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Validation of e-Government Information Delivery Attributes: The Adoption of the Focus Group Method

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Abstract: In democratic countries, government websites became an important channel for interaction with the public administration in the last few years. Nevertheless, several issues have an impact on the way users access to content and information. Lack of accessibility and usability or, in the broad sense, lack of concern with user needs, can still be found in many government websites. To address the problem, a previous literature review on e-government information delivery attributes was performed. Based on this review, a large set of attributes related to quality was obtained to evaluate these dimensions in the context of e-government. The purpose of this study is to better understand which of these attributes are the most valued, in the users' perspective, for evaluating content delivered by government websites. A qualitative approach was adopted, using Focus Group interviews as a strategy to obtain data and Thematic Analysis to analyze such data. The main results highlighted the attributes related to content delivery, interaction, and emotional aspects. User Experience, accessibility, and usability were prioritized by Focus Group participants.

Keywords: Electronic Government, Usability, Accessibility, User Experience (UX), Quality
Categories: A .0, A.1, H.m, J.7
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1 Introduction

Government websites became a primary channel of interaction between users and public administration (PA) in the last few years, in democratic countries [AlBalushi and Ali, 15]. E-government contributes to the reduction of costs with PA and is available for users twenty-four hours a day making government websites a sustainable alternative to traditional public services [Alanezi et al., 11] [AlBalushi and Ali, 15]. Nevertheless, several issues affect users when accessing content and information. Lack

of accessibility, usability, or in the broad sense, lack of concern with user needs, still can be found in many government websites (e.g.: some websites have been "abandoned", others remain with an old layout, others are not updated for a long time, others provide information that is too technical and not user friendly.

The problems with content delivery by e-government seem to affect many users in various countries all over the world [Alanezi et al., 11] [Zahran et al., 15]. Studying this issue as a whole may be too complex. The technological, cultural, and social aspects and the characteristics of each country population may differ from country to country and may require different approaches. To define the scope of the study, it was decided to study only the Portuguese e-government. The research question (RQ) that guided this study is: what attributes of e-government information delivery are more valuable to the users of e-government in Portugal?

A research conducted by Dias [Dias, 14] [Dias, 16] about the e-government research in Portugal, reveals the interest on a very diversified set of subjects: interoperability and service integration; strategies, methodologies, and key factors; marketing and public participation; back-office processes and workflows; usability of government websites; administrative and socioeconomic impacts; maturity models and maturity assessment; e-learning environments; mobile government; privacy and security. The same research reports the consistent growth of the e-government research on Portugal and the opportunities to expand the investigation [Dias, 14] [Dias, 16]. In fact, the commitment of the Portuguese government on the dematerialization of the PA supports the growth of e-government in Portugal [Carrasqueiro et al., 18]. Despite its high rank on the Electronic Government Development Index (EGDI) of the United Nations [United Nations, 18: 91-96], the lack of coherence and the lack of strategies of the interfaces of the PA websites, inherited from the past, affect the quality of information delivery to the users [Fernandes, 15]. Consequently, it may contribute to the low interaction rate between users and government websites [Nunes et al., 18]. Portuguese government legislation and initiatives will not be effective, without a better understanding of how users perceive the value of the information conveyed through the PA websites [Monteiro et al., 20].

Research on e-government quality highlighted an extensive set of models, frameworks, guidelines, or heuristics to evaluate and improve content quality at the national and municipal levels. These artifacts, usually, cover one or more domains (e.g.: service, information, system, organization, processes, technical, etc.) [Papadomichelaki and Mentzas, 12] [Fath-Allah et al., 14] [Hien, 14] [Sá et al., 16] [Acosta-Vargas et al., 17], and in some manner, are influenced by areas imported from web design/development, such as web accessibility, usability or UX (reference to add after peer review). Four factors may justify the absence of consensus on the metrics, dimensions, characteristics, or categories, adopted by researchers on their artifacts: (i) who are the beneficiaries of the results of the artifact?; (ii) the artifact to be based (or not) on ISO (International Organization for Standardization) standard [Fath-Allah et al., 14]; (iii); the quality domain covered by the artifact; (iv) the perspective of the researchers about the e-government. The relevance in the capture of these perspectives is driven by the concern of the web design/development with the users' needs, abilities or emotions [Janita and Miranda, 18].

Artifacts conceptualization is sustained by a set of concepts classified by researchers as metrics, dimensions, characteristics, or categories, to evaluate content delivered by e-government [Monteiro et al., 20]. Regarding the difficulty in referring

clearly to these different classifications, it was decided to adopt a singular term to represent all. The term "attributes" is adopted to refer to these classifications (reference to add after peer review). The understanding of the e-government information delivery attributes relies on two core factors: (i) the information delivered by government websites; (ii) and the concepts that represent the specific parts of the artifacts to evaluate e-government information quality (e.g.: accessibility, usability, efficiency, effectiveness, availability, utility, ease to use, etc.). The latter are what authors refer to as attributes.

For e-government users, websites are the visible layer of government information systems (IS). Users' needs must not be ignored when technology is adopted to interact with the government. If e-government does not meet users' needs there are not useful [Youngblood and Youngblood, 18]. The IS attributes in the context of e-government are pointed by Kagoya and Mbamba as relevant for the success of e-government implementation [Kagoya and Mbamba, 21]. Due to artifacts resulted from specific researching areas of e-government, the study of their attributes provides a low-level view and an understanding of their parts. This approach complements the high-level view of artifacts design and helps to reduce the low understanding of the areas involved in e-government infrastructure implementation [Kagoya and Mbamba, 21].

An understanding of user perceptions is a fundamental tool to provide efficient e-government services [Annis et al., 21]. The growth of e-government services introduced a new paradigm in the interaction with citizens and the government. Citizens in the role of e-government users deal with new perceptions related to the use of new technologies to meet their needs. In this sense, the deconstruction of the models in their small parts allows deepening user perceptions of each attribute.

In a previous study attributes were identified for evaluating e-government websites content [Monteiro et al., 20]. The study consisted of a systematic literature review (SLR) to identify models, frameworks, guidelines, or heuristics used to evaluate e-government content quality and retrieve the attributes of each artifact. The present study was based on the results of the SLR to obtain an understanding of what are the most valued attributes by the users of e-government in Portugal. The SLR and the current study are parts of broader research to investigate how to increment the value of the content delivered by government websites.

