

An Empirical View of Local Residents' Perceptions Towards E-Government in Kyrgyzstan

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Abstract

Digital transformation in the public sector has been the focus of academic studies for several decades. According to the literature, efforts by countries towards digitalisation vary both across countries and within the regions of each country. Although the starting points may differ, this process has yet to be completed in any country. It is evident that various obstacles and problems are still being encountered. Along with major obstacles such as inadequate infrastructure and limited financial and human resources, the willingness of residents to adopt e-government services is also a significant factor to consider. In this context, the main purpose of this paper is to evaluate residents' perceptions of e-government services in Kyrgyzstan. Primary data was collected by administering a structured questionnaire to 325 residents. The results indicate that perceived functional benefits, perceived service response, and availability of resources significantly impact ($p < 0.05$) residents' adoption of e-government services. Significant differences have been observed in residents' perceptions of the dependent and independent variables of the study based on demographic characteristics such as marital status, income, experience using e-government services, and area of residence. This study can provide valuable insights for public policy in relation to digital transformation. A deeper understanding of user behaviour can provide a reliable foundation for making managerial and marketing decisions that can help overcome this problem as a barrier to digital transformation.

Keywords: digital transformation, e-government services, adoption of e-government, groups of factors, resident perceptions.

Introduction

As a result of the information and communication era, we are witnessing rapid digital transformation processes in all fields of human endeavour around the globe. Digital transformation as a distinct research area has been on the agenda for the past 30 years, with research in this field increasing significantly since the 2000s (Pardo & Styryn, 2010). Although digital transformation was initially more prevalent in the private sector, it has increasingly become a priority for the public sector in recent decades. Today, both developed and developing countries around the world are rapidly adopting e-government applications.

E-government can be defined as the use of information and communication technologies (ICT) in the interactions of the state with citizens and other institutions (Dewa & Zlotnikova, 2014; Lemuria et al., 2016; Kamaruddin & Noor, 2017). The use of ICT in public services undoubtedly provides a number of advantages both for the state and users (citizens and other institutions) (Akman et al., 2005; Güler & Döventaş, 2009; Zawaideh, 2017). Advantages such as fast high-quality services, reduced distance and time, elimination of bureaucratic issues, transparency, and low cost are just some of the benefits provided by e-government to all stakeholders. Despite all the potential advantages of e-government, countries face challenges during their digital transformation journey. In addition to challenges such as inadequate technological infrastructure and limited human and financial resources, the level of readiness and intention among citizens and institutions to adopt e-government services is also a crucial factor for a successful digital transformation (Alshehri & Drew, 2010; Ranaweera, 2016). The readiness of users to embrace technology refers to their inclination to adopt and utilise new technologies to accomplish their goals in both personal

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and professional settings (Parasuraman, 2000). Public policy focused solely on infrastructure, human resources, and financial resources is not sufficient for a successful digital transformation. Technological readiness and user acceptance play critical roles in achieving digitalisation goals (AlAwadhi & Morris, 2009; Daştan & Efilođlu Kurt, 2016; Muhammad et al., 2017; Isaac, 2018; Çabuk et al., 2017).

In line with the global trend, the Kyrgyz Republic (KR) declared its National Development Strategy for 2018–2040 in 2018. This strategy outlines the country's digital transformation and its future direction. One of the programmes outlined in the strategic plan is the national programme "Taza Koom," which aims to facilitate the digital transformation of the country. This programme aims to establish a society that is open, transparent, and technologically advanced, with active citizen participation, thriving businesses, a stable government, and reliable international relations (National Development Strategy, 2018). Within the framework of these plans and programmes, priority goals have been established, such as the establishment of a modern information and communication infrastructure and the provision of digital public services. In this context, the years 2019–2020 have been consecutively declared as the years of regional development and digitalisation in the country, as per the Presidential Decree of KR. One of the tangible outcomes of these efforts is the establishment of an electronic interoperability centre called "Tunduk". This centre facilitates the sharing of information among all stakeholders. More than 100 public and private sector institutions were connected to the centre by April 2020 (Tunduk, 2020). The Kyrgyz Republic has been striving to progress in parallel with other countries in the region and its partner nations (Bhuiyan, 2010; Vinogradova & Moiseeva, 2015).

Although there a wide range of academic studies have been published on e-government service adoption issues, a limited number of papers have been published on this topic in the context of Kyrgyzstan (Birimkulov & Baryktabasov, 2018; Ismailova et al., 2018). Previous studies were necessary and provide important insights for understanding the digital transformation in the country. Unlike previous studies, this paper aims to empirically evaluate residents' perceptions of e-government services in Kyrgyzstan.

