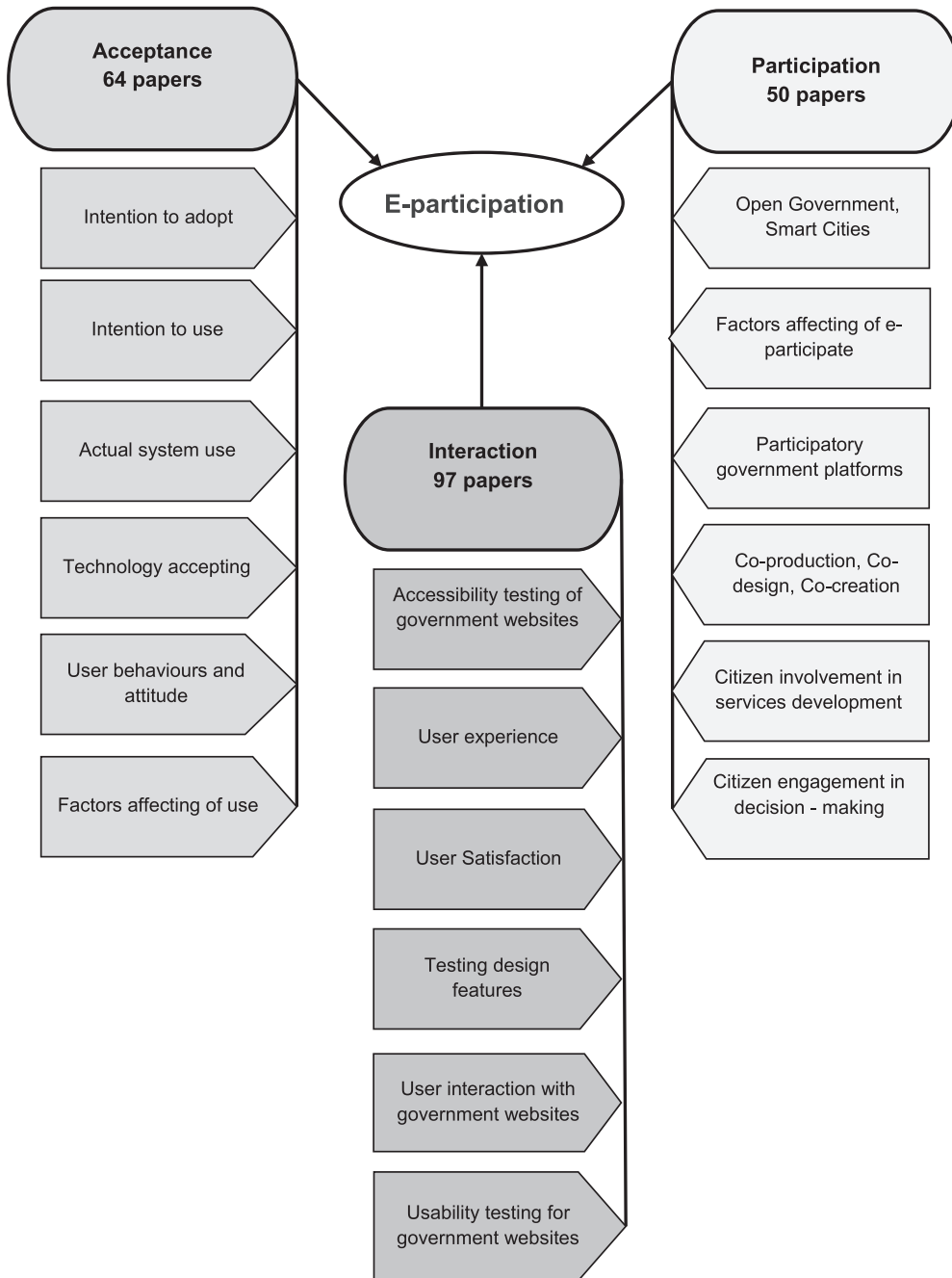


Fig. 8. The research themes of e-participation within the context of e-government initiatives

of research: conceptual and methodological research. Some conceptual research tried to explain the meaning of participation regarding the citizens' role. According to [102,103,104,105], consider the citizen one of the critical sectors that contribute to the success of e-government initiatives. They refer that citizens' participation means supplying suggestions and giving valuable opinions to obtain better decisions.