The focus on the attributes used to evaluate e-government content delivery to the users was approached as a deconstruction process. With this approach, it was intended to obtain an understanding of each attribute as a piece of an artifact and shed some light on how users can benefit, in the field, of the e-government technological advances (reference to add after peer review). Due to the native Portuguese origin of the authors and their previous user experience of the Portuguese e-government, the latter was selected as the focus of the study. To do so, a small group of Portuguese users was selected to validate the attributes value. To obtain an understanding of the users' perspectives, Focus Group (FG) method was adopted. This method is considered a good evaluation tool when an analysis of the critical thinking of a subject, by a sample of individuals, is required [Pretorius and Calitz, 11] [Queirós et al., 17]. Reactions, attitudes, facial expressions, the tone of the answers during the interviews, may provide complementary clues to the researcher when analyzing the answers of the participants [Pretorius and Calitz, 11]. The group is the source of information [Acocella, 12] [Queirós et al., 17]. Other advantages of the FG include the obtention of detailed information about the participants, the opportunity to get clarifications on the subjects,

and the lower costs when compared to personal interviews. Some risks of the FG are the difficulty of getting people participation, the possibility of not obtaining a representative population or the difficulty to control and manage [Queirós et al., 17]. The selection of the participants was not random and based on the desired characteristics of the study, instead [Pretorius and Calitz, 11].

An interpretivist/constructivist research paradigm was adopted in this study, which was guided by a qualitative approach. FG method and Thematic Analysis (TA) were chosen as research techniques [Onwuegbuzie et al., 09]. Due to the purposes of this study, the FG technique allows us to obtain detailed information about the participants, a deep understanding of their thinking about how they interact with e-government, why they do it, from where, and what are the attributes they value the most [Kumar et al., 17]. Alternative techniques (e.g.: observation, questionnaires, interviews), have an added risk of complexity (e.g.: how many observations would be needed to analyze what attributes are more valued by users of the Portuguese e-government; if questionnaires were used, how many answers would be needed per attribute), an added risk of biased results due to non-controlled factors during the process (e.g.: low rate of responses to questionnaires; difficulty to validate respondents' profiles; lack of feedback in the event of doubts or misunderstandings), and risks of non-compliance with the deadlines (e.g.: individual interviews may be time-consuming to meet each participant according to his/her availability; questionnaires may require several contacts to motivate people to answer; observation may take too long to obtain the first results.). After settling on how to gather data and which type of data should be obtained, it was decided to use a TA method. TA, unlike Content Analysis [Alkhalifah, 17], is not dependent on an epistemological or theoretical perspective. Due to the possibility of new attributes being suggested by FG participants, TA characteristics make it a more flexible method for this study. The participants selected for the FG interviews were a representative sample of the population of users of the Portuguese government websites. Thirteen participants attended and were divided into two interviews.

The contributions of the participants highlighted the following attributes: accessibility; ease of use, comprehensibility, satisfaction, trust, utility. Accessibility was the attribute most referred and ease of use came next. None of the attributes obtained unanimity among the participants. Additionally, participants provided an overview of how to prioritize attributes. The analysis of the discussions suggested the users of e-government may play an active role in the improvement of the information delivered by PA websites. As limitations of the study, authors are fully aware the FG technique adopted is not designed to build consensus or provide empirical data on the subject under study. Therefore, and despite the possibility of replication, the results of the study cannot be generalized.

This paper is organized in the following sections: Introduction – presenting study contextualization and background; Methodology – presenting the design of the study; Theory – presenting the background to future work; Results – presenting the validated attributes; Discussion – presenting the analysis of the validation of the attributes; Conclusion – presenting the main conclusions of this study; (v) References.

2 Methodology

Research on FG techniques recommend a group of 4 to 12 participants [Tong et al., 07]; [Pretorius and Calitz, 11]. However, not all academic community agrees with the number of participants. Nielsen points to groups composed of 6 to 9 participants and the possibility of the existence of more than one group [Nielsen, 97]. Krueger suggests 5 to 10 participants per group but argue that 6 to 8 are preferable [Krueger et al., 01]. The determination of the sample size should not be based on statistical formulas but rather on a set of individuals that can provide different perspectives on the subject under analysis [Krueger et al., 01]. Another important aspect is the duration of the interviews, which should not last for more than 90 to 120 minutes, to avoid diminished focus of the participants [Nielsen, 97] [Krueger et al., 01] [Tong et al., 07] [Pretorius and Calitz, 11].

Since the purpose of this study is to obtain a perception of the participants' experience with e-government and understanding what are the attributes they value the most, the qualitative approach was considered to be the best option [Ochieng, 09], also because it provides new insights on the existing data [Ochieng, 09]. There is more than one possibility to carry out an analysis of qualitative data [Rabiee, 04]. In practice, researchers may combine multiple approaches in their research [Rabiee, 04]. Content analysis (CA) and TA are two prominent methods used for the analysis of the message data present on FG interviews [Neuendorf, 19]. TA, unlike CA, does not depend on an epistemological or theoretical perspective. The possibility of new attributes being suggested by participants makes TA the most adequate method for this study. The analysis model proposed by Braun and Clark, was adopted for this study since it allows for an easier and clearer process of data analysis [Braun and Clarke, 06] [Maguire and Delahunt, 17].

Researchers' assumptions represent their vision and orientations about the world in the process of creation and development of scientific knowledge [Bhattacherjee, 12: p18]. During the research process, the scope of the study, the identification of the problem, the RQ, the research strategies adopted, the methods to obtain the data, and the data analysis, have the hand of the researcher [Mackenzie and Knipe, 06]. This study was based on an interpretivist/constructivist paradigmatic view and conducted by a qualitative approach.

The research methodology is divided into five phases: (i) planning the study; (ii) recruiting the participants; (iii) conducting the interviews; (iv) registering the data of the interviews; (v) analyzing the information. Figure 1 provides an overview of the research methodology.