Literature review

West (2005) divides the digital transformation of the public sector into four phases: information board, partial service delivery, fully integrated services, and interactive democracy. At the initial stage, the websites of public institutions were no different from an information board. However, with each new stage, the interactive and security features of these websites have been improved, reaching a level where instant communication can be established. It has been stated that the websites offering e-government services in North American and European countries passed the initial "information board" stage between 1990–1998, and are currently progressing through subsequent stages (Goings et al., 2003). In developing countries (AlAwadhi & Morris, 2009; Abdelghaffar & Magdy, 2012; Dewa & Zlotnikova, 2014; Kamaruddin & Noor, 2017; Zawaideh, 2017), particularly in post-Soviet transition countries like Kyrgyzstan, the initial stage of implementation is still underway.

There is a wealth of literature that attempts to explore and identify the key factors that affect the adoption of e-government in the context of both developed and developing countries. In the study by Carter et al. (2016) on the adoption of e-government services by citizens in the USA and England, the researchers found no significant difference between the two countries in terms of e-government strategies. The paper concludes that perceived ease of use, perceived usefulness, trust, and internet trust are important factors that influence the adoption of e-government services by citizens. Lean et al. (2009) found similar results that perceived usefulness, perceived relative advantage and trust have a direct positive significant relationship towards intention to use e-government services and perceived complexity has a significant negative relationship towards intention to use e-government services. In the above-mentioned studies, all variables except for trust were taken from the Technology Acceptance Model (TAM) proposed by Davis (1989), which

has been widely utilised in empirical studies.

According to Davis (1989), the factors that influence individuals' intention to use new technologies are perceived usefulness and perceived ease of use, as well as a range of exogenous variables that include the demographic or personality traits of the users and technological characteristics. Related literature has pointed out that the TAM dimensions are not sufficient to fully examine consumer behaviour towards new technologies. The model was developed based on perceived attitudes and does not take into account consumer trust and safety concerns or social factors (Singh et al., 2017). Srivastava and Teo (2005) emphasise that citizens' trust is crucial for the successful adoption and adaptation of e-government services. The study discussed the example of Singapore and highlighted the importance of two types of trust among citizens. The first is trust in the government's ability, motivation, and commitment, while the second is trust in technology. Rehman et al. (2012) also identified trust in the internet and trust in the government as significant variables for successful digital transformation in their study. Moreover, the quality of information, perceived ease of use, service quality, and transaction security were found to be significant variables that influence citizens' intentions to perform transactions with the government. Mensah and Adams (2020) reported similar findings in their recent study on the adoption of e-government services by both foreign and Chinese students. The paper concludes that trust in the government, expectations of performance, and social influence were significant predictors of the intention to use e-government services.

Although perceived ease of use, perceived usefulness, and trust are found to be the main drivers of e-government adoption in many studies, some papers report an insignificant impact of trust. A study that aimed to determine the intention to use mobile government services among young people in Egypt concluded that perceived usefulness, compatibility, awareness, social impact, and face-to-face interaction had a significant effect on their intentions. However, the dimensions of internet experience, perceived ease of use, trust, and personal connections did not have a significant effect (Abdelghaffar & Magdy, 2012). On the other hand, Eze et al. (2011) obtained different results in a study conducted among working adults in Malaysia that aimed to determine the influential factors affecting the use of e-government services. Factors such as security, internet infrastructure, reliability, and availability have a positive impact on the intention to use e-government services. However, perceived usefulness and perceived ease of use do not have a significant effect.

As we can see, the adoption of e-government services by users is a multidimensional phenomenon that cannot be fully explained by a single factor. Al Athmay et al. (2016) examined social influence, perceived effectiveness, system quality, and information quality as e-government attributes and concluded that these factors have a direct impact on user satisfaction and intention to use e-government services. Rodrigues et al. (2016) discovered that several factors significantly influence the adoption of e-government services. These factors include facilitating conditions, attitude towards using technology, performance expectations, and effort expectations. Sabani (2020) confirmed that performance expectancy, effort expectancy, social influence, facilitating conditions, and transparency are critical factors for evaluating citizens' adoption of e-government. Recent studies have revealed that citizens' intention to use e-government services is positively influenced by various factors, including perceived usefulness, system interactivity, computer self-efficacy, management support, confirmation, and satisfaction (Mandari & Koloseni, 2022). In addition, government administrative capacity and e-government performance are critical determinants of citizens' intentions (Tran Pham, 2023).

As mentioned above, the intention to adopt a technology is not only related to external factors but also to individual characteristics. Akman et al. (2005) conducted research among e-government users in Turkey and concluded that the use of e-government is closely linked to gender and level of education. Gender and education were found to be significant factors in another study as well (Sharma, 2015). Al Athmay (2015) reported similar findings, indicating that demographic factors such as gender, age, education, and employment type significantly influence citizen perceptions of e-government. The place of residence significantly and positively influences citizens' motivations to use e-government services. In a recent study conducted by Zhang and Zhu (2021), it was found that there are differences between urban and rural groups in terms of the factors that influence

their intentions to use e-government services. Citizens' motivation to use e-government services is significantly and positively influenced by their perceived usefulness, regardless of their residential location. However, perceived service quality is only significant for urban residents. On the other hand, perceived security is found to be significant for rural groups.