According to Simonofski et al. [106], in 1969, Arnstein classified the participants into three main tiers includes (1) co-decision (sharing the process of decision-making between citizens and officials), (2) consultation (collecting of thoughts but no effect on decision-making), and (3) non-participation [107]. However, some studies consider the electronic smoothed cooperation between citizens and governments, which leads

to better government is only ideas and concepts, due to the scarcity of empirical studies that could provide positive results and evidence of improvement in this aspect [108,109].

On the other hand, several primary studies addressed citizens' readiness to take part. The findings were diverse about citizens' capacity and willingness to engage in intelligent governance. According to some studies, technology has allowed the emergence of a community of very active participants who are typically more skilled, wealthy, technologically competent, and knowledgeable about urban policy issues [110,111,112,113,105].

Some authors state that a group of citizens does not have the readiness to participate due to low incomes, insufficient education, and a

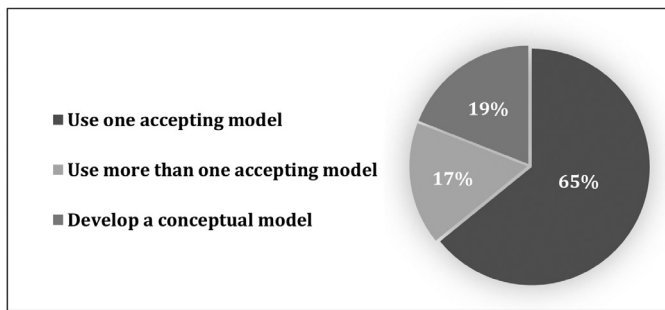


Fig. 9. Rating of the use of theories

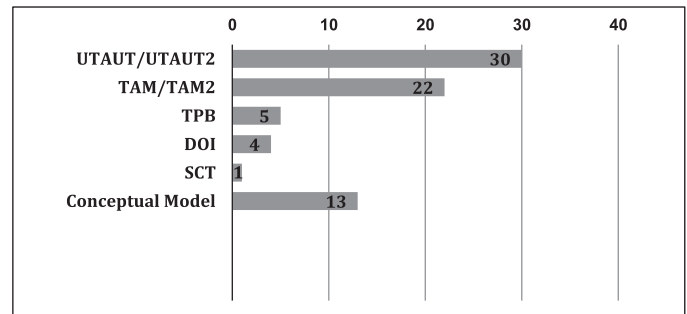


Fig. 10. Distribution of theories and models

marginalized status [114,115]. While others showed that although the elderly have a desire and interest in government affairs, the lack of technological skills makes them prefer the traditional methods of participation (face to face) rather than e-participation [116,117].

Moreover, Ertiö [118] demonstrated that young people who have good experience using computers, the internet, and smartphones mostly tend to lack the desire to be involved in policy-making or urban development. The investigated research also emphasizes that despite the voluntary involvement of civilians who possess the knowledge and willingness to participate, the level of interest and public participation in e-governments still relatively low [108,119,120,121,109,122]. On the other hand, other literature has dealt with involvement issues in the government's role in monitoring e-participation. Some authors stated that governments need to accept the citizens as partners to maintain a long-term relationship between them [118,123,124].

In addition, the review shows that the realities of electronic participation, which aims to policy changes by involving the users in the decision-making process, are almost absent in practice [125,109,126]. In the context of the experiment's studies, a few studies focused on measuring effect factors. For example, Alharbi et al. [127] examined a set of factors that may affect the citizens' intention to engage in e-government activities. The results showed that trust and subjective norms significantly influence citizens' preferences to take part in e-participation activities.

(RQ2) Are there already available theories, models, and methods that addressed these issues?

In the domain of e-government, various theories have been used by academics. This section seeks to answer the second research question. In the context of the e-government acceptance theme, most studies looked to develop a conceptual model based on standard theories. In Fig. 9, the results of the review showed that 65% of the reviewed studies have developed a conceptual model by adopting one theory and adding one or more constructs, such as [128,129,130,74,131,132].

For example, Al Mansoori et al. [130] adopt the Unified Theory of Acceptance and Use of Technology (UTAUT) to explore the factors that might motivate citizens to adopt the public e-services of the Abu Dhabi government. In addition, 17% have developed their contribution based on combining more than one model [133,134,75,135,136,137]. For example, Amagoh, [134] proposed a model to examine factors that affect citizens' intention to use e-government in Nigeria by combining three theories namely the Technology Acceptance Model (TAM), Diffusion of Innovation Theory (DOI), and Unified Theory of Acceptance and Use of Technology (UTAUT).

