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Understanding gender inequality in central e-government: A Korean case study

Yeon-Tae Choi [a], Sangin Park [b,c,*]

[a] Department of Public Administration, Kyungnam University, 7 Kyungnamdaehak-ro, Masanhappo-Gu, Changwon-Si, Gyeongsangnam-Do 631-701, South Korea
[b] Graduate School of Public Administration, Seoul National University, 1 Gwanak-ro, Gwanak-Gu, Seoul 151-742, South Korea
[c] Research Institute of Public Information Management, Seoul National University, 1 Gwanak-ro, Gwanak-Gu, Seoul 151-742, South Korea

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ABSTRACT

In this study, we examine gender inequality in the use of the Korean central government website in 2010. Adapting the digital divide and the gender differentiation hypothesis, we analyze e-government users and the determinants of their demand for e-government websites. Specifically, after controlling for socio-economic factors and family characteristics as demand determinants, we test whether gender inequality in e-government access and usage persists across central government units that provide differentiated public services. Our regression results indicate (i) no persistent gender inequality, supporting the gender differentiation hypothesis, and (ii) the importance of family characteristics as a determinant of demands for e-government websites. However, we also find a persistent divide in access to and usage of central e-government services by education and occupation, which deserves more attention and further research.

1. Introduction

The Information Age has introduced at least two new fields of research: the digital divide and e-government. Much attention has been directed to the digital divide regarding internet access and usage, as the infusion of new media information is believed to increase a knowledge gap between the socio-economically advantaged and the socio-economically disadvantaged (Donohue, Tichenor, & Olien, 1973). Although internet access is often considered to have been equalized by the early 2000s (DiMaggio & Hargittai, 2001), recent studies still note a digital divide in internet usage (Hsieh, Rai, & Keil, 2008). This inequality has been explained by IT literacy (Ferro, Natalie, & Gil-García, 2010) and socio-economic factors such as race and ethnicity, income, location, age, and education (Bélanger & Carter, 2006).

Surprisingly, e-government research has evolved with relatively little interaction with the literature on the digital divide. Although e-government was believed to provide more citizen-oriented public services and to promote more effective and democratic public administration, this new empirical literature has taken a "supply-side" evaluation approach, putting a major emphasis on the evaluations of web-based e-government services in terms of accessibility and content offerings (Park, Choi, & Bok, 2012). Only recently, Helbig, Gil-García, and Ferro (2009) have suggested the potential implications drawn from the digital divide literature for e-government research and practice, including understanding users and some determinants of demand.

In this paper, we study one aspect of the digital divide in usage of e-government websites. Specifically, we focus on gender inequality in the use of the Korean central government websites in 2010. It is widely acknowledged that there was almost no gender inequality in Korean internet access in 2010. However, our data, detailed in Section 3, show substantial gender inequality in both access to and usage of e-government websites. The data indicate that 5% more male internet users than female internet users have logged on to the Korean central e-government websites in 2010 and that these male users spent about one and a half as much time on these e-government sites.[1]

We aim to analyze this gender inequality in the Korean central e-government, adapting theoretical and empirical studies of digital inequality in general internet usage. In addition, we will explicitly consider internet users' family characteristics as demand predictors and the possibility of different demands by gender for differentiated public services. To our knowledge, the paper is the first attempt to include socio-economic factors, family characteristics and differentiated preferences in the analysis of individual citizens' demands for e-government websites.[2]

* Corresponding author at: Graduate School of Public Administration, Seoul National University, 1 Gwanak-ro, Gwanak-Gu, Seoul 151-742, South Korea. Fax: +82 2 882 5608.
E-mail address: sanpark@snu.ac.kr (S. Park).

[1] In our data of 2006, 5% more male internet users logged on to the Korean central e-government websites, but these male users spent approximately twice as much time on these e-government sites.

[2] As will be detailed in Section 2, previous studies of general internet usage indicate the importance of family characteristics and differentiated preferences in gender inequality.

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The paper is organized as follows. In Section 2, we will briefly discuss theoretical and empirical studies related to gender inequality in internet use, proceeding to address our research question. In Section 3, we will detail our data and our research design for gender inequality in e-government usage. Section 4 will present our findings. We will conclude in Section 5.

2. Literature review and research question

In the digital divide literature, inequality in internet usage has been explained by socio-economic factors and by individual differences in IT literacy (Bélanger & Carter, 2006; Ferro et al., 2010). However, recently users' interest and motivation have been added to possible sources of the internet usage divide. For instance, Min (2010) analyzes General Social Survey data to show that political internet users are individuals with high political interest as well as developed internet skills. Brandtweiner, Donat, and Kerschbaum (2012) stress motivation as a determinant of e-competence, explaining motivation by attitudes (e.g., perceived usefulness), objective hurdles (e.g., access) and social influence.