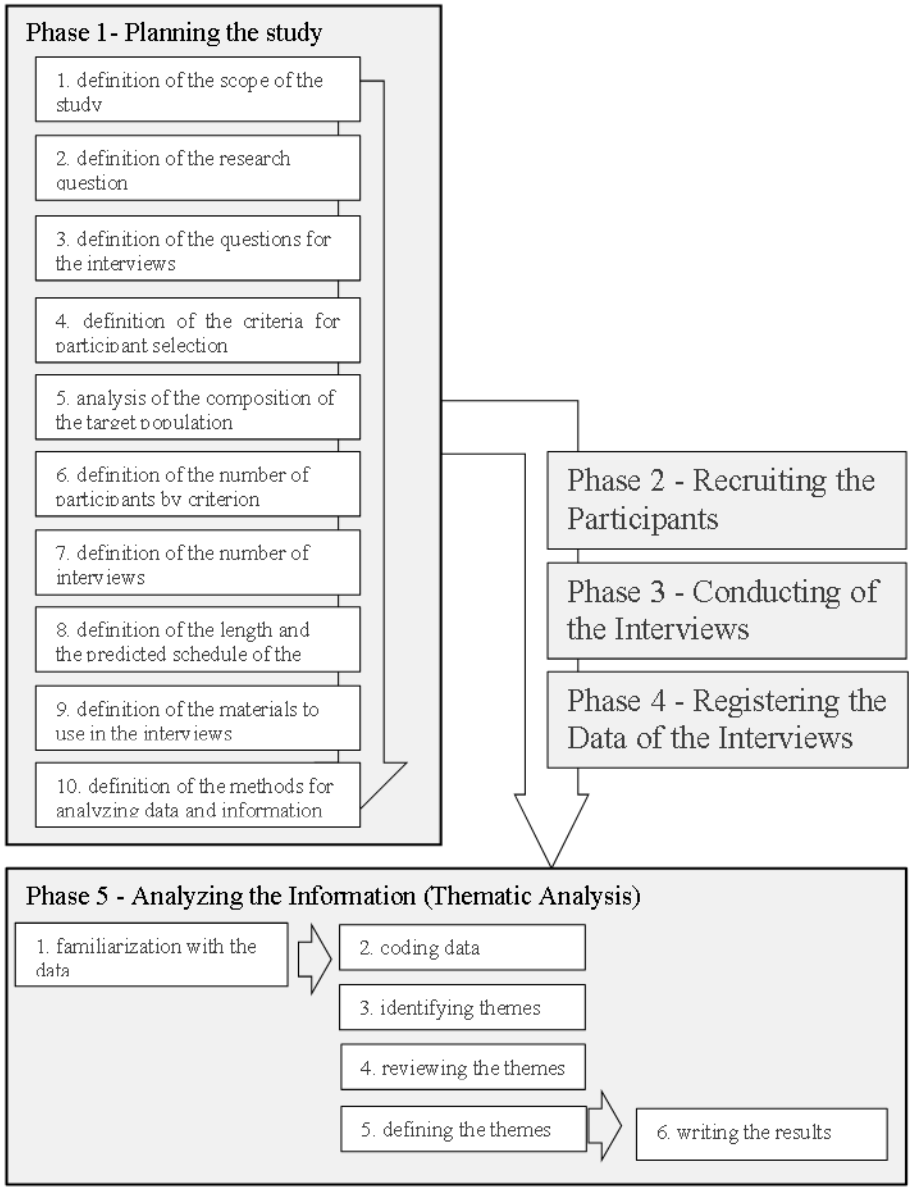

Figure 1: Overview of the research methodology

2.1 Planning the study

The planning of the study, presented in this sub-section, explains how this FG study was prepared, describing the plan, step by step. This phase is relevant to obtaining an understanding of the subsequent phases of this study.

Following Krueger recommendations [Krueger et al., 01] [Krueger, 02], ten steps were defined: (i) definition of the scope of the study; (ii) definition of the RQ; (iii)

definition of the questions for the interviews; (iv) definition of the criteria for participant selection; (v) analysis of the composition of the target population according to the defined criteria; (vi) definition of the number of participants by criterion; (vii) definition of the number of interviews; (viii) definition of the length and the predicted schedule of the interviews; (ix) definition of the materials to use in the interviews; (x) definition of the methods for analyzing data and information.

The study aims to understand what are the attributes the users of e-government in Portugal value the most, to evaluate the content delivered by government websites. The scope of the study lies in the RQ: what attributes of e-government information delivery are more valuable to the users of e-government in Portugal?

The definition of the semi-structured questions for the interviews was grouped into five types [Krueger et al., 01] [Krueger, 02]: open questions; introduction questions; transition questions, key questions, and final questions. The groups of questions were designed in a funnel perspective [Morgan, 97], starting with open topics and, progressively, tending to become more focused [Krueger, 02]. The objective is to lead participants answers to provide an understanding of: (i) their Internet access experience; (ii) their experience with e-government; and (iii) what attributes of e-government they value the most. The first two points are relevant for understanding if the contribution of the participants in choosing the most valued attributes is supported by their experience with e-government. Table 1 presents the questions by category.

Category	**Questions**
Open questions	Please introduce yourselves, starting with your name, occupation, hobbies
Introduction questions	Are you an Internet user? In which circumstances do you access the Internet? How many hours, on average, do you spend on the Internet?
Transition questions	What type of sites or content do you access more frequently?
Key questions	Do you usually access the websites of the Portuguese government? Which ones do you visit more frequently? (e.g.: citizens' portal, tax authority, ministry of education, national health service, police forces) What is your experience with these sites? What do you like the most about them? Which difficulties did you face when accessing these sites? Do you want to highlight a difficulty or a positive aspect?
Final questions	Which attributes do you consider more relevant in government websites? (you may use the materials provided or suggest your own attributes)

Table 1: Questions of the interviews

The definition of the criteria for participant selection takes into consideration the need to obtain a representative sample of the users or potential users of e-government in Portugal. The criteria adopted were: nationality, country of residence, gender; age

group; academic education; and people with some degree/type of disability. To fill the criteria nationality and residence, the profile of the participants was restricted to individuals with Portuguese nationality or foreigners with permanent residence in Portugal. Portuguese individuals who have permanent residence outside Portugal or foreign people who have no permanent residence in Portugal were not eligible for this study, since their perceptions regarding Portuguese e-government could be influenced, mainly, by their experience with the e-government of the country where they live. To fill the criteria gender, age group, academic education, and people with some degree/type of disability, a preliminary analysis of the Portuguese population was made.

PORDATA, which is supported by Instituto Nacional de Estatística – INE, was chosen as the source of data. PORDATA is a database of contemporary Portugal, organized and developed by the Francisco Manuel dos Santos Foundation. PORDATA cooperates with more than 60 official entities, including INE, which is the official statistics entity in Portugal.

Data selection was based on the last Census of the Portuguese population (updated each decade), which corresponds to the year 2011. Nevertheless, the most recent data of the individuals with some type/degree of disability was taken from the Census of 2001. To obtain a balanced overview of the distribution of the population according to these four criteria, it was decided to include data of the Census of 2001 in the criteria gender, age group, and academic education, as shown in Table 2, Table 3, Table 4 and Table 5.

The distribution of the population by gender points to half a million more women in 2011. From 2001 to 2011, the female population grew four times more than men.

Year	**Gender**		**Total**
	Women	Men	
2001	5,355.0	5,000.1	10,356.1
2011	5,515.6	5,046.6	10.562.2

values in thousands

Table 2: Questions of the interviews

Regarding age, the data was obtained according to three main groups: young people (0-14); adult people (15-65); and elderly people (+65). Because the group of young people is bellow adulthood, their needs for interaction with the PA are mediated by their tutors. Therefore, only the groups of adults and elderly people were considered. The group of adult people is four times larger than the group of elderly people. From 2001 to 2011 the group of elderly people has grown while the groups of adults and young people decreased.

Year	**Age group**			**Total**
	0 - 14	15 - 64	65+	
2001	1,656.6	7,006.0	1,693.5	10,356,1
2011	1,572.3	6,969.8	2,010.1	10,562.2

values in thousands

Table 3: Population by age group, according to the Census

The data of academic education were obtained for individuals aged 15 years or more. Between 2001 and 2011, the number of individuals with one of the three highest levels of academic education increased, and the number of individuals with the lowest levels of academic education decreased. Data from 2011 indicate the following: approximately 10.9% of the population did not conclude any formal level of education; approximately 59.4% of individuals only have the basic level of education; approximately 16.5% have a secondary or post-secondary education level; approximately 13.2% have higher education.