Meanwhile, 19% of the studies proposed appropriate models for a particular context that were not based on technology acceptance theories. For example, Alghamdi and Beloff [103] proposed a more integrated and suitable model (EGAUM) to analyze the crucial factors that could influence the utilization of e-government in Saudi Arabia. Another study was conducted in Canada by Shareef et al. [138], which proposed

a new model (G.A.M.) to explore the essential factors encouraging people to involve at various stages of service maturity.

Furthermore, Dwivedi et al. [139] stated that accepting technology models in their original form is not appropriate for e-government contexts because they do not take into account e-government-specific structures such as trust, risk, security, or privacy. As a result, they developed and tested a new model known as the Unified Model of E-Government Adoption (UMEGA). Other studies used this model as well [140] and [141].

Besides, the findings of this review revealed that the most used theory was the Unified Theory of Acceptance and Use of Technology (UTAUT), as shown in Fig. 10, with 30 papers representing the majority of studies that used the UTAUT model. Among these studies, quantitative research was conducted by Alshehri et al. [142] to identify the main factors that influence citizens' acceptance to use e-services. In a similar study, Ibrahim and Zakaria, [143] determined the elements of improving employees' adoption of e-government in Iraq. In the other study, Olatubosun and Madhava Rao [144] identified the readiness of public servants to adopt e-services in Nigeria. Other research was conducted by Almaiah and Nasereddin [74] to study the potential factors that might play a critical role in the citizens' decision to use e-services in Jordan.

Following UTAUT, Technology Acceptance Model (TAM) was used in 22 research primary studies. TAM is the most popular used theory for investigating the users' acceptance of technology. Also, Ahmed et al. [145] examined the effect of external factors such as trust and quality of service on citizens' intention to use in Sudan. In a similar study, ElKheshin and Saleeb [146] investigated the effect of website design, public value, and trust on citizens' attitudes to adopt e-services in Egypt. In addition, the results showed that five studies of the primary papers used the Theory of Planned Behaviour (TPB) [147,148,149,150]. The Diffusion of Innovation Theory DOI theory was used in 4 articles [133,134,135,136]. Only one study used Social Cognitive Theory SCT to examine self-efficacy, anxiety, and social influence on the behavioral intention to use the e-government of India [151].

Regarding the issue of interaction with e-government applications and systems, all the reviewed studies focused on the technical aspects that concern the external form of the systems, content display, and user interface design. Most of these studies contributed to identifying the technical defects and errors that make e-government applications hard to use as well as seeking to provide the best guidelines and recommendations to solve them. These experimental studies used diverse methods to examine the accessibility and usability features. In this review, these studies were classified into three groups. The first group of experimental studies used manual methods such as (expert review, user testing, and heuristic evaluation method) to inspect accessibility, navigation, design, interaction, and content [95,152,83,153].

For example, Serra et al., [153] have inspected manually the accessibility of four e-government mobile applications by expert review using a checking list in Brazil. Another study conducted by Bournaris, [83] evaluated users' satisfaction with e-government services through testing for accessibility, navigation, design, interaction, and content, where they

deployed a questionnaire for the users who had visited the websites to answer the questions. Moreover, Al-Khalifa, [95] and Bouazza & Chebli, [152] carried out a usability evaluation of the number of e-government websites by using the heuristic evaluation method to inspect the dimensions of usability such as legitimacy, user-help & feedback, navigation, online services, and information architecture by an expert's review.

The second group used the online automated approach such as online testing tools (Eval-Access 2.0 Web Service tool, Accessibility Checker A-checker) to define the problems of accessibility and usability [81, 154]. Ismailova, [154] used two automatic tools to examine the accessibility, usability, and security of e-government websites in the Kyrgyz Republic. For the usability checking the online tool namely "WebSiteOptimization" was used, also they applied Eval-Access 2.0 Web Service tool by the HCI Laboratory for assessing web accessibility. Besides, Barricelli et al. [81] have employed an open-source web accessibility testing tool namely Accessibility Checker A-checker to examine the application of WCAG 2.0 guidelines on municipalities' websites in Italy and identify accessibility problems that prevent universal access to public content.

