

Factors Affecting the E-Services Channel Usage in E-Government: A Literature Review

Vita Pusvita^a and Moh. Muttaqin^b

Research Center for Society and Culture, Institute of Social Sciences and Humanities, National Research and Innovation Agency, Gedung B.J. Habibie Jalan M.H. Thamrin Nomor 8, Jakarta Pusat 10340, Indonesia

Keywords: Channel Usage, E-service Adoption, E-government, Government to Citizen.

Abstract: This study aims to identify the factors that influence the use of service channels in accessing government services. A literature review was conducted using the Google Scholar database. Articles are limited to Scopus indexed journal and proceeding. In addition, the object of this research is limited to the citizen so that the e-government relationship that is discussed is only government to citizen (G2C). The results showed that there are several factors that influence the selection of individual channels, namely socio-demography, tasks, individual factors, external factors, and technology. This finding can help the government to provide electronic service channels that are in accordance with the citizen channels usage, so as to increase the use of electronic services.

1 INTRODUCTION

The implementation of e-services changes the use of channels in public services from traditional to electronic. Not only providers, service users must also be a determining factor in the successful implementation of e-services. Without adoption from the user's side, the goal of implementing e-services will not be achieved. Therefore, in addition to assessing the government's readiness, the perspective of service users is also needed to support the success of e-services.

The research has been conducted on the adoption of citizen e-services is more focused on the type of technology applied. In fact, citizen's usage of the channel to access services is also very important for successful e-service implementation. To achieve this, the government generally uses multichannel in the implementation of e-services. The use of a multichannel system makes the government have to maintain more channels than a single-channel system, which means it requires more resources (Pappel et al., 2019). Meanwhile, the government must consider efficiency and effectiveness in providing service channels to provide sustainable services (Tangi et al., n.d.).

On the other hand, citizens as users are still reluctant to adopt electronic services (W. Pieterston & Ebbers, 2008). Citizens will prefer to use electronic services than traditional services if the available channels are convenient for them (Al-Ghaith et al., 2010). This shows that in addition to technology adoption factors, it is also necessary to know the factors that encourage the use of a channel to access services. The implementation of e-services with electronic channels that are preferred by citizen can help increase the success of sustainable e-services implementation.

Channel choice has different definition from channel use, but both will affect channel behavior (W. Pieterston & Teerling, 2008). Channel use is an individual's use from time to time. Meanwhile, channel choice is an individual decision in selecting a channel to carry out certain activities. The internet has changed the use of channels by citizens to access services (Lee et al., 2018). The increasing number of internet adoptions by the public causes changes in behavior towards service channels (W. J. Pieterston & Ebbers, 2020). C. G. Reddick et al. (2012) found that internet users generally access government services using traditional and electronic channels. Meanwhile, Faulkner et al. (2019) revealed that the shift in the use

^a <https://orcid.org/0000-0002-5403-632X>

^b <https://orcid.org/0000-0002-6345-6975>

of service channels from traditional to electronic in accessing e-services can be achieved if users are satisfied.

Many researches related to service channels have been carried out, both regarding channel selection, multichannel management, and multichannel strategies. Even Madsen & Kræmmergaard (2015) have also conducted a literature study related to channel selection from an individual point of view and channel selection management from an organizational point of view. However, what is more important than channel selection is the use of channels in e-services itself. There is a gap between the desire or selection of service channels and the actual use of electronic service channels. To find out the channel selection preferences in actual conditions, E. Ebbers et al. (2016) conducted a survey using scenario-based. In contrast to previous research, in this paper, a literature review will be conducted on the factors that influence the use of digital service channels by the public. This research is very important, because the success of e-government implementation is determined by citizen orientation, channel orientation, and technology orientation (Malodia et al., 2021).

2 THE MATERIALS AND METHOD

The study was conducted with a systematic literature review in determining the factors that influence the use of channels by the public. We used three stages in conducting the systematic literature review, namely planning the review, conducting the review, and reporting the review.

First stage, planning the review, we defined a research question. The research question for this study is “What factors are affecting the e-services channel usage in e-government”.