The population that did not conclude any level of education may include illiterate individuals. For this reason, it was decided not to include them in the sample. Excluding this group, three groups were adopted for representativeness purposes: (i) Basic Education (less than 12 years of academic education concluded); (ii) Secondary and Post-Secondary Education (at least 12 years of academic education concluded with success and no higher education); (iii) Higher Education (at least with a bachelor's degree). According to these three groups, nearly 67% of the individuals have the basic level of academic education; nearly 18% of them have concluded the secondary level of academic education, and nearly 15% have at least a bachelor's degree.

Year	**Academic Education**						**Total**
	No education level	Basic: 1st level	Basic: 2nd level	Basic: 3rd level	Secondary and post-secondary level	Higher-level	
2001	1,516.6	2,864.3	1,424,9	1,285.0	1,013.2	584.4	8,687.4
2011	981,3	2,332.5	1,153.7	1,841.8	1,475.1	1,186.1	8,970.5

values in thousands

Table 4: Population aged 15 or more by level of education, according to the Census

The data of the people with some degree/type of disability are distributed by five typified categories (hearing; visual, mobility, learn/cognitive, brain paralysis) and a category, which corresponds to non-typified cases. According to the Census of 2001 data, individuals identified with some type/degree of disability accounted for nearly 5% of the Portuguese population.

In Table 5 are presented the number of disabilities obtained by Census 2001 and the classifications adopted by Portuguese authorities. The data presented does not include the year 2011 because in Census 2011 the information about disabled people is not available. The lack of information in relating disabilities with the age or if one person is included in more than one type of disability is not clear and does not allow to compare with data of other studies [Rocha et al., 12]. To avoid speculation were decided to adopt a conservative approach and maintain criteria in select participants based on data of Census, presenting only the year 2001 and start the analysis from that data.

Year	Type of disability						Total
	Hearing	Visual	Mobility	Learn/ Cognitive	Brain paralysis	Other	
2001	84.2	163.6	156.2	71.0	15.0	146.1	636.1

values in thousands

Table 5: Population with some type of disability grouped by impairment, according to the Census

An analysis of the composition of the target population according to the defined criteria suggests the recruitment of 14 participants to distribute by two interviews with 7 participants each, with the following justification by criteria: (i) gender - data suggests including the same number of individuals by gender or one more woman; (ii) age group - data suggests to include 10 to 12 adult and 2 to 4 elderly participants. Bearing in mind the aging phenomena that is affecting the European population, including, of course, the Portuguese population, and the phenomena of prematurely retired people caused by changes in market conditions, the decision was to include 1 to 2 retired individuals. In spite of belonging to the age group of adults, their retirement puts their needs regarding electronic government at the same level as the elderly group; (iii) academic education - data points at the recruitment of 9 to 10 individuals with the basic level, 2 to 3 individuals with secondary level, and 2 to 3 individuals with higher level of academic education; (iv) people with some degree/type of disability - despite the data for this criterion may suggest the inclusion of 0 to 1 participant, the decision was made to include at least 1 participant, due to the social relevance of accessibility nowadays, thus enabling us to understand the perspectives of this group.

Regarding the definition of the number of participants by criterion, it began with a preliminary personal contact with individuals who fit the required profile, to ask them if they would be available to participate in the interviews. The differences between planned and attended can be explained by the following reasons: (i) one of the participants, with the profiled woman, adult age group, and a basic level of academic education, cancelled the presence on the day of the interview; (ii) during the recruitment, some of the individuals with a basic level of academic education, became unavailable, claiming they did not feel prepared to discuss the topics of the interviews. After several unsuccessful contacts, the decision was made to replace these individuals with others which profile corresponds to the secondary level or higher level of academic education. The tendency to the increase of individuals with highest levels of academic education and the mandatory level of twelve years of education in Portugal minimizes the bias caused by this option; (iii) regarding the recruitment of individuals with some type/degree of disability, one individual with Parkinson syndrome was invited to the interviews, as according to plan. However, during the interviews, a participant mentioned having a visual disability.

Table 6 shows the number of participants planed by criteria and their attendance.

Criteria	Criteria Options	Planed	Attended
Nationality	Portuguese	14	13
Residence	Portugal	14	13
Gender	Woman	7	6
	Man	7	7
Age group	Adults	10	9
	Elderly	4	4
Academic education	Basic level	9	5
	Secondary level	3	4
	Higher-level	2	4
Have some degree/type of disability		1	2

Table 6: Number of participants by criteria: planed vs. attended

The definition of the number of interviews considered the number of participants per interview of 6 to 8 individuals, and the groups to be balanced in terms of academic education. The objective of this segmentation was to privilege the homogeneity of the participants and make them comfortable and self-confident inside the group [Morgan, 97] [Krueger et al., 01] [Krueger, 02] [Bhattacherjee, 12]. The length and the schedule of the interviews were defined to last 90 to 120 minutes and they were scheduled according to the availability of the participants [Nielsen, 97] [Krueger et al., 01] [Krueger, 02] [Tong et al., 07] [Pretorius and Calitz, 11].

The definition of the materials to use in the interviews included the reservation of the room for the interviews, the recording equipment for the interviews, didactic materials, and a document with the set of attributes obtained from the literature review, to provide as supplementary material to the participants. The document includes a short description by attribute, translated into Portuguese.

The definition of the methods for analyzing data and information consisted of the technique outlined by Braun and Clarke, called reflexive TA [Braun and Clarke, 06]. Even though different authors argue that TA can be carried out in diverse ways, Latent TA was adopted based on the assumptions and concepts present on the data to suggest the themes [Ryan and Bernard, 03] [Braun and Clarke, 06] [Maguire and Delahunt, 17]. Six sequential steps were followed to work on the data [Braun and Clarke, 06]: (i) familiarization with the data; (ii) coding data; (iii) identifying themes; (iv) reviewing the themes; (v) defining the themes; (vi) writing the results.

2.2 Recruiting the Participants

The recruitment of the participants followed the previous contact with the participants which characteristics could meet the required profiles. As referred by Queirós [Queirós et al., 17], to get the participation of people is a difficult process. The main challenges of this process were to motivate people to participate in the discussion of e-government issues and conciliate their availability with the expected date for the interviews. Predicting the possibility that one or more individuals might refuse the invitation or not be available on the date of the interview, over-recruitment is considered a valid strategy

[Morgan, 97]. Several contacts were made with the participants, iteratively, until the necessary number of participants was reached, and a consensus was obtained about the dates for the interviews.

Table 7 shows how participants meet the criteria and which interview they attended. To preserve confidentiality, participants' names were replaced by codes.