Although the automated methods can quickly inspect large numbers of websites, sometimes it comes out with inaccurate findings [155]. Therefore, some studies have combined manual and automatic methods to obtain more accurate results [156,98,100,157]. For instance, B. King & Youngblood, [98] assessed a 22-point Election Information Content Score (EICS) in Alabama. Usability, accessibility, and readiness standard compliance were evaluated using a combined automated evaluation AChecker, heuristic evaluation, and manual inspection. In addition, Al-Soud & Nakata, [96], and Youngblood & Youngblood, [157] have evaluated accessibility accommodation, navigation, online services, user help, and feedback through adopt the automated testing and Heuristic evaluation methods. These empirical studies contributed greatly to diagnosing weaknesses in the technical and practical aspects that would influence the interaction of users and their satisfaction with the performance of e-government systems. Thus, this may affect the e-participation level.

(RQ3) What are the factors that cause the issues?

This section seeks to answer the third research question of this study. According to the extensive review of the primary studies, 62 papers focused on examining the factors affecting the use and adoption of e-government. This study classified the factors into two categories: (i) *standard factors* and (ii) *external factors*. All the factors that belong to the technology acceptance theories are considered standard factors. For example, TAM theory includes perceived usefulness, perceived ease of use, and attitude, whereas DOI includes relative advantage, compatibility, and complexity.

Some studies examined only the standard factors proposed by UTAUT theory: performance expectancy, effort expectancy, social influence, and facilitating conditions [158,159,160,142,137,161]. On the other hand, other studies stated that the focus only on the standard factors is insufficient. Therefore, they examined additional factors, including trust, computer self-efficacy, information quality, service quality, awareness, security, privacy, website design, access, availability, outcome expectation, and computer literacy. For example, [74][162,163,164] investigated trust based on two directions: trust in the internet and trust in e-government, and they found that trust has a significant effect on using e-government.

The results revealed that 27 of the effects factors had been used more than three times. As shown in Fig. 11, the most argumentative variables addressed were *social influence* and *trust* mentioned in 37 research papers. Twenty-nine studies examined the *facilitating condition*, *effort expectancy* in 28 studies, *performance expectancy* in 27 research, *perceived ease of use* in 24 studies, *perceived usefulness* in 23 studies, *behavior intention to use* in 20 cases, *attitude* toward technology in 18 papers, *computer self-efficacy* with 14 research, and *perceived behavioral control* with 7 works.

Moreover, *perceived compatibility* and *information quality* were repeated in 10 research works, then *awareness* in nine studies. In contrast,

subjective norms, *service quality*, *system quality*, and *security* were used in six studies. In the same vein, *privacy*, *skills*, *website design*, and *relative advantages* are mentioned in five studies. The rest factors were examined four or three times.

The findings of these studies have important implications for government agencies and organizations that want to develop e-government systems. These factors influence intention to e-participation, according to the studies that were looked at. Some studies mentioned that users' perceptions of e-government systems are influenced by technical factors such as system quality, interfaces design, usability, information accessibility, security, and privacy [165,134,166,167] [168].

Furthermore, social, behavioral, and cultural factors can influence e-participation adoption [128,169,136,80]. These can be hard to manage with stakeholders' cultural and social beliefs. The level to which citizens are resistant to change, their ability to use technology, and whether they prefer to deal with a human or a computer when looking to find services may all influence their level of e-participation [170,169]. Individuals' behaviors toward technology acceptance may be influenced by educational factors based on their personal experiences [103]. The studies mentioned personality factors in various ways, such as user awareness, self-efficacy, and trustworthiness [148] [168,140,150]. All these factors were reported to be major challenges that influenced the e-participation level.

(RQ4) Is there any correlation between the identified factors that causes the issues?

This section aims to answer this question by reviewing the studies that examined the relation between effecting factors. In This study, we adopted the weight analysis method to develop an integrative view of finding across the vast number of published papers. According to Jeyaraj et al. [171], weight analysis is a technique used for two purposes; one is to check the relationship strength between independent and dependent variables, second is to identify the 'best predictors' and 'promising predictors' of factors in diverse contexts, and the frequency of use the criterion of select the variables. Consequentially, the extracted independent variables are distributed in two groups, called: (a) well-utilized variables that were used more than five times, and (b) 'experimental' variables that were examined less than five times.

The calculation of weights is conducted through the following mathematical equation: $W = (S) / (F)$, where 'F' is the number of times the factor has been used in the experimental studies, and 'S' indicates the total number of significant correlations between variables, while 'W' is the total value of predictive strength. According to Jeyaraj et al. [171], the independent variable was classified as the best predictor if the weight value was greater than 0.80. Meanwhile, it will belong to promising predictors in the case of used less than 5, and a weight value equal to "1". Table 5 in this study shows the results of a meta-analysis of the relationships between factors that were got weight more than 0.8.