Existing literature indicates that the perceived usefulness of using an e-government system, instead of traditional public offices, is a key driver of e-government adoption. This is due to the functional benefits in terms of cost, time, efficiency, and effectiveness (Lean et al., 2009; Carter et al., 2016; Daştan & Kurt, 2016). However, if there is a lack of ICT infrastructure or if the level of ITC provided is inadequate, citizens may not believe that using an e-government system will be beneficial for them. Therefore, the effectiveness of an e-government framework depends on improving the accessibility and availability of e-government resources, as well as ensuring that all constituents of the e-government system have access to them (Rodrigues et al., 2016; Daştan & Kurt, 2016; Tran Pham, 2023). In addition, the adoption and continued use of e-government services depend on factors such as service quality, efficiency, responsiveness (Sharma, 2015; Daştan & Kurt, 2016; Mandari & Koloseni, 2022) and the demographic features of users (Akman et al., 2005; Sharma, 2015; Zhang & Zhu, 2021). In general, a country's overall performance in terms of digital transformation depends on various factors and has a multidimensional nature.

The Global Digital Readiness Index published by CISCO reports on the current state of countries regarding their digital transformation. According to the report (2019), Asia Pacific, North America, and Europe are leading the world, while African and Middle Eastern countries demonstrate the lowest performance. The average score for all countries in the Eurasia region is 11.8 out of a possible 25 points, placing them in the middle of the ranking. In other words, countries in this group have initiated some measures towards digitalisation, but there is still ample room for improvement and acceleration in their digital transformation. The score of the Kyrgyz Republic is 11.0, which is lower than the average score of the Eurasian region. The indicators for Kazakhstan, Uzbekistan, Turkey, and Russia are 13.4, 11.1, 12.8, and 13.6, respectively. Moreover, the same report indicates a strong and positive correlation (0.96) between a country's technology readiness index and its technological infrastructure and technology acceptance. According to the United Nations E-Government Survey (2018), nearly two-thirds of the 193 UN member countries demonstrate a high level of performance in digital transformation processes. In the same study, it was noted that there is a positive correlation between a country's e-government rankings and its economic level. A study published by Zhao and Xu (2015) examined the relationship between perceived government corruption and e-government readiness. The results confirmed a positive and statistically significant relationship between e-government readiness and the Corruption Perceptions Index. The higher a country's level of e-government readiness, the greater its level of cleanliness and transparency.

Methodology

Research model and hypotheses

On the basis of existing literature, the following model (Figure 1) is proposed and hypotheses formulated:

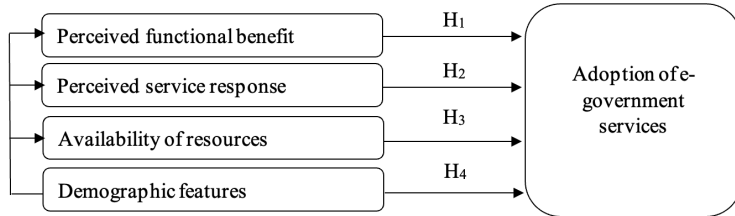


Figure 1: Conceptual model for the study

Source: Own elaboration

H_1 : Perceived functional benefit positively affects adoption of e-government services.

H_2 : Perceived service response positively affects adoption of e-government services.

H_3 : Availability of resources positively affects adoption of e-government services.

H_4 : There is significant differences in study variables on the basis of demographic features.

Sample, data collection tools and procedures

The adoption of e-government services is the dependent variable in this research, with perceived functional benefits, perceived service response, availability of resources, and demographic features as independent variables. Not including additional independent variables, such as trust and perceived level of corruption, is a limitation of this study.

The data for the study was collected using a questionnaire. The questionnaire consisted of two parts. The first part comprised demographic questions, such as residence area, gender, age, marital status, income, working status, and education. It also included questions related to the use of technology. The second part of the questionnaire contained a 16-item scale with four dimensions (1. Adoption of e-government services, 2. Perceived functional benefit, 3. Perceived service response, and 4. Availability of resources) adapted from the study conducted by Daştan and Efiloğlu Kurt (2016). The first dimension consists of three items, such as “I use e-government websites to access information and download forms” and “I would like to use e-government websites in the future to access information and download forms.” The second dimension encompasses five items, such as “Transactions can be carried out more easily through e-government websites” and “E-government websites expedite transactions.” The third dimension comprises of four items, including statements such as “E-government websites take quick corrective action when faced with any problem” and “24/7 access to online customer service.” The fourth dimension comprises four elements, such as “Having adequate computer technology at home” and “Always having internet connection at home”. All items were measured using a five-point Likert scale that ranged from 1 (strongly disagree) to 5 (strongly agree). The Cronbach’s α coefficients for each dimension were determined to be 0.710 for the adoption of e-government services, 0.777 for the perceived functional benefits, 0.810 for the perceived service response, and 0.799 for the availability of resources.