Second stage, conducting the review, we searched for primary study. We have done some steps in this stage. First step, we used keywords to find articles which related to our study. The keywords are "channel choice", or "multichannel", or “channel usage”, and “e-services”, or “e-government services”. We used Google Scholar as our primary database because it indexes articles from various sources such as ScienceDirect – Elsevier, IEEE Xplore and Association for Computing Machinery Articles. Second step, we used inclusion and exclusion criteria to filter the articles. The inclusion and exclusion criteria are shown in Table 1.

Table 1: Inclusion and Exclusion Criteria.

Inclusion Criteria	Exclusion Criteria
Articles written in English	Articles is not written in English
Articles published in journals and proceedings indexed on Scopus.	Articles published in book chapter.
Articles was published in the period from 2016 to 2022	Articles published before 2016
Articles discussing government to citizen services	Articles discussing government to government or government to business services

After screening articles with these criteria, another filter was applied in the third step. To confirm articles meet our research need, we used Quality Assessment Criteria. In this stage, we filtered articles four questions. The Quality Assessment Criteria are showed in Table 2.

Table 2: Quality Assessment Criteria.

Quality Control Question	Criteria
Does the factors affecting channel preferences explained in articles?	Yes: Move to next question No: articles will be excluded
Does the articles discuss government to citizen services? or Does the articles discuss citizen service channel preferences?	Yes: Move to next question No: articles will be excluded
Does the articles contain data on service channel usage (proven with government data or secondary data)? or does the articles discuss the preferences of service channel users (explained in methodology: the object was service users)?	Yes: Move to next question No: articles will be excluded
Does the articles compare the use of several service channels provided by the government?	Yes: Articles will be included No: Articles will be excluded

As we shown in Table 2, if the answered is “no” than articles will be excluded from this study. The paper will be selected if it has all quality assessment criteria.

Initially, we found 52 articles when we searched articles by keyword and by inclusion and exclusion criteria in Google Scholar. But we found that four articles are inaccessible and ten articles are duplicate. After screening the articles by quality assessment

criteria, we found that nine teen articles are meet our research need.

The last stage is reporting the review. In this stage We reported the review based on year and publication type.

3 RESULTS AND DISCUSSION

In reporting the review, we reported by the year and publication type. They will be showed in Figure 1 and Figure 2.

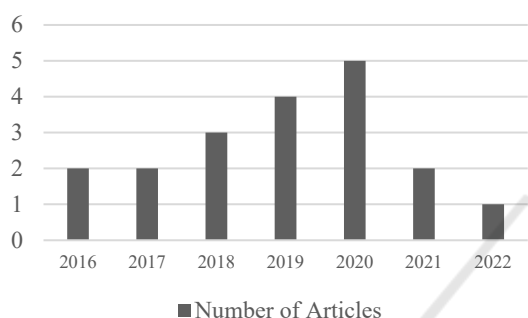


Figure 1: Number of Articles per Year.

Figure 1 shows the year of the articles which we analysed have been published. The highest publication period is in 2020, followed by 2019.



Figure 2: Publication Type.

Figure 2 shows the type of the publication of articles which consist of journal articles and conference article. The majority of publication is in form of journal article.

Referring to the literature review results of the 19 articles, several factors affecting the channel usage to access e-Government services were found. These factors are classified into 5 categories, namely socio-demographic, individual/personal factors, tasks,

external factors, and technology. These findings are summarized in Table 3.

Table 3 show that factors that is most discussed in channel usage is nature of interaction, followed by age and internet access. Meanwhile, external factors are the least discussed factors in the study related to the use of service channels.

The discussion of the factors affecting the service channel usage are divided into three parts. The first part is individual internal factors (covering socio-demography and individual factors), the second is service channel product factors (covering tasks and technology), and the third is external factors. Individual internal factors are divided into two factors that influence the use of electronic service channels from the individual side, namely socio-demography and individual factors. The socio-demography factor consists of several variables that affect the use of service channels, namely education, age, gender, and income. Several studies have shown that the higher the level of education, the more people prefer to use electronic channels than face-to-face (Ebbbers et al., 2016; Hooda Nandal & Singla, 2019). Another socio-demographic factor, age shows that older people prefer traditional channels (Laenens et al., 2018). Meanwhile, a study conducted by Rey-Moreno et al. (2018) and Rodriguez Müller et al (2021) revealed that there is a difference in the frequency of using electronic services between men and women, where men use electronic channels more than women. On the income variable, a research which has been conducted by C. Reddick et al. (2020) stated that income will affect the use of mobile-government service channels and traditional channels. On the other hand, Medina Macaya et al. (2019) found that each type of channel has a specific user profile that can be categorized based on their income.