As shown in Fig. 12, the best predictors of intention to use are computer self-efficacy and perceived ease of use, with a total weight of 1; attitude, with a weight of 0.93; trust and effort expectancy, with 0.86; system quality, awareness, performance expectancy, and service quality, with 0.83 and 0.80; and finally, system quality, awareness, performance expectancy, and service quality, with 0.83 and 0.80. Other correlations that have been the best predictors are perceived usefulness and trust on attitude toward use, intention to use on actual use, and perceived ease of use on perceived usefulness.

Moreover, other variables' correlations were examined more than five times and revealed that they have significant relations between them, but with a weight below 0.80. As shown in Table 6, perceived ease of use on *attitude* (weight 0.77), facilitating conditions on *intention to use* and on *actual use* (weight 0.75), and social influence on *intention to use* (weight 0.70). It is needed to conduct more studies to examine their effects on the prediction of accept e-participation. While variables like perceived usefulness (weight 0.61), perceived behavioral control (weight 0.60), and subjective norms (weight 0.50) on *intention to use*

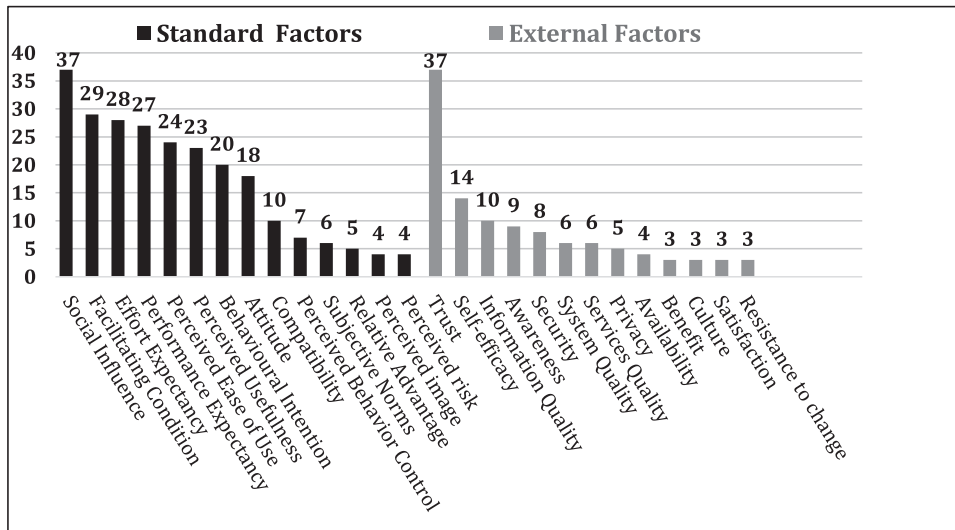


Fig. 11. Factors that were adopted more than three times within reviewed studies

Table 5 Summary of results from the analysis of variables' correlation that have weights >= 0.8

Independent Factors	Dependent Factors	No. of Use	Significant	Non-Significant	Weight >= 0.80
Performance Expectancy	Intention of use	15	12	3	0.80
Effort Expectancy		15	13	2	0.86
Computer Self-efficacy		5	5	0	1.00
Perceived Ease of Use		10	10	0	1.00
Attitude	Attitude	15	14	1	0.93
Trust		22	19	3	0.86
System Quality		6	5	1	0.83
Services Quality		5	4	1	0.80
Awareness		6	5	1	0.83
Perceived Usefulness		9	8	1	0.88
Trust		5	4	1	0.80
Intention	Actual of use	12	14	1	1.00
Perceived Ease of Use		7	7	0	1.00