The data collection process was conducted using an online survey technique between April and May of 2020. The link to the questionnaire form was sent to participants via email and social media platforms, including WhatsApp, Instagram and Facebook. The population of the study consists of 3.5 million residents aged between 18 and 65 years, according to the National Statistical Committee of the Kyrgyz Republic in 2020. In total, 325 responses were received from citizens across the

country who were reached using a convenience sampling method. The majority of respondents are female (69%), single (68%), residents of Bishkek (62%), aged between 21–36 (67%), and have a university degree (59%). In addition, 58% of respondents reported a monthly family income of under 30,000 Som (340 USD). More than half of them have previously used e-government services (55%). Further details are provided in Appendix 1.

The obtained data was properly coded and computerised for further analysis. Both descriptive statistics (mean and standard deviation) and inferential statistical techniques (correlation, regression, ANOVA, and paired sample t-test) were utilised to analyse the data.

Findings

As part of the research, participants were asked about their level of computer usage and the devices they used to access e-government services. According to the results (Figure 2), 42% of the participants evaluated their computer skills at a basic level, 50% at a professional level, and the remaining 8% stated that they did not know how to use a computer. The majority of the participants (86%) reported using e-government services through their mobile phones, while only 14% used a computer. According to data from the International Telecommunication Union (2019), the Asian region has approximately 42 computers per hundred people, while the number of mobile phones per hundred people is around 98. Around 40% of individuals have internet access at home. Therefore, it can be said that the results obtained from this study accurately reflect the real situation.

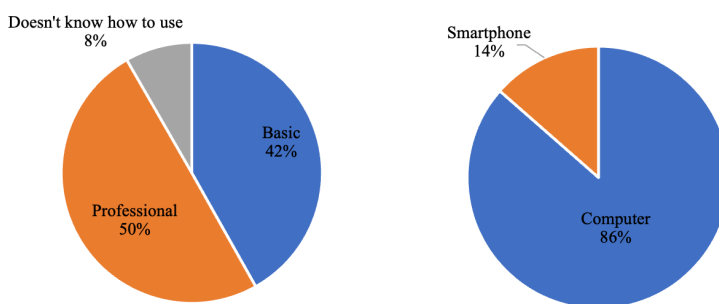


Figure 2. Computer usage levels and devices used to access e-government services

Source: prepared by author

Table 1 presents the results of the correlation analysis for the study variables, along with Cronbach's Alpha coefficients and descriptive statistics (mean, standard deviation, skewness, kurtosis values). From the table, it is evident that the reliability values for all dimensions are above 0.700. More specifically, the adoption of e-government services has a reliability value of 0.710, perceived functional benefit has a value of 0.777, perceived service response has a value of 0.810, and availability of resources has a value of 0.799. Significant and positive relationships were found between the adoption of e-government services and perceived functional benefit ($r=0.533$; $p<0.01$), the adoption of e-government services and perceived service response ($r=0.565$; $p<0.01$), the adoption of e-government services and the availability of resources ($r=0.274$; $p<0.01$), perceived functional benefit and perceived service response ($r=0.531$; $p<0.01$), perceived functional benefit and the availability of resources ($r=0.297$; $p<0.01$), and similarly between perceived service response and the availability of resources ($r=0.221$; $p<0.01$). Upon examining the mean and standard deviation values of the variables, it is evident that the dimension of perceived functional benefit ($\bar{x} = 4.3$; $sd=0.63$) has the highest value, while the dimension of perceived service response ($\bar{x} = 3.6$; $sd=0.96$) has the lowest value. Skewness and Kurtosis values are between -1.5 and +1.5 for all dimensions.

Table 1. Reliability, correlation coefficients and descriptive statistics of the variables

	(1)	(2)	(3)	(4)
(1) Adoption of E-Government Services	<i>(0.710)</i>			
(2) Perceived Functional Benefit	.533**	<i>(.777)</i>		
(3) Perceived Service Response	.565**	.531**	<i>(.810)</i>	
(4) Availability of Resources	.274**	.297**	.221**	<i>(.799)</i>
Mean	4.1262	4.3526	3.6538	4.1308
SD	.85315	.63467	.96034	.92994
Skewness	-1.008	-1.364	-0.385	-1.123
Kurtosis	0.923	1.374	-0.571	0.821

Note: Cronbach's Alpha coefficients are in parentheses in italics

** Significant at $p < 0.01$ level

Source: prepared by author

The results of the multiple linear regression are given in Table 2. The regression model was statistically significant ($F: 70.426; p < 0.01$) and the R^2 value was 0.404. As shown in the table, it has been concluded that all independent variables, including perceived functional benefits, perceived service response, and availability of resources, have a positive and significant impact on the dependent variable, which is the adoption of e-government services. Perceived functional benefit ($s\beta: 0.300; p \leq 0.01$), perceived service response ($s\beta: 0.383; p \leq 0.01$) and availability of resources ($s\beta: 0.101; p \leq 0.05$) significantly and positively affect the adoption of e-government services.