Criteria	**Criteria Options**	**Participant**												
		#01	**#02**	**#03**	**#04**	**#05**	**#06**	**#07**	**#08**	**#09**	**#10**	**#11**	**#12**	**#13**
Nationality	Portuguese	X	X	X	X	X	X	X	X	X	X	X	X	X
Residence	Portugal	X	X	X	X	X	X	X	X	X	X	X	X	X
Gender	Woman	X	X	X	X	X	X							
	Man							X	X	X	X	X	X	X
Age group	Adults	X			X	X	X		X	X		X	X	X
	Elderly		X	X				X			X			
Academic education	Basic level				X	X	X	X	X					
	Secondary level		X	X						X	X			
	Higher-level	X										X	X	X
Have some degree/type of disability								X			X			
First interview		X		X						X	X	X	X	X
Second Interview			X		X	X	X	X	X					

Table 7: Participants in the interviews by criteria

A brief characterization of the participants is provided on the following lines. A total of thirteen individuals, six women, and seven men attended, aged between 20 and 76. In terms of academic education, five of the participants did not conclude the secondary level of academic education, four of the participants concluded the secondary level of academic education, and four of the participants have a higher level of academic education. In terms of age groups, four of the participants are retired from the labour market (two belong to the adult age group, and two belong to the elderly age group). Two men have impairments: one has visual limitations, and the other has Parkinson's syndrome. All participants declared to have experience in the use of the Internet. Differences were noted in the frequency of use, the conditions of access, the motivations, and the devices used. Participants stated they spend one to eight hours per day connected to the Internet.

2.3 Conducting the Interviews

Two interviews were conducted, on different days and lasting a maximum of 90 minutes. One week before each interview a document was provided to the participants

with a sample of attributes so they can prepare for the debate. The document had one attribute per page, written in English and Portuguese, followed by a brief description of the attribute in Portuguese. The participants were divided into two groups. One group consisted of participants with secondary and higher academic education. The other group was composed, mainly, of participants with the basic level of academic education. The objective was to make participants feel comfortable, by setting groups with a similar level of speech and communication skills [Morgan, 97]; [Krueger et al., 01]. The questions asked to the participants in each interview followed the sequence presented above in Table 1.

2.4 Registering the data of the interviews

The interviews were recorded after informing participants and obtaining their consent. The recordings of the interviews were transcribed in two separate files. To attain an overview of the contributions of the participants, a synthesis of the main ideas was reported, into a unique file, in line with the sequence of the questions.

2.5 Analyzing the information

The analysis of the information started with a process of familiarization with the data. After careful reading, a synthesis of the data was prepared. The synthesis consisted of writing an interpretation of the main thoughts of each participant to help familiarization with the data. The second step, coding data, consisted in replacing the chunks of text that match the answers of the participants by codes (e.g.: the conditions of access to the Internet; time spent connected to the Internet; types of websites more visited; e-government websites used; positive aspects of e-government websites; negative aspects of e-government websites; most valuated attributes in e-government websites) [Bree and Gallagher, 16]. New codes were adopted as the coding process was worked through.

Table 8 shows the codes used and provides some brief examples of what participants mentioned during the interviews (freely translated from the Portuguese).

Code	Part.	Text example
#comp	#02	"We have cellphones but, it's the computers that we use the most"
#tlm	#10	"I frequently use the mobile phone and its apps"
#conf	#03	"I avoid using the cellphone because it's too difficult to see what's on the screen"
#mob	#01	"While I am waiting, I use the Internet in the mobile phone"
#casa	#03	
#trab	#01	"... the Internet is my life because I need it for work…"
#2h+	#12	"…About ten. Ten hours per day."
#ate2h	#04	"I have no idea, but I believe around two hours…"
#muito	#05	"I use it a lot."
#pouco	#06	"No. I don't use much"
#invest	#11	"…in the academic context, I use, mainly, to research papers…"
#desp	#03	"I spend a lot of time with STRAVA, …definitely."
#imob	#12	"I frequently use Real Estate software, for professional reasons"

Code	Part.	Text example
#info	#11	"…I frequently use it to read news about sports and economics."
#tec	#08	"…I look for webpages related to lighting… To compare."
#email	#01	"…while I am waiting, I connect to the Internet to check my email."
#entret	#07	"And to play games…"
#imvoip	#02	"So, I also use Skype, …"
#pesquisa	#08	"At home, I avoid, unless she asks me to search for something…"
#nutricao	#02	"I like to read about medicinal plants, types of herbal teas, etc…"
#reclama	#09	"I complained once about a situation that happened to me."
#rsociais	#11	"I use social media to keep in touch with friends, look for events…"
#venda	#06	"I like to see things in Custo Justo."
#ASAE	#13	"Not of crimes, but ASAE website… I tried to submit a complaint…"
#AT	#11	"I use PORTAL DAS FINANÇAS (Tax Authority Portal), once or twice per month."
#BDP	#12	"…and BANCO DE PORTUGAL (Bank of Portugal), with clients, to analyze their issues."
#IMTT	#02	"Because of the driving license."
#PC	#03	"That is the only experience I have, PORTAL DO CIDADÃO (Citizen Website)."
#PSP	#11	"I have tried to access the website of the Police once because my car was towed."
#PS	#05	"It's Marta who sets the appointments with the Doctor."
#SS	#08	"To verify if social security contributions are ok… things like that."
#delega	#05	"… just for convenience, I leave it up to my mom, or someone else."
#famili	#10	"On properties…. I do it all."
#pos	#11	"By the way, a positive aspect is the notification system…."
#pro	#09	"Essentially, because I submit customs clearances through the website."
#neg	#01	"Any information on the website is very vague."
#pess	#09	"I particularly like it [Tax Authority Portal] ... That's where I submit my tax return."

Table 8: Codes used to code data

The third step, identifying themes, started with the identification of how participants connect to the Internet, what are the websites they visit more frequently (including e-government websites) and how they evaluate the e-government websites

they visit. The identification of the themes is somehow reflected in the coding process [Ryan and Bernard, 03] [Maguire and Delahunt, 17]. The codes represent ideas that provide feedback about themes (e.g.: experience of the users with Internet and technology - #comp, #tlm; #ate2h, #2h+; user content preferences - #entret, #info; government websites visited and the reasons - #AT, #BDP, #famili, #pro; positive and negative feedback about government websites - #pos, #neg) [Ryan and Bernard, 03] [Maguire and Delahunt, 17]. The previously identified themes are shown in Table 9.

Theme	**Sub-theme**	**The feedback that fits on the theme**
Context of the access to the Internet	Where does access take place	home, work, on the move…
	How does the access take place	mobile data, wi-fi, cable, …
	Time spent per day connected to the Internet	average hours
Websites visited and content searched	Generic websites or content	Type of sites visited, or content searched
	e-government websites	Websites visited at least once
	Which ones are more visited	Websites more frequently visited
	What are the reasons	Reasons to visit the websites
Evaluation of the e-government websites	Positive aspects	Facts that benefit users
	Negative aspects	Facts that are considered difficulties
	What are the most valued attributes	Attributes identified as relevant by participants; new attributes suggested by participants

Table 9: Previously identified themes

On the fourth step, reviewing the themes, the preliminary themes were reviewed. It was decided to maintain the theme "Evaluation of the e-government websites", but the themes "Context of the access to the Internet" and "Websites visited, and content searched", do not seem to express the feedback of the participants about their experience with the Internet, nor their experience with e-government. The theme "Experience on the access to the Internet" is better suited to provide an overview of the familiarity of the participants with Internet use and the theme "Use of e-government" seems to be more relevant to provide an overview of the experience of the participants with e-government. The review process was conducted to provide more coherence between the themes and the feedback of the participants [Maguire and Delahunt, 17]. The fifth step, defining the themes, was centred on the participants' experience with the Internet and their experience with e-government, to provide an overview of how reliable their feedback is regarding the attributes they consider to be more relevant to evaluate e-government. Table 10 presents the defined themes.