In addition to socio-demography, there are several individual factors affecting the e-service channel usage. When the habit of using the internet has been formed among citizens, the tendency of citizens to use e-service channels in accessing e-services is getting bigger (E. Ebbbers et al., 2016). The knowledge gained during the use of e-service channels built on usage experience will increase the adoption of e-services (Fakhoury & Aubert, 2017). It is also explained in the channel expansion theory that this experience will also affect service channel choice in the community. With the increasing use of services, the quality and quantity of information related to service channels provided by the government can help increase citizen awareness (Wu, 2017). When awareness has been built in the community, it allows for increased use of service

Table 3: Factors affecting the channel usage to access e-services.

Factors	Variables	Number of Article	Reference
Socio-demographic	Education	3	(Distel, 2020; W. J. Pieterse & Ebbers, 2020; C. Reddick et al., 2020)
	Age	4	(Ebbers et al., 2016; C. Reddick et al., 2020; Rodriguez Müller et al., 2021; Rodriguez-Hevia et al., 2020)
	Gender	2	(W. J. Pieterse & Ebbers, 2020; C. Reddick et al., 2020)
	Income	1	(Medina Macaya et al., 2019)
Individual Factor	Satisfaction	2	(Ma & Zheng, 2019; Rey-Moreno et al., 2018)
	Experience	1	(Fakhoury & Aubert, 2017)
	Awareness	1	(Wu, 2017)
	Habit	1	(Aranyosy, 2018)
Task	Nature of interaction	5	(Distel, 2020; Ebbers et al., 2016; Rey-Moreno & Medina-Molina, 2016a; Rodriguez Müller et al., 2021; Van de Walle et al., 2018)
	Ease of Use	2	(Faulkner et al., 2019; Wu, 2020)
External Factor	Social influence	1	(Wu, 2017)
	Government (regulation)	1	(Ramirez-Madrid et al., 2022)
Technology	Digital skill	2	(C. Reddick et al., 2020; Rodriguez-Hevia et al., 2020)
	Internet access	4	(Aranyosy, 2018; Camilleri, 2019; C. Reddick et al., 2020; Rodriguez-Hevia et al., 2020)
	Internet trust	2	(Aranyosy, 2018; C. Reddick et al., 2020)
	Benefit	2	(Faulkner et al., 2019; Ma & Zheng, 2019)

channel. Meanwhile, the satisfaction of using the channel can increase the use of not only electronic, but also traditional services. The satisfaction depends on the expected results and user expectations. When the satisfaction of using e-service channels is achieved, there will be an increase in the use of e-services.

For the technological factor, digital skill has no effect on the e-services channel usage in developed countries with advanced infrastructure. It is because the habit for the internet has been built in the midst of citizens. However, digital skills, especially internet skills, are still an important variable for developing countries in the e-services channel usage because of the existence of these channels on the internet (W. J. Pieterse & Ebbers, 2020). Internet access is an important variable in technology for the e-services channel usage. In fact, Rodriguez-Hevia et al. (2020) revealed that the presence of the internet at home will increase the e-services channel access compared to access through public facilities. On the technological aspect, trust in the internet also has an influence in increasing the e-services channel usage.

Regarding the use of service channels, it is necessary to pay attention to the task factors. These

factors consist of the nature of interaction and ease of use. Each service channel has a different nature of interaction, as well as the type of service. Ebbers et al., (2016) found that the type of interaction needs by user while accessing services determines the channel used to access government services. Rey-Moreno & Medina-Molina (2016b) found that the internet is only used to obtain initial information. If follow-up is needed, people will use other channels. In addition, Distel, (2020) revealed that people are reluctant to use e-services with types of services that require interaction in the form of consultations, so it is necessary to evaluate services before digitizing. Citizens need personal assistance to access complex services (Van de Walle et al., 2018; Wu, 2017). For example, the case reports will be more easily communicated using traditional channels, such as telephone lines (Rodriguez Müller et al., 2021). Thus, the e-service access will increase if the government provides the right channel for suitable services, moreover the government can also provide service assistance to increase the use of electronic channels. Faulkner et al. (2019) revealed that this personal service assistance will also assist migration to digital services with an emphasis on ease of use and benefits.