Table 2. Regression analysis results

	β	SE	$s\beta$	t	p
Constant	.747	.271		2.756	.006
1. Perceived Functional Benefit → Adoption	.403	.070	.300	5.750	.000
2. Perceived Service Response → Adoption	.341	.045	.383	7.517	.000
3. Availability of Resources → Adoption	.092	.042	.101	2.225	.027
$R^2 = .404; F: 72.426; p < 0.05$					

Source: prepared by author

This research also examined the impact of demographic variables on the perceived adoption of e-government services, as well as the perceived functional benefits, service response, and availability of resources. It was found that there were no significant differences based on variables such as gender, education level, age and status. Significant differences were found (as shown in Table 3) based on demographic features such as area of residence, marital status, use of services, and income.

Table 3. Differences in perceptions towards variables by demographic group

Demographic Group		Adoption	Benefit	Response	Resources
Area of residence	Bishkek Others	-.34481*	-.08374	-.36719*	.45541*
Marital status	Married Single	-.00939	.12054	.15498	.33090*
Residents experience	Yes No	.36005*	.32948*	.22837**	.30750**
Income, (thousand Som)	>30 31 - 60	-.34164*	-.06358	-.05763	-.52491*
	>30 61 <	-.24594	-.22046	.21390	-.72453*
	31 - 60 61 <	.09570	-.15688	.27153	-.19962

Note: Mean difference is significant at $p < 0.01^*$ and $p < 0.05^{**}$ level

Source: prepared by author

Based on Table 3, it is clear that significant differences ($p < 0.05$) exist for all variables except for perceived functional benefit, across different areas of residence. These variables include adoption of e-government services, perceived service response, and availability of resources. It can be concluded that residents outside of Bishkek have a more positive perception of the adoption of e-government services compared to residents within Bishkek. In addition, residents from other regions have a higher perception of service response compared to residents from Bishkek. Despite this, residents in Bishkek have greater access to resources compared to other regions. There is no significant difference ($p > 0.05$) observed for all other variables, except for the availability of resources, across the different marital status groups. These variables include adoption of e-government services, perceived functional benefit, and perceived service response. Married individuals tend to have a higher perception of resource availability compared to those who are single. Significant differences ($p < 0.05$) were observed for all study variables among the different resident's experience groups. Accordingly, residents who have experience using e-government services have higher perceptions than their counterparts who have not had such experience. Lastly, there are significant differences between income groups in terms of their adoption of e-government services and availability of resources. The groups with incomes between 31,000 and 60,000 Soms (350-700 USD), as well as those earning more than 61,000 Soms (701 USD and more), have more positive perceptions compared to residents with incomes less than 30,000 Soms (less than 350 USD).

Discussion and conclusion

The Kyrgyz government has taken steps towards implementing an e-government model in order to establish a government that focuses on its citizens, and is accountable and transparent. Previous studies have indicated that there is a positive correlation between a country's level of e-government readiness and its level of cleanliness and transparency (Zhao & Xu, 2015). This means that successful digitalisation in the public sector depends on citizen readiness and on government readiness and leadership. This study is one of the first empirical studies conducted in the context of Kyrgyzstan. In addition, it focuses on citizen perceptions and examines the impact of various factors on their adoption of e-government services. According to the findings, it was revealed that perceived functional benefit ($s\beta: 0.300; p \leq 0.01$), perceived service response ($s\beta: 0.383; p \leq 0.01$) and availability of resources ($s\beta: 0.101; p \leq 0.05$) positively affect the adoption of e-government services in the context of a sample group from Kyrgyzstan. Therefore, hypotheses H_1 , H_2 and H_3 are accepted. Generally, this study validates the findings of other empirical studies on e-government adoption in the literature (AlAwadhi & Morris, 2009; Zhang & Hsieh, 2010; Kamaruddin & Noor, 2017; Isaac, 2018).

On the other hand, hypothesis H_4 was only partly accepted. Residents' perceptions of the study variables were found to be significantly ($p \leq 0.01$) different according to demographic features, such