Theme	Sub-theme	The feedback that fits on the theme
Experience on access to the Internet	Conditions of the access	mobile phone, laptop, desktop, home, work, on the move…
	Time spent per day connected to the Internet	average hours
	Websites visited or content searched	Types, categories, …
Use of e-government	e-government websites visited	Websites visited at least once
	more visited e-government websites	Websites more frequently visited
	What are the reasons for using e-government websites	Reasons for visiting e-government websites
Evaluation of the e-government websites	Positive aspects	Facts that benefit users
	Negative aspects	Facts that are considered difficulties
	What are the most valued attributes	Attributes identified as relevant by participants; new attributes suggested by participants

Table 10: Themes defined after review

The sixth step, writing the results, consisted of a written synthesis of the results of the thematic analysis. TA results are provided at the section Results, within the context of the results of the FG.

3 Theory

E-government can be approached from the governments' or from the users' perspective (reference to add after peer review). Each perspective tends to privilege one side over the other. The governments' focus in the dematerialization of the PA lead to technological determinism, ignoring some of the basic user needs. Not all users have access to the Internet or enough literacy to deal with computer devices. Additionally, there are users who physical or cognitive impairments are serious limitations to the use of computer devices and(or) to website navigation. Therefore, such users will be excluded from accessing and using e-government if no action is taken to make technology more user-friendly. The ideal approach would be to reach a balance between technological determinism and social needs and provide e-government solutions that rely on users' needs.

Models of maturity, adopted to evaluate e-government, are oriented to provide an assessment of its technological capability, at a national or municipal level [Zahran et al., 15] [Zautashvili, 17]. These conceptualizations were designed to reflect the technology sophistication level, offered by governments, through its PA, and cannot capture users' perceptions of the e-government. Despite its value, to gain insight of what stage e-government infrastructures are in, it is necessary to perceive how users, as

main beneficiaries, perceive e-government value. The e-government adoption by users can only be achieved if they recognize value in their interaction with PA. Hence, understanding users' perspective may unravel the path capable of providing valuable insights on how to improve e-government infrastructures.

To evaluate e-government improvements in the satisfaction of users' needs, it is necessary to mind business and web development areas (reference to add after peer review). Similarities among e-government technology and the technology used by enterprises to interact with users are considerable. Both use the web as an extension of the core activities. However, while in business, its core defines the target audience, in e-government, the target are all adult citizens and thus, universality must be the foundation of e-government.

In this sense, the theory about quality models, widely adopted in business studies, and the theory about web accessibility, usability or UX (which are closer to the users' needs, abilities or emotions), can be transferred to the e-government context [Janita and Miranda, 18]. Attributes of e-government related with these concepts are fundamental to capture of users' contributions as an asset to improve e-government. Given the fact that users feedback reflects their own reality in terms of interaction with the e-government, the result of their contributions will provide an overview of the e-government that matches the national reality. In the context of the attributes of e-government users can be surveyed while avoiding a rigid set of heuristic guidelines. A questionnaire to capture voluntary users' feedback on their interactions with e-government may promote its continuous assessment and improvement. Ultimately, this would allow e-government information technology (IT) development establish improvements to meet users' needs. Moreover, users' feedback on their interaction with PA, through e-government use, may help IT teams to gain insight of users' needs and employ them as a tool to improve e-government technology. Future research should focus on how to capture users' feedback on their interaction with e-government, focusing on information delivery attributes, to build a surveying mechanism.

4 Results

The analysis of the results relies upon the contributions of the participants and the way such contributions answer the RQ. The themes defined in the TA guide the presentation of the results.

Participants showed experience in accessing the Internet with their testimonies on how many hours they spend online, what devices they use, how they connect, and what is the content they more frequently search for. Three of the participants stated they preferred to use a computer instead of mobile devices (e.g.: #02, #07 – "We have a mobile phone, but we spend more time connected at home."; #03 – "The screen is small. I prefer using my home computer…"; #09 – "Not on my mobile phone, no. I don't have it. The mobile phone is for making calls and sending text messages."). The need for visual comfort on the use of the devices was manifest. Their experience with e-government is related with the needs to accomplish personal, familiar, or professional responsibilities with the PA (e.g.: participants #09, #12 and #04 use e-government mainly in a professional context; participant #10 uses e-government mainly for the family business; the others use e-government for personal purposes or to help family

members.). Overall, participants have used e-government more frequently to comply with tax responsibilities and to manage social security issues.

The feedback of the participants about the evaluation of e-government was obtained from (i) their speech and (ii) their identification of a sample of attributes provided by moderators.

Participants' speech provided a characterization of their e-government experience which was classified on positive or negative aspects. The identification of attributes by participants was made with the help of the document provided by moderators. Participants' speech, about positive or negative aspects, started by describing the individual experience, sometimes corroborated by other participants of the group. The descriptions of the participants were the starting point for relations to be established with the attributes obtained from the literature review, and understanding which attributes fitted in each case. The text coded as positive aspects covered the critical thoughts of the participants where they praised government websites. When referring positive aspects, participants, unconsciously, expressed their thoughts according to two approaches: (i) by comparing the present status of a website, they visit frequently with the past status (e.g.: #04 comparing changes on Tax Authority website - "I used it before. I think, now, it is getting better. Gradually, becoming better.".); (ii) by expressing their satisfaction with some website functionalities (e.g.: #11 praising user alerts and notifications of Tax Authority website – "The notifications to alert us for our responsibilities or some irregularity… I consider it useful."). The reference to negative aspects was identified with concrete experiences (e.g.: #11 criticizing efficiency and effectiveness of the Police website – "The issue is that the number of steps to find the information that I need is greater than the number of steps using other alternatives."; #11 criticizing information clarity, understandability and navigation of the Tax Authority website – "One of the things that causes me some difficulty in navigating are the specific terms they use, which are not understandable to common people."; #08 criticizing the time needed to complete a task at Tax Authority website during the period of tax return submission – "Yes, yes, it freezes a lot…".). The main concerns, latent on the speech of the participants were: clarity, accuracy, understandability, comprehensibility, utility, availability, and accessibility when they access information; search, process time, navigation, efficiency, effectiveness, and ease of use to perform the tasks and satisfy their needs; trust and comfort using the government websites.