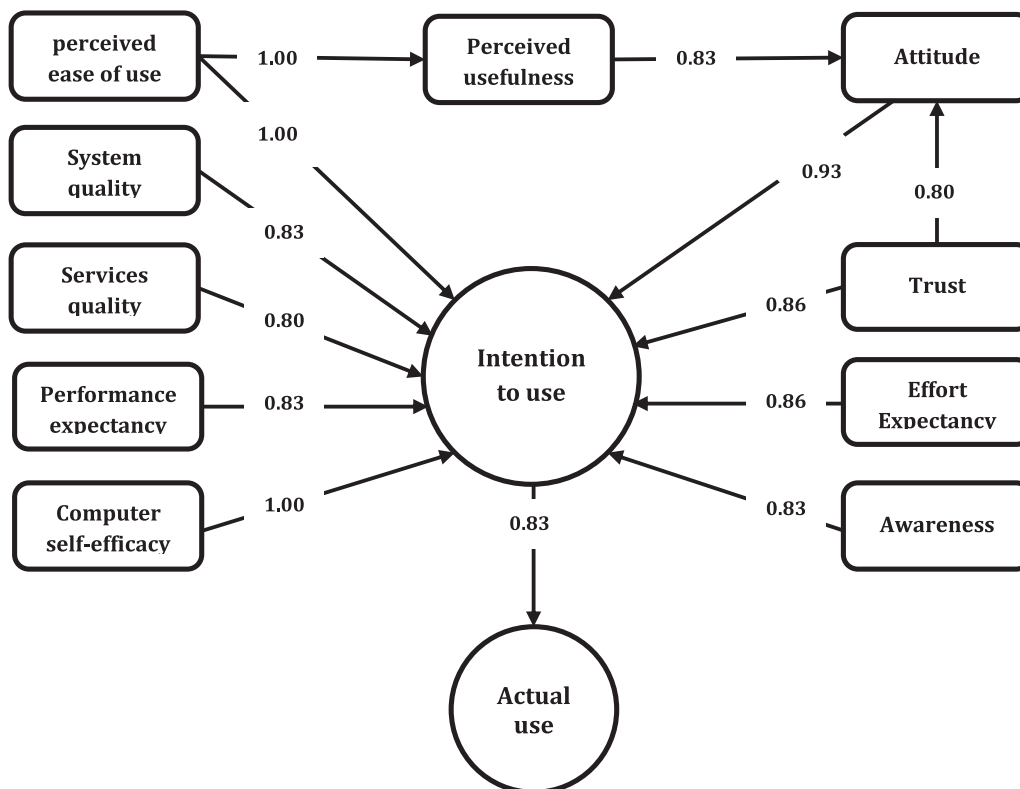


Fig. 12. The best predictors model resulting from meta-analysis

Table 6
The predictors of correlation that have wight <= 0.80

Independent Factors	Dependent Factors	No.of Use	Significant	Non-Significant	Wight < 0.80
Social influence	Intention	20	14	6	0.70
Facilitating Conditions	of	15	11	4	0.75
Perceived Usefulness	use	13	8	5	0.61
Perceived behavioral control		5	3	2	0.60
Subjective norms		6	3	3	0.50
Perceived Ease of Use	Attitude	9	7	3	0.77
Facilitating Conditions	Actual of use	8	6	2	0.75

Table 7
The predictors of correlation that have weight = (1.00)

Independent Factors	Dependent Factors	No. of Use	Significant	Non-Significant	Weight >= 0.80
Information Quality	Intention of use	3	3	0	1.00
Website Design		3	3	0	1.00
Public value		1	1	0	1.00
Security		4	4	0	1.00
Privacy		1	1	0	1.00
Anxiety		1	1	0	1.00
Public value	Attitude	1	1	0	1.00
Anxiety		1	1	0	1.00
Security	Trust	2	2	0	1.00
Privacy		2	2	0	1.00
Social influence		1	1	0	1.00
Performance Expectancy	Satisfaction	1	1	0	1.00
Effort Expectancy		1	1	0	1.00
Facilitating Conditions		1	1	0	1.00
Services Quality		1	1	0	1.00
Perceived Usefulness		2	2	0	1.00
Perceived Ease of Use		1	1	0	1.00
Facilitating Conditions	Effort Expectancy	3	3	0	1.00
System Quality		1	1	0	1.00
Information Quality		1	1	0	1.00
Computer Self-efficacy	Perceived behavioral control	3	3	0	1.00
Perceived Ease of Use		1	1	0	1.00
Trust		1	1	0	1.00
Facilitating Conditions		3	3	0	1.00
Information Quality	Perceived Usefulness	2	2	0	1.00
System Quality		2	2	0	1.00
Website design		1	1	0	1.00
Services Quality		1	1	0	1.00
Trust	Perceived Ease of Use	2	2	0	1.00
Website Design	Use	1	1	0	1.00

ranked much lower than 0.80. Although their findings were statistically significant, the low weight values may discourage further investigation in the future.