as area of residence, marital status, residents' experience, and income. In terms of regional factors, residents of other regions have a higher perception than those from Bishkek. Similarly, in terms of perceived service response, residents in Bishkek have a comparatively lower perception than those in other regions. However, unlike other regions, it has been determined that residents in Bishkek perceive a higher availability of resources. Bishkek is the capital of Kyrgyzstan, and all government services are more accessible there in terms of cost and time compared to other regions. Moreover, it also differs from other regions in terms of the quality of life and income levels. This is one of the main reasons why residents in Bishkek have a relatively low perception of adopting e-government services and perceived service response, and a relatively high perception of service availability. Zhang and Zhu (2021) also found significant difference in the intention to use e-government services between urban and rural residents. The authors concluded that perceived service quality is significant only for urban residents, while perceived security is found to be significant for the rural group. Experience is also one of the important factors in the adoption of e-government services. According to the results of this study, individuals who have utilised e-government services have higher perceptions for all dimensions, except for perceived service response, compared to those who have not used such services. Significant differences were observed only in the availability of resources dimension, with respect to age group, occupation, and income. Accordingly, it has been determined that older individuals have better access to resources than younger ones. Private sector employees also have better access to resources compared to students and public sector employees. In addition, the high-income group has better access to resources than the low-income group. Previous studies have also indicated that the adoption of e-government services may vary based on demographic characteristics (Akman et al., 2005; Al-Eryani, 2009; Çabuk et al., 2017). However, contrary to some papers, such as Akman et al. (2005) or Sharma (2015), no significant differences were found based on gender, education level and occupation type. This may be because there is no significant difference between male and female education level in Kyrgyz society. According to the statistics, adult male and female literacy rates are 99.64% and 99.41% respectively (UNESCO, 2016).

Despite the large number of publications examining e-government adoption at the global level and in developed countries, there are very few studies that focus on post-Soviet transition countries, such as Kyrgyzstan, where technology is in its infancy. This study may contribute to the relevant literature in the context of Kyrgyzstan, which is mostly unknown internationally. Moreover, this study can provide useful implications, particularly for practical application. E-government authorities in Kyrgyzstan can use these findings to develop programmes and improve the quality and efficiency of e-government services. The findings of the study can also be utilised by the private sector to implement e-marketing and e-commerce activities.

Limitations

Despite its benefits, this study also has some notable limitations. Firstly, the research model does not include all possible independent variables. Future studies should include other important factors that drive e-government adoption, such as trust, social influence, and other relevant variables (AL Athmay et al., 2016; Eze et al., 2011; Mensah & Adams, 2020). Second, the study had a small sample size and utilised a convenience sampling method. Future studies should be expanded by increasing the number of independent variables and the sample size, as well as incorporating other research methods and diverse sample groups. As is well known, the Covid-19 pandemic is altering our lifestyles and work habits. In particular, it is clear that there has been a significant improvement in our technological literacy during and since the pandemic. Therefore, it can be said that the transition to e-government will be even faster in the next period.

References

- Abdelghaffar, H., & Magdy, Y. (2012). The adoption of mobile government services in developing countries: the case of Egypt. *International Journal of Information and Communication Technology Research*, 2(4), 333–341.
- Akman, I., Yazıcı, A., Mishra, A., & Arifoglu, A. (2005). E-government: a global view and an empirical evaluation of some attributes of citizens. *Government Information Quarterly*, 22, 239–257. DOI: 10.1016/j.giq.2004.12.001.
- Al Athmay, A. A. R. A. (2015). Demographic factors as determinants of e-governance adoption: A field study in the United Arab Emirates (UAE). *Transforming Government: People, Process and Policy*, 9(2), 159–180. <https://doi.org/10.1108/TG-07-2014-0028>.
- Al Athmay, Al. A. A., Fantazy, K., & Kumar, V. (2016). E-government adoption and user's satisfaction: An empirical investigation. *EuroMed Journal of Business*, 11(1), 57–83. <https://doi.org/10.1108/EMJB-05-2014-0016>
- Al Awadhi, S., & Morris, A. (2009). Factors influencing the adoption of e-government services. *Journal of Software*, 4(6), 584–590. DOI: 10.4304/jsw.4.6.584-590.
- Al-Eryani, A.Y. (2009). E-government services in Yemen: success and failure factors. *Sana'a University, Faculty of Science Bulletin*, 22, 61–74.
- Alshehri, M., Drew, M., & Alfarraj, O. (2010). A comprehensive analysis of e-government services adoption in Saudi Arabia: obstacles and challenges. *International Journal of International Journal of Advanced Computer Science and Applications*, 3(2), 1–6. DOI: 10.14569/IJACSA.2012.030201.
- Bhuiyan, S.H. (2010). E-government in Kazakhstan: challenges and its role to development. *Public Organization Review*, 10(1), 31–47. <https://doi.org/10.1007/s11115-009-0087-6>
- Birimkulov U., & Baryktabasov K. (2018). E-government development in the Central Asian states: best practices, challenges and lessons learned. In L. Alcaide Muñoz & M. Rodríguez Bolívar (Eds.), *International e-government development* (pp 121–154). Palgrave Macmillan. https://doi.org/10.1007/978-3-319-63284-1_6
- Carter, L., Weerakkody, V., Phillips, B., & Dwivedi, Y. K. (2016). Citizen adoption of e-government services: exploring citizen perceptions of online services in the United States and United Kingdom. *Information Systems Management*, 33(2), 124–140. <https://doi.org/10.1080/10580530.2016.1155948>
- Cisco (2019). Global digital readiness index 2019, https://www.cisco.com/c/dam/en_us/about/csr/reports/global-digital-readiness-index.pdf.
- Çabuk, S., Zeren, D., & Gökdağlı, N. (2017). E-devlet sistemine adaptasyonun teknoloji kabul modeliyle araştırılması [Investigating e-government adoption using technology acceptance model]. *Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi [Journal of Cukurova University Institute of Social Sciences]*, 26(3), 140–154.
- Daştan, I., & Kurt, Ö.E. (2016). E-devlet adaptasyonunda etkili olan faktörlerin belirlenmesine ilişkin ampirik bir araştırma: Yalova örneği [An Empirical Research about Determining the Factors Effecting E-government Adoption: Evidence from Yalova]. *Ege Akademik Bakış [Ege Academic Review]*, 16(1), 95–107.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- Dewa, M., & Zlotnikova, I. (2014). Citizens' readiness for e-government services in Tanzania. *Advances in Computer Science: An International Journal*, 3(4), 37–45.
- Eze, U.C., Huey, G. M., Yaw, L.H., & Har, L. C. (2011). Intention to use e-government services in Malaysia: perspective of individual users. In A. Abd Manaf, Zeki, M. Zamani, S. Chuprat, & E. El-Qawasmeh (Eds.), *Informatics Engineering and Information Science. ICIEIS 2011. Communications in Computer and Information Science*, vol 252. (pp. 512–526). Springer. https://doi.org/10.1007/978-3-642-25453-6_43