Attributes identification was made with the help of a document with a sample of attributes (with a brief description of each one) and a conceptual map that was provided to each participant, and where they could select the attributes identifiable with the thoughts expressed during the interview. Participants were free to select an unlimited number of attributes. During the process, participants could talk to each other, discuss their interpretation of each attribute, or read the information provided about the attributes. The analysis of the attributes selected by the participants was synthesized on a matrix to perceive what is the most consensual attributes. In 142 attributes, nine were selected by two-thirds of the participants, and 22 were selected by half of the participants. Only 23 of the 142 attributes were not selected by any participant. In total, 119 attributes were selected as relevant by at least one participant. Participants did not suggest any other attributes neither rejected any of the provided attributes. Due to the great extension of the data, only the subset of attributes that got more consensus was provided in this paper, in Table 11 below.

Attribute	**#01**	**#02**	**#03**	**#04**	**#05**	**#06**	**#07**	**#08**	**#09**	**#10**	**#11**	**#12**	**#13**	**SUM**
Accessibility	x	x	x	x	x	x	x	x	x	x	x	x		12
Ease of Use	x	x	x	x	x	x	x	x	x	x			x	11
Comprehensibility		x	x	x		x	x	x	x	x	x		x	10
Satisfaction	x	x	x		x	x	x	x	x	x		x		10
Trust	x	x	x	x		x	x	x			x	x	x	10
Utility		x	x		x		x	x	x	x	x	x	x	10
Accessible		x	x		x	x	x	x	x	x		x		9
Search		x	x		x	x	x	x		x	x		x	9
Usability	x	x	x	x	x		x			x	x		x	9
Credible		x				x	x	x	x	x	x		x	8
Functionality	x	x		x	x		x	x	x	x				8
Permit easy reversal actions	x	x	x	x		x	x	x			x			8
Topics		x	x	x	x		x			x		x	x	8
Understandability		x	x				x	x	x	x	x		x	8
Useful	x	x	x		x		x			x			x	7
Efficiency	x	x			x		x	x		x			x	7
Fluidity of Interactivity		x	x	x	x		x	x					x	7
Help and documentation		x	x	x			x	x		x	x			7
Learnability		x	x	x	x	x	x	x						7
Enable frequent users to use shortcuts	x		x	x	x	x						x	x	7
Readiness		x			x	x	x			x	x	x		7
Text		x	x		x	x	x			x			x	7

Table 11: Sample of the matrix of the attributes selected by the participants

5 Discussion

Systematic advances in technology with impact to the e-government may result in the obsolescence of the artifacts to evaluate the quality of information delivered by government websites. Each artifact carries the mark of their authors, the moment when is created and the context where it is planned to be applied. Despite the robustness of the artifacts, with time, there will always be criticism and room for improvement

[Bannister and Connolly, 15]. During this period a gap may occur between the new technological reality and the mechanisms able to perform an effective evaluation of the technology. This is what happens in e-government. The offer of new technologies by governments is growing fast and it is not followed by updated tools that allow its evaluation by users. Some of the most recent artifacts tend to represent a synthesis of past artifacts [Fath-Allah et al., 14] [Sá et al., 16]. Today, to deeply evaluate e-government, the main difficulty is not to select the appropriate tool but to the right set of tools. Recognizing the complementary role those different artifacts may play on the evaluation process two negative aspects must be pointed: (i) the complexity of the process by the need to follow different evaluation protocols to gathering and process data; (ii) and there is the risk of the various tools to include similar techniques of evaluation, rendering part of the analysis repetitive and in consequence, redundant. With the deconstruction of the e-government evaluation artifacts on small pieces, the attributes, the aim is to focus the attention on each element of the e-government information delivery rather on rigid and complex evaluation framework tools. With this approach, users may be involved in the discussion of the issues of the e-government information delivery by providing feedback about the attributes they value more. The involvement of the users in discussing the issues that they are more affected by, offers the possibility to promote collective consciousness to improve e-government information and its delivery mechanisms. The research on new artifacts supported by users' contributions, may become beneficial to the development of artifacts user-centric.

Another point to discuss is if the e-government information delivery must be centred only on the information domain or should extend to the related domains. If the discussion of e-government information delivery issues weas delimited to the information domain, ignoring the technical, the service and the organizational aspects of e-government, it would not be providing the complete view of the factors that need to be improved. The artifacts developed to contain one domain of e-government tends to be more specific in the capture of the issues of that domain, ignoring the issues of the related domains. Despite this approach reducing the complexity of the analysis, it may not provide effective solutions to the present dimension of e-government. Regarding integrated artifacts to cover more than one domain [Acosta-Vargas et al., 17], the complexity of the evaluation stresses the possibility of not covering all desired situations. In allowing participants of the FG to openly discuss each attribute on every context (or domain) of the e-government, according to their beliefs, the possibility to think artifacts as dynamic tools where their attributes may be selected according to the evaluation context was captured. Due to the influence of factors like educational level, culture, or social environment may have on how people understand information, it is necessary to think of artifacts as tools to achieve consensus from the users' feedback.

The interpretation of the meaning of the attributes that are part of the artifacts may highlight some issues when these tools are analyzed by other researchers/authors or applied in the field by practitioners. Not all researchers/authors provided a clear explanation about the meaning of the attributes that they include on their artifacts, which can lead to misinterpretations. To isolate attributes from the artifacts exposed differences in terminology. On some artifacts, attributes were represented by a noun and in other artifacts, attributes were represented by an adjective. This supports the notion that two different attributes may represent a similar concept or idea (e.g.: accessible vs. accessibility; useful vs. usefulness). At first sight the different

terminology adopted may taint the perception of distinct attributes, which is not exactly what happens. Normalization of the terminology of the attributes may be necessary to minimize further misinterpretations. To explore how the terminological differences are perceived by the users, it was intentionally decided to maintain similar attributes in the interviews. An example is presented in the case of accessibility issues related to e-government information delivery. Some users interpreted the term accessible as guaranties to make information available anytime anywhere, another group of users interpreted the term accessible as the addons that render information available to people with impairments, and a third group of users interpreted the term accessible as the method to make information clear to people with low educational levels. The slightly different understandings ignited the discussion and contributed to a more careful the explanation of the attributes present on artifacts. The discussion was improved by the various contributions, and a debate was suggested to establish a common understanding.

The conceptualization of new artifacts by combining new attributes or reusing attributes from past frameworks, cannot shift the present paradigm [Sá et al., 16]. It is necessary to take into consideration the beneficiaries of the e-government, the users, independently of their role (citizens, companies, or public employees), social status, age group, pathologies, or education. The involvement of the users in the validation of the attributes allowed a new perception to be conceived of their priorities, doubts, disagrees, consensus, and interests related to the information delivered by e-government websites. Despite the limitation of the FG method in producing results that cannot be generalized to a country population, it opened the idea to extend the evaluation of the information delivered by e-government to the active users' participation. When navigating a website of the government, users may be invited to provide feedback related with the different attributes. The difference from the conventional methods based on questionnaires sent to the visitors of the websites is the possibility of providing feedback, beyond only the attributes that already constitute a concern. The adoption of personalized feedback solutions on the e-government portals represents a possibility that should be considered.