On the other hand, **Table 7** showed 30 significant correlations experimented with less than five times with a value of weight '1' regarding the promising predictors. Six of 30 are promising predictors of the *intention to use*: *information quality*, *website design*, *public value*, *security*, *privacy*, and *anxiety*. The other six promising predictors of *satisfaction* are *performance expectancy*, *effort expectancy*, *facilitating conditions*, *service quality*, *perceived usefulness*, and *perceived ease of use*. Then, 4 of 30 are promising predictors of *perceived behavioral control* such as *computer self-efficacy*, *perceived ease of use*, *trust*, and *facilitating conditions*. Moreover, four promising predictors are on *perceived usefulness*, namely: *information quality*, *system quality*, *service quality*, and *website design*. Three of 30, which are: *facilitating conditions*, *system quality*, and *information quality*, are promising predictors of *effort expectancy*. At the same time, each *security*, *privacy*, and *social influence* are promising for *trust*. Finally, *public value* and *anxiety* on *attitude*, while *trust* and *website design* on *perceived ease of use*.

Discussion

This comprehensive study analyzed a vast body of literature regarding issues surrounding e-participation, which has piqued researchers'

and practitioners' interest. This study sought to review previous literature from different perspectives. The results were illustrated by classifying the collected studies into three main research themes: acceptance, interaction, and participation in e-government. All reviewed studies on these themes agreed on one goal, which is how to improve the level of e-participation. This section discusses the issues based on the results classified and themes.

Acceptance of e-government

In this context, most studies focused on exploring human behavior and defining their intentions to participate. The results showed that most researchers conducted experimental studies to identify the factors affecting the user's attitudes and behavior. Given the importance of government employees' role in managing e-government projects, the government needs to spread the knowledge of e-government among its employees [160]. Therefore, some studies have examined the factors that affect employees' attitudes. A survey carried out by Amagoh [134] examined factors affecting the usage of e-government from the employees' point of view.

In addition, Alraja et al. [160] defined whether the performance expectancy and the efforts expectancy are considered significant factors that affected the employee's intention to use. However, these studies faced some constraints, such as the sample size being relatively small to

explain the intention of the employees to adopt the e-government system and establishing a limited number of ministries. In contrast, some studies consider that effects on citizens' behavior, such as security and privacy, are among the challenges that lead to a lack of user e-participation [172,103,75,173].

Some researchers discussed the impact of quality of services on the citizens' attitude towards the acceptance and use of e-services [78,163,174], but only Shareef et al. [138] mentioned that service quality has no binding effect on using e-government. Besides, Al Hujran et al. [102] and Talukder et al. [132] proved that service quality significantly impacts citizen satisfaction. Despite the vast number of studies within the context of user acceptance, most of these studies were conducted on specific regions and small samples that may not reflect all the public's opinions. Thus, carefulness should be utilized in the popularization of the results.

Based on this review, acceptance of e-government considers one of the critical issues and is the first threshold for e-participation, as effective e-participation cannot be achieved unless there is prior acceptance from users. However, most developing countries still ignore this issue [146,80].

Interaction with e-government

In the context of users' interaction with e-government systems, within the initial development stages, official websites and applications were designed by governments to publicize information and activities to communicate with users [175]. In line with the website's development, poor design can affect e-participation. Most studies focused on educational institutions. While few studies were conducted in other fields, such as the websites of Parliament [176], the federal government websites of the US [177], municipalities websites [178,87,179], the government e-services websites [180].

Moreover, other research thought usability plays a vital and influential role in e-government success, where poor usability led users to feel frustrated, thus generating a negative impact on the sustainability of e-government [100]. Many papers have been conducted to evaluate the user interface design according to usability standards.

The results of this review indicated that most of the research on usability testing concluded that government websites failed to meet many usability criteria such as navigation, interface design, and page layout [86] [181]. Moreover, Web designers lack awareness of usability concepts; thus, it is essential to collaborate with the end-user by participating in the initial stages of the design process [90] [87].

Participation of e-government

Other challenges lie in the issue of citizens' participation in developing services and participation in governmental decision-making. Citizen participation is considered one of the primary piles that e-governments are based on, and according to the literature, it offers enormous potential. By involving them in e-participation, the citizens can provide helpful suggestions and give valuable opinions for government agencies to get better-informed decisions [182,104,105].

Some research considers the electronic smoothed cooperation between citizens and governments, which leads to better government is only ideas and concepts, due to the scarcity of empirical studies that could provide positive results and evidence of improvement in this aspect [108,183]. Regarding this context, the reviewed studies revealed that many problems need further research in the future. Al-Jamal and Abu-Shanab [184]; Alharbi et al. [127]; and Grimmelikhuisen and Feeney [185] stated that currently proposed models to examine the citizens' intentions to engage in e-participation need more validation. In contrast, other studies mentioned that the proposed models are just theoretical. Therefore, they recommended generating models or frameworks of e-participation [13,186].