Particularly, gender differences in interest or preference have been recognized in internet usage, which Peter and Valkenburg (2006) call *gender differentiation*. Jackson, Ervin, Gardner, and Schmitt (2001) argue that females are more likely to use the internet for email and inter-personal communications, while males use the web to obtain information. According to Kennedy, Wellman, and Klement (2003), female users are more likely to use the internet for socialization, while males are more likely to use the internet for the productivity purposes or for entertainment. In a similar spirit, Goldfarb and Prince (2008) find that male internet users spend more time on e-government, news, e-commerce, on-line chatting, and the purchase of research products, while female internet users more frequently visit sites for health information.

We may infer that the apparent gender inequality in e-government website usage also reflects differences in interests or preferences between females and males. Hence, in this paper, we extend the idea of gender differentiation in general internet usage to gender differentiation in central e-government services because females and males may have different interests and needs for central government e-services. Different units of the central government provide different public services and information that may appeal to one gender more than the other. For example, females may be more interested in education, public health and child care, with more visits to the related government units that will be labeled 'social and cultural affairs' in Section 3.2. Hence, we expect that female usage of these e-government sites is more frequent if the gender differentiation hypothesis is correct. However, if gender inequality in e-government usage persists across different units of the central government, we will conclude that gender inequality in e-government usage is caused by gender itself. In this case, we will say that a gender divide exists in e-government usage.

Gender is one aspect of socio-economic differences among internet users. Hence, we need to control for other socio-economic factors as well. Furthermore, we expect users of different socio-economic backgrounds to use e-government resources differently across various units of the central government if there are different e-government uses by those of other socio-economic backgrounds. Differentiation in e-government usage by those of other socio-economic backgrounds can be considered to be supportive of the presence of gender differentiation in central e-government usage.

In addition, we will consider the influence of *family characteristics* of internet users on e-government website usage. The importance of family characteristics on general internet usage has been recognized in previous studies. According to Kennedy et al. (2003), caretaking of an infant prohibits a mother's internet usage more than a father's. Goldfarb and Prince (2008) argue that the more children a family has, the less time an individual family member spends on the internet, while Cleary, Pierce, and Trauth (2006) indicate that the greater the number of adult family who use the internet, the more time the school-aged children spend on the internet will be because internet usage promotes the spread of knowledge through learning within the household. Hence, the apparent gender inequality in central e-government may reflect the individual users' differences in these family characteristics.

3. Research design and methods

3.1. Research design

We aim to empirically examine whether a gender divide exists in the Korean central e-government website usage, even after controlling for gender differentiation, family characteristics and socio-economic factors such as age, occupation, income, education and location. Notably, we do not include IT literacy in our analysis because no relevant data are available on this variable in our data. However, Dholakia (2006) finds no statistical evidence of gender differences in internet familiarity and skill.

In general, website usage can be measured by access and by time spent online. An internet user is said to access certain websites if the user has visited the sites during the time period under consideration, while the usage is measured by either the sum of the user's duration of the visit[3] or the number of the user's daily visits[4] to the sites during the time period.

Hence, the internet user's access to certain websites is measured by a binary choice variable in which we code the variable to be "1" if an internet user has visited the websites during the time period and to be "0" otherwise. In the analysis of access to e-government, we use a binary system as the dependent variable, and we use gender dummy, family characteristics and socio-economic factors as independent variables. As is well known, the Logit model and the Probit model are typically the two models used for regression analyses of the binary choice model. In our analysis, we employ both Logit and Probit model specifications to verify whether we reach basically the same conclusion regardless of the specification of the binary choice model.

In the usage analysis, we use an internet user's duration of visit or the number of his or her daily visits as the dependent variable, while gender dummy, family characteristics and socio-economic factors are used as independent variables. Because the dependent variable (the internet user's duration of visit or the number of his or her daily visits) is censored at 0, we employ the Tobit model in the regression analysis to analyze usage.

To consider gender differentiation, we conducted separate regressions for different types of government units. We conclude that a *gender divide* exists if the significance of gender inequality is persistent across different types of e-government services.

3.2. Classification of the Korean central government units

To consider gender differentiation in central e-government services, we follow the classification of the Korean central government units provided by the Korea Institute of Public Administration (2005),[5] which based on the functions of the central government units, categorizes the 39 central government units into three subdivisions: industrial and economic affairs, social and cultural affairs, and public administrative affairs. As shown in Table 1, out of the 39 central government units, 19 units are labeled by industrial and economic affairs, 7 by social and cultural affairs, and 13 by public administrative affairs.

[3] The duration of visit is defined to be the time passed between log-on and log-out.

[4] If an internet user has logged on to certain websites on ten different calendar dates during the time period in concern, it is said that the user's number of daily visits to these sites is ten.

[5] For the institutional background of the Korean central government, refer to Park et al. (2012).

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