- Goings, D.A., Young, D., & Sarah, H.H. (2003). Critical factors in the delivery of e-government services: perceptions of technology executives. *Communications of the International Information Management Association*, 3(3), 1–15.
- Güler, M., & Dövertaş, E. (2014). Elektronik devletten (e-devlet) mobil devlete (m-devlet) geçişte Türkiye’de yerel yönetim uygulamaları [Local government implementations in transition from e-government to m-government in Turkey]. *Hitit Üniversitesi Sosyal Bilimler Enstitüsü Dergisi [Hitit University Journal of Social Sciences Institute]*, 1(2), 25–49.
- International Telecommunication Union (2019) *Global and Regional ICT Data*, <https://www.itu.int/en>.
- Isaac, K. M. (2018). Citizens’ readiness to adopt and use e-government services in the city of Harbin, China. *International Journal of Public Administration*, 41(4), 297–307. DOI: 10.1080/01900692.2016.1263658.
- Ismailova, R., Muhametjanova, G., & Kurambayev, B. (2018). A Central Asian view of e-government services adoption: citizens’ trust and intention to use e-services. In P. M. Aroon, & M. James (Eds.), *Innovative Perspectives on Public Administration in the Digital Age IGI Global 2018* (pp. 212–226). DOI: 10.4018/978-1-5225-5966-5.ch011.
- Kamaruddin, K.A., & Noor, N. (2017). From e-government to t-government: a Malaysian citizens’ readiness study. *Journal of Telecommunication, Electronic and Computer Engineering*, 9(2-9), 15–21.
- KR Presidency. (2019–2020) *KR Presidential Decree*, <http://www.president.kg>.
- Lean, O.K., Suhaiza, Z., Ramayah, T., & Fernando, Y. (2009). Factors influencing intention to use e-government services among citizens in Malaysia. *International Journal of Information Management*, 29(6), 458–475. <https://doi.org/10.1016/j.ijinfomgt.2009.03.012>
- Lemuria, C., Vishanth, W., Brandis, Ph., & Yogesh K. D. (2016). Citizen adoption of e-government services: exploring citizen perceptions of online services in the United States and United Kingdom. *Information Systems Management*, 33(2), 124–140. DOI: 10.1080/10580530.2016.1155948.
- Mandari, H. E., & Koloseni, D. N. (2022). Determinants of continuance intention of using e-government services in Tanzania: The role of system interactivity as moderating factor. *Transforming Government: People, Process and Policy*, 17(1), 15–38. <https://doi.org/10.1108/TG-05-2022-0077>
- Mensah, I. K., & Adams, S. (2020). A comparative analysis of the impact of political trust on the adoption of e-government services. *International Journal of Public Administration*, 43(8), 682–696. <https://doi.org/10.1080/01900692.2019.1645687>
- Muhammad, Z.I. L., Naguib, L., & Gias, M. L. (2017). Factors influencing the adoption of e-government services in Mauritius. *Telematics and Informatics*, 34(4), 57–72. <https://doi.org/10.1016/j.tele.2017.01.003>
- Parasuraman, A. (2000). Technology readiness index (TRI) a multiple-item scale to measure readiness to embrace new technologies. *Journal of Service Research*, 2, 307–320. <http://dx.doi.org/10.1177/109467050024001>
- Pardo, T., & Styryn, E. (2010). Digital government implementation: a comparative study in USA and Russia. In *Proceedings of AMCIS (2010) – Lima: 2010.- 330*. <https://aisel.aisnet.org/amcis2010/330>
- Ranaweera, H.M.B.P. (2016). Perspective of trust towards e government initiatives in Sri Lanka. *SpringerPlus*, 5(22), 1–11. <https://doi.org/10.1186/s40064-015-1650-y>
- Rehman, M., Esichaikul, V., & Kamal, M. (2012). Factors influencing e-government adoption in Pakistan. *Transforming Government: People, Process and Policy*, 6(3), 258–282. <https://doi.org/10.1108/17506161211251263>
- Rodrigues, G., Sarabdeen, J., & Balasubramanian, S. (2016). Factors that influence consumer adoption of e-government services in the UAE: A UTAUT model perspective. *Journal of Internet Commerce*, 15(1), 18–39. <https://doi.org/10.1080/15332861.2015.1121460>
- Sabani, A. (2020). Investigating the influence of transparency on the adoption of e-Government in Indonesia. *Journal of Science and Technology Policy Management*, 12(2), 236–255. <https://doi.org/10.1108/JSTPM-03-2020-0046>