The ease of use of electronic service channels will also increase the use of electronic services (Wu, 2020).

The last factor, external factor, also has a big role in the use of electronic service channels. Wu (2017) revealed that family and colleagues have a big influence on encouraging the use of certain e-services channels compared to social media. In addition, the government as a policy maker also has the authority to make the e-service channels as the main channel in public services delivery, which has an impact on increasing the use of e-services by citizens (Madsen & Kræmmegaard, 2016). The government needs to classify citizens regarding what channels they use to access e-services so that they can provide better public services (Medina Macaya et al., 2019). However, the citizen is a determinant of the success of e-services provided by the government (Alabdallat, 2020). Setting up access to e-services using multichannel allows to increase the number of service users (Laenens et al., 2018). The availability of service access through multichannel is highly dependent on the capacity of the government as a service provider, and usually does not consider the characteristics of service channels (Wirtz & Langer, 2017). In providing e-service and their channels, the government generally only focuses on the technical aspects without considering the sociological aspects of the technology (Dawood Mulung & Rosun, 2017). The discrepancy between the provision of e-services and their channels with the needs of the community can affect the use of e-services by citizens (Thiel, 2016). Thus, regulations that make electronic channels as the main access to public services must be accompanied by an evaluation of their needs and their impacts on citizens.

4 CONCLUSIONS

The factors that influence the use e-services channels in e-Government consist of socio demography, individual factors, technology factors, tasks, and external factors. This study collects various studies on the e-services channel usage and summarizes them in several factors that influence the use of electronic channels in accessing e-government. In contrast to previous studies which emphasize more on channel choice and channel preference, this study attempted to find factors that influence the use of existing e-service channels. The results of this study can be used to help increase the use of existing e-service channels. However, this study also reveals that the provision of multichannel is still needed. By knowing the user

profile of each service channel through consideration of the factors studied, the government can increase service delivery both online and offline. This study still has many limitations, especially in the use of database and keywords. Future research can use different databases and different research objects.

REFERENCES

- Alabdallat, W. I. M. (2020). Toward a mandatory public e-services in Jordan. *Cogent Business & Management*, 7(1), 1727620. <https://doi.org/10.1080/23311975.2020.1727620>
- Al-Ghaith, W., Sanzogni, L., & Sandhu, K. (2010). FACTORS INFLUENCING THE ADOPTION AND USAGE OF ONLINE SERVICES IN SAUDIA. *EJISDC*, 40, 1–32. <https://doi.org/10.1002/j.1681-4835.2010.tb00283.x>
- Aranyosy, M. (2018). Citizen adoption of e-government services – Evidence from Hungary. *Digital Transformation – Meeting the Challenges*, 27–46. <https://doi.org/10.18690/978-961-286-170-4.3>
- Camilleri, M. A. (2019). The online users' perceptions toward electronic government services. *Journal of Information, Communication and Ethics in Society*, 18(2), 221–235. <https://doi.org/10.1108/JICES-09-2019-0102>
- Dawood Mulung, M. A., & Rosun, M. S. (2017). A citizen-centric framework for government e-services uptake. *2017 IST-Africa Week Conference (IST-Africa)*, 1–12. <https://doi.org/10.23919/ISTAFRICA.2017.8102359>
- Distel, B. (2020). Assessing citizens' non-adoption of public 1 e-services in Germany. *Information Polity*, 25(3), 339–360. <https://doi.org/10.3233/IP-190214>
- E. Ebbers, W., Jansen, M. G. M., Pieterse, W. J., & van de Wijngaert, L. A. L. (2016). Facts and feelings: The role of rational and irrational factors in citizens' channel choices. *Government Information Quarterly*, 33, 506–515. <https://doi.org/10.1016/j.giq.2016.06.001>
- Ebbers, W. E., Jansen, M. G. M., & van Deursen, A. J. A. M. (2016). Impact of the digital divide on e-government: Expanding from channel choice to channel usage. *Government Information Quarterly*, 33(4), 685–692. <https://doi.org/10.1016/j.giq.2016.08.007>
- Fakhoury, R., & Aubert, B. (2017). The impact of initial learning experience on digital services usage diffusion: A field study of e-services in Lebanon. *International Journal of Information Management*, 37(4), 284–296. <https://doi.org/10.1016/j.ijinfomgt.2017.03.004>
- Faulkner, N., Jorgensen, B., & Koufariotis, G. (2019). Can behavioural interventions increase citizens' use of e-government? Evidence from a quasi-experimental trial. *Government Information Quarterly*, 36(1), 61–68. <https://doi.org/10.1016/j.giq.2018.10.009>
- Hooda Nandal, A., & Singla, M. L. (2019). Investigating the impact of metaphors on citizens' adoption of e-governance in developing countries: An empirical