Participants' feedback is mainly based on the expectation of obtaining a good experience when using e-government. The perceptions that shape their experience when interacting with Portuguese government websites are built through the interactions with the websites they visited more often. Accessibility along the years has become a relevant subject in many aspects of our lives and is an attribute present on the most diverse artifacts. Maybe influenced by overall perception of accessibility or the presence of disabled individuals in the group, participants strongly considered accessibility and the easy to use, as relevant attributes in accessing to the e-government information. This emphasizes the idea that participants valued usability in a way that can be extended to all users of e-government. Another relevant factor to the participants was the utility of the specific e-government services to particular and professional needs. The comprehensibility of the information is equally considered a relevant attribute to the participants. They considered the information provided by some government websites too technical, and too difficult to understand by common sense. The discussion about the right to understand is not recent and assumes more relevance when it involves information delivered by e-government [Fisher-Martins, 11]. The success of the e-government may depend on the understanding of the users. The effort in making information understandable stands with the PA. The attribute trust was, also,

an attribute highlighted by the participants for various motives. Some participants focused on trust from the perspective of the security of the technology, others regarding the perspective from the trustworthiness of the information, and others tended to see trust from the perspective of government actions. Thus, trust can be viewed as an attribute that can have multiple representations. Another highlighted attribute was satisfaction. Participants considered the primary purpose of e-government was to satisfy the needs of the users, which can only be met when other attributes fulfil their expectations. The attribute satisfaction may be faced as a result of a well-succeeded interaction with e-government.

6 Conclusions

The scope of this study was to identify what are the attributes of the information delivery that users of e-government in Portugal value more. Attributes of e-government are spread by several models present in literature. The fast transformations in technology and its influence on users' perceptions of e-government, justify new approaches to meet e-government users' expectations. The adoption of a user-centric approach is justified to empower the e-government users and transmit trust in e-government technology [Kagoya and Mbamba, 21]. Past works [Youngblood and Youngblood, 18] [Annis et al., 21] [Kagoya and Mbamba, 21], centred on users' perspective, focus on technology adoption models, or (and) on behavioural models to obtain an understanding of users' perceptions about the adoption of e-government. These high-level perspectives, join social sciences and computer sciences to try to predict how users can successfully adopt e-government. However, e-government research needs more than a refinement of existing models. E-government deals with information to be transacted with users. When users cannot find and obtain the content, it becomes irrelevant [Youngblood and Youngblood, 18]. In this sense, a view of overall is needed. Focusing only on, government perspective, users' perspective or technology perspective means ignore the other two. This contribution differs from other studies in trying to provide a basis for a native e-government model centred on users' perspectives. This study started from the attributes obtained through the deconstruction of existing models, dimensions, metrics, characteristics, or other elements of e-government evaluation to submit to users' validation. As result, an understanding of how users perceive a large set of attributes was obtained. Users' perceptions of e-government attributes are influenced by their needs, past experiences, and expectations. These factors can be understood through the attributes that users most value.

The methodology of the study was designed to obtain real users' perceptions of e-government attributes they valuate most. With the adoption of the FG method, combined with the Thematic Analysis technique, and the previous work of the authors in the identification of the attributes from their artifacts, a user-centric perspective of the information delivered by e-government was obtained. This qualitative research contributed to exposed how users' experiences, needs, and critical thinking may intercept to prioritize the attributes which satisfy their needs in the adoption of e-government. It differentiates from similar studies centred on government perspectives, user attributes perspective, or technology perspective, in focusing on e-government attributes from the users' perspective [Zahran et al., 15] [Janita and Miranda, 18] [Youngblood and Youngblood, 18] [Annis et al., 21] [Kagoya and Mbamba, 21]. The

clues provided by this research suggested the socio-technical approach as a path to establish the bridge between a common-sense perspective and a research perspective to improve e-government. In this sense, it is concluded that users' feedback represents an asset to the evaluation of e-government information delivery. The divergences in the interpretation of the meaning of the attributes urge the adoption of a negotiation process involving the users to establish a common understanding of the attributes that are not ISO standards. Factors like educational level, culture, or social environment may influence how people comprehend information. These factors cannot be ignored by governments when providing electronic mechanisms to interact with their citizens. Hence, the development of new artifacts as tools to allow achieving consensus from the users' feedback should be considered.

Participants of the FG were not familiarized with the technical aspects of the research related to the user experience, accessibility, or usability, however, the spontaneity of their reasoning and their arguments during the interviews, allowed to highlight these three attributes, namely, by the emphasis they put on their experiences interacting with e-government. From the perspective of the consensus expressed by participants on the attributes selection, this research highlights the following groups: (i) content delivery (clarity, accuracy, understandability, comprehensibility, utility, availability, and accessibility of the information); (ii) interaction (search, process time, navigation, efficiency, effectiveness, and ease of use to perform the tasks to satisfy the user needs); (iii) and emotional aspects related with e-government interaction (trust and comfort using the government websites).

A surprising aspect was the lack of a clear emphasis on the attribute quality. Due to participants' focus on attribute satisfaction, a hypothesis arises based on their perception that quality is obtained when the users reach satisfaction interacting with e-government. As a final remark, the participants considered e-government a modality of interaction with the PA that is time-saving and free, in the sense that they can determine the time, device, or place where such interaction takes place.

The limitations of the study are summarized below: (i) results presented are indicative clues; (ii) authors are fully aware that the FG technique adopted is not designed to build consensus, or to provide empirical data on the subject under study; (iii) despite the possibility of replication the results of the study cannot be generalized.

Recruiting participants was a complex task. People's availability and their fear to discuss with strangers a subject that they feel unprepared, influenced the recruitment process. This has impacted the planed profiles of the participants to the interviews, as well as the possibility of extending the number of the interviews to more than two. As a lesson obtained for future studies, the preparation of the interviews may require more time to establish contacts and the improvement of the strategy to motivate people to participate in interviews. The balance between the number of participants by interview and the number of interviews should be carefully taken into consideration to avoiding take too long the process. If the context of the study changes in time, the results may be biased.

The formulation of questions may be criticized. The lack of emphasis on the attribute quality revealed by the results may indicate there was not clear to the participants that quality is a relevant attribute on e-government information delivery. Another perspective was users assume the quality attribute was a holistic product of the other attributes, and they did not consider it relevant to mention it in their contributions. As a lesson to future works, explicit questions about the main attributes should be

considered. In complement, the contextualization of the study to the participants must be improved.

7 Future Work

As for future work with the attributes the authors suggest the following: (i) to explore metrics and techniques of evaluation that can be adopted by each attribute; (ii) to explore how attributes can be incorporated on government websites to obtain feedback from the users' interaction; (iii) to explore the correlation, hierarchies, and influences between small groups of attributes; (iv) to explore possibilities of building a framework that allows evaluating e-government information delivery by dynamic selection of attributes.

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