The different challenge is the government's limited attention to enhancing the effectiveness of participatory programs. This aspect is vital in maintaining constructive online collaboration because the degree of participants' satisfaction with the government's responsiveness has a positive association with their perceptions of individual development, their perceived influence on decision-making, and trust in government [118,123,124,187].

The implications of the study on the research and practice

This study has several implications for both research and practice. According to the evaluation of significant relationships from meta-analysis, we were able to develop a model of the best predictors of intention and actual use of e-government services, which can help researchers to make a more careful choice of appropriate items to include a priori in their studies as well as an a posteriori validation guide for the results of the new studies. For example, the findings of this research prove the high performance of all the constructs that belong to TAM and UTAUT models within the context of the e-government acceptance theme, except for facilitating conditions and perceived usefulness on intention to use, which had low performance.

Moreover, a set of the best predictors of the intention to use are awareness and trust, which are considered external constructs and do not belong to any theories. Based on these results, it is suggested that these constructs be kept and used in future studies of how people accept e-government. The results of this study can be used by researchers as a preliminary step for a more precise and efficient selection of constructs in the analysis of e-participation adoption, offering additional criteria as to whether to involve or not to involve a factor in the research model. For example, variables with a high number of uses, low weight, and no significance may not be used again. On the other hand, promising predictors need more research to become the best predictors, and it may be okay to keep using them.

The study's findings have important implications for governments and institutions looking to implement e-government platforms. The results of the analysis showed that the quality of services and systems quality on the intention to use e-services were significant and strong predictors. This suggests that governments should focus their efforts on strategies that help to maintain interaction, the perception that the platform is easy to use, and citizen satisfaction in the long run. E-government platforms should not only be focused on using cutting-edge technology and coming up with new ways to design interfaces. They should also have solid back-on processes. For example, when people share their opinions, and comments, or participate in elections online, feedback should be given in a reasonable amount of time. This could help people see that the government is useful and keep their trust.

Because of the voluntary nature of e-participation and the ease of participation by general users, it is strongly recommended to encourage the spread of these technological platforms among the public. Although implementing and promoting e-participation can lead to better governance in the long run, government agencies need to be aware of the high administrative costs of supporting e-participation. Finally, citizen participation also includes a feeling of community, so social influence turned out to be a significant predictor of intent to e-participate. This means that governments should encourage people to get involved in the development of e-participation tools.

Conclusion

This review summarizes research studies on the issues surrounding e-participation within the context of e-government published recently. Four research questions were answered by adopting a systematic approach. This review covers the studies conducted between 2010 till the first quarter of 2020. A total of 211 articles were selected as primary studies after passing several systematic processes. The remaining pa-

pers were excluded in this SLR because they did not meet the study's inclusion requirements or quality assessment.

Nevertheless, this study has some limitations since it was conducted at the beginning of 2020, and the papers included are those published from 2010 to June 2020. Thus, this study did not cover all the published papers in the year 2020. Besides that, by changing or adding other related keywords to the search string, such as "smart cities" or "urban governments," more studies can be found. Based on analyzing the extracted data, the primary articles are categorized into three key research themes: user acceptance, user interaction and satisfaction, and user participation.

Most of the studies belonged to the interaction theme with 97 studies followed by acceptance with 64, and participation with 50 papers. Even though most of the work focuses on interaction and satisfaction, more practice research on users' experiences and preferences within different contexts is still needed. The findings showed that most of the investigations used the UTAUT hypothesis to investigate users' behavioral intentions concerning the use of e-government. However, more studies are required to explore other renowned theories and proposed new models in the context of e-participation. Furthermore, social influence, facilitating conditions, performance expectancy, effort expectancy, and trust have been described as the most prominent impact factors used by researchers.

In conclusion, since e-government is one of the most common phenomena in different countries of the world, this research may be valuable for academics, practitioners, and even for government website developers. Based on the analysis done, this research concluded that e-participation is one of the most important success criteria of e-government, and its form changing in line with ICT's evolution, so there is a significant need for more ongoing investigation broad field. Moreover, this review draws a research map of research themes that combine more than one field and provide a comprehensive view of theories and methodologies for further exploration. In addition, the results of this study will lend a hand to academics, especially the novice, to distinguish the current gaps and limitations and future works.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability

No data was used for the research described in the article.

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