- study. *Transforming Government: People, Process and Policy*, 13(1), 34–61. <https://doi.org/10.1108/TG-04-2018-0026>
- Laenens, W., Van den Broeck, W., & Mariën, I. (2018). Channel Choice Determinants of (Digital) Government Communication: A Case Study of Spatial Planning in Flanders. *Media and Communication*, 6(4), 140–152. <https://doi.org/10.17645/mac.v6i4.1652>
- Lee, E., Kim, D., Lim, H., & Chun, S. A. (2018). Long tail phenomenon in public policy: Analyzing big data on citizen opinion. *Proceedings of the 19th Annual International Conference on Digital Government Research: Governance in the Data Age*, 1–6. <https://doi.org/10.1145/3209281.3209361>
- Ma, L., & Zheng, Y. (2019). National e-government performance and citizen satisfaction: A multilevel analysis across European countries. *International Review of Administrative Sciences*, 85(3), 506–526. <https://doi.org/10.1177/0020852317703691>
- Madsen, C. Ø., & Kræmmergaard, P. (2015). Channel Choice: A Literature Review. In E. Tambouris, M. Janssen, H. J. Scholl, M. A. Wimmer, K. Tarabanis, M. Gascó, B. Klievink, I. Lindgren, & P. Parycek (Eds.), *Electronic Government* (Vol. 9248, pp. 3–18). Springer International Publishing. https://doi.org/10.1007/978-3-319-22479-4_1
- Madsen, C. Ø., & Kræmmergaard, P. (2016). How to Succeed with Multichannel Management: A Case Study of Cross-Organizational Collaboration Surrounding a Mandatory Self-Service Application for Danish Single Parents. *International Journal of Public Administration in the Digital Age*, 3(4), 94–110. <https://doi.org/10.4018/IJPADA.2016100107>
- Malodia, S., Dhir, A., Mishra, M., & Bhatti, Z. A. (2021). Future of e-Government: An integrated conceptual framework. *Technological Forecasting and Social Change*, 173, 121102. <https://doi.org/10.1016/j.techfore.2021.121102>
- Medina Macaya, J. F., Alves, A. F., Meirelles, F., & Cunha, M. A. (2019). Digital By Default: The Use of Service Channels by Citizen. In *Electronic Government: 18th IFIP WG 8.5 International Conference, EGOV 2019, San Benedetto Del Tronto, Italy, September 2–4, 2019, Proceedings* (Vol. 11685). Springer International Publishing. <https://doi.org/10.1007/978-3-030-27325-5>
- Pappel, I., Tsap, V., Pappel, I., & Draheim, D. (2019). Exploring e-Services Development in Local Government Authorities by Means of Electronic Document Management Systems. In A. Chugunov, Y. Misnikov, E. Roshchin, & D. Trutnev (Eds.), *Electronic Governance and Open Society: Challenges in Eurasia* (Vol. 947, pp. 223–234). Springer International Publishing. https://doi.org/10.1007/978-3-030-13283-5_17
- Pieterse, W., & Ebbers, W. (2008). The use of service channels by citizens in the Netherlands: Implications for multi-channel management. *International Review of Administrative Sciences*, 74(1), 95–110. <https://doi.org/10.1177/0020852307085736>
- Pieterse, W. J., & Ebbers, W. E. (2020). Channel choice evolution: An empirical analysis of shifting channel behavior across demographics and tasks. *Government Information Quarterly*, 37(3), 101478. <https://doi.org/10.1016/j.giq.2020.101478>
- Pieterse, W., & Teerling, M. (2008). *Citizen Behavior in a Multi-Channel Environment*. 4.