- Sharma, S. K. (2015). Adoption of e-government services: The role of service quality dimensions and demographic variables. *Transforming Government: People, Process and Policy*, 9(2), 207–222. <https://doi.org/10.1108/TG-10-2014-0046>
- Singh, N., Srivastava, S., & Sinha, N. (2017). Consumer preference and satisfaction of m-wallets: a study on North Indian consumers. *International Journal of Bank Marketing*, 35(6), 944–965. <https://doi.org/10.1108/IJBM-06-2016-0086>
- Srivastava, C.S., & Teo, T.S.H. (2005). Citizen trust development for e-government adoption: case of Singapore. In Proceedings of PACIS (7-10 July, 2005) – Bangkok, Thailand, 2005 (pp. 721–734).
- Tran Pham, T. K. (2023). Government administrative capacity, e-government performance and citizen's e-government adoption: Evidence from a transition country. *Transforming Government: People, Process and Policy, ahead-of-print* (ahead-of-print). <https://doi.org/10.1108/TG-09-2022-0120>
- Tunduk (2020) <https://www.tunduk.gov.kg/>
- UNESCO Institute for Statistics (UIS) (2016). Education Database, <http://data.uis.unesco.org/Index.aspx>.
- Vinogradova, N.S., & Moiseeva, O.A. (2015). Open government and “e-government” in Russia. *Sociology Study*, 5(1), 29–38. doi: 10.17265/2159-5526/2015.01.004.
- West, D.M. (2005). *Digital government: Technology and public sector performance*. Princeton University Press.
- Zawaideh, F.H. (2017). Acceptance of e-government services among Jordanian citizen. *International Journal of Recent Advances in Multidisciplinary Research*, 4(2), 2348–2351.
- Zhang, Y., & Hsieh, C. (2010). Chinese citizens' opinions on e-government benefits, issues and critical success factors. *Electronic Government an International Journal*, 7(2), 137–147. DOI: 10.1504/EG.2010.030924.
- Zhang, B., & Zhu, Y. (2021). Comparing attitudes towards adoption of e-government between urban users and rural users: An empirical study in Chongqing municipality, China. *Behaviour & Information Technology*, 40(11), 1154–1168. <https://doi.org/10.1080/0144929X.2020.1743361>
- Zhao, X., & Xu, H. D. (2015). E-government and corruption: a longitudinal analysis of countries. *International Journal of Public Administration*, 38(6), 410–421. <https://doi.org/10.1080/01900692.2014.942736>

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Appendix 1: Sample Characteristics

<i>Gender</i>	<i>F</i>	<i>%</i>	<i>Marital Status</i>	<i>F</i>	<i>%</i>
Female	225	69.2	Married	103	31.7
Male	100	30.8	Single	222	68.3
<i>Area of residence</i>	<i>F</i>	<i>%</i>	<i>Experience</i>	<i>F</i>	<i>%</i>
Bishkek	203	62.5	Yes	181	55.7
Other regions	122	37.5	No	144	44.3
<i>Age</i>	<i>F</i>	<i>%</i>	<i>Education</i>	<i>F</i>	<i>%</i>
Under 20	47	14.5	High School	62	19.1
21-36	218	67.1	Vocational School	57	17.5
37-56	47	14.5	University	192	59.1
Over 57	13	4.0	Postgraduate	14	4.3
<i>Monthly Family Income</i>	<i>F</i>	<i>%</i>	<i>Occupation</i>	<i>F</i>	<i>%</i>
Less than 30 000 Som	191	58.8	Student	161	49.5
30 001 – 60 000 Som	71	21.8	Public sector employee	52	16.0
Above 60 001 Som	26	8.0	Private sector employee	63	19.4
Not declared	37	11.4	Other	49	15.1
<i>Total</i>	<i>325</i>	<i>100.0</i>	<i>Total</i>	<i>325</i>	<i>100.0</i>