- Ramirez-Madrid, J. P., Escobar-Sierra, M., Lans-Vargas, I., & Montes Hincapie, J. M. (2022). Government influence on e-government adoption by citizens in Colombia: Empirical evidence in a Latin American context. *PLOS ONE*, 17(2), e0264495. <https://doi.org/10.1371/journal.pone.0264495>
- Reddick, C. G., Abdelsalam, H. M. E., & Elkadi, H. A. (2012). Channel choice and the digital divide in e-government: The case of Egypt. *Information Technology for Development*, 18(3), 226–246. <https://doi.org/10.1080/02681102.2011.643206>
- Reddick, C., Zheng, Y., & Perlman, B. (2020). Channel choice in China: Correlates and determinates of satisfaction and use of government service channels in a survey of Chinese cities. *Transforming Government: People, Process and Policy*, 14(1), 81–100. <https://doi.org/10.1108/TG-11-2019-0105>
- Rey-Moreno, M., & Medina-Molina, C. (2016a). Omnichannel strategy and the distribution of public services in Spain. *Journal of Innovation & Knowledge*, 1(1), 36–43. <https://doi.org/10.1016/j.jik.2016.01.009>
- Rey-Moreno, M., & Medina-Molina, C. (2016b). Social Capital in E-services Adoption: SOCIAL CAPITAL IN E-SERVICES ADOPTION. *Psychology & Marketing*, 33(12), 1151–1158. <https://doi.org/10.1002/mar.20952>
- Rey-Moreno, M., Medina-Molina, C., & Barrera-Barrera, R. (2018). Multichannel strategies in public services: Levels of satisfaction and citizens' preferences. *International Review on Public and Nonprofit Marketing*, 15(1), 9–24. <https://doi.org/10.1007/s12208-017-0188-9>
- Rodriguez Müller, A. P., Lerusse, A., Steen, T., & Van de Walle, S. (2021). Understanding channel choice in users' reporting behavior: Evidence from a smart mobility case. *Government Information Quarterly*, 38(1), 101540. <https://doi.org/10.1016/j.giq.2020.101540>
- Rodriguez-Hevíá, L. F., Navío-Marco, J., & Ruiz-Gómez, L. M. (2020). Citizens' Involvement in E-Government in the European Union: The Rising Importance of the Digital Skills. *Sustainability*, 12(17), 6807. <https://doi.org/10.3390/su12176807>
- Tangi, L., Gastaldi, L., Russo, C., & Benedetti, M. (n.d.). HOW TO COVER CITIZENS' NEED IN MAKING MANDATORY THE E-GOVERNMENT CHANNEL. EVIDENCES FROM ITALIAN LOCAL GOVERNMENT. *20th International Continuous Innovation Network (CINet) Conference*, 10.
- Thiel, L. (2016). *The Interplay between E-Government Service Adoption Preferences and E-Government Service Delivery in Germany*. 2016 49th Hawaii International Conference on System Sciences, Hawaii. <https://doi.org/10.1109/HICSS.2016.365>

- Van de Walle, S., Zeibote, Z., Stacenko, S., Muravska, T., & Migchelbrink, K. (2018). Explaining non-adoption of electronic government services by citizens: A study among non-users of public e-services in Latvia. *Information Polity*, 23(4), 399–409. <https://doi.org/10.3233/IP-170069>
- Wirtz, B. W., & Langer, P. F. (2017). Public Multichannel Management – an Integrated Framework of Off- and Online Multichannel Government Services. *Public Organization Review*, 17(4), 563–580. <https://doi.org/10.1007/s11115-016-0356-0>
- Wu, W.-N. (2017). Citizen Relationship Management System Users' Contact Channel Choices: Digital Approach or Call Approach? *Information*, 8(1), 8. <https://doi.org/10.3390/info8010008>
- Wu, W.-N. (2020). Determinants of citizen-generated data in a smart city: Analysis of 311 system user behavior. *Sustainable Cities and Society*, 59, 102167. <https://doi.org/10.1016/j.scs.2020.102167>

