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Mediated Adoption and Claims of Success: Innovation Attributes in Mobile Driving Licence Renewal in Indonesia

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ABSTRACT

The Indonesian National Police introduced a national mobile application for online driving licence renewal as part of the country's digital government agenda. This study examines how innovation attributes shaped the adoption of this service at the level of a local licensing office, which barriers arose, and how the office responded. We conducted a qualitative single case study at one driving licence office in a provincial capital, interviewing four officers and seven users, observing service delivery, and analyzing applicant records. Data were analyzed with the Miles, Huberman, and Saldaña interactive model, using Rogers' five innovation attributes as a framework. Users experienced strong relative advantage, saving time, money, and leave from work, and found the service compatible with their digital habits. Complexity concentrated at identity verification: four of the five users who commented on this aspect had to repeat electronic identity card or facial verification. Officers attributed such failures to user error, whereas users located them in a specific system stage. Older users adopted the service with help from younger relatives, and information spread mainly by word of mouth rather than through institutional communication. Officers described applicant numbers as rising, but recorded monthly averages for January to May 2025 were lower than in 2024. The study shows that adoption of a mandatory public service can be mediated by households and that institutional and public observability can diverge. Providers should simplify identity verification, support digital helpers, and publish service performance data. All interviewed users were successful adopters.

Keywords: Mediated Adoption; Diffusion of Innovations; Administrative Burden; Digital Divide; Digital Government

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INTRODUCTION

Digital transformation has become a central item on the public administration reform agenda. Governments move services from the counter to online channels with the promise that they will become faster, cheaper, and more transparent (Layne & Lee, 2001; Mergel et al., 2019). Indonesia illustrates this agenda clearly. Presidential Regulation No. 95 of 2018 on Electronic-Based Government Systems provides the legal basis for digitizing services across agencies, and in the United Nations E-Government Survey 2024 Indonesia ranked 64th of 193 member states, up from 77th in 2022 (United Nations Department of Economic and Social Affairs [UN DESA], 2024). Digital services are also expected to

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contribute to Sustainable Development Goal 16, which calls for effective, accountable, and inclusive institutions (United Nations, 2015).

Police services are among the sectors being digitized. A driving licence (Surat Izin Mengemudi, SIM) is mandatory for drivers of motor vehicles under Law No. 22 of 2009 on Road Traffic and Transport, and its issuance is regulated by National Police Regulation No. 5 of 2021, as amended by Regulation No. 2 of 2023, on the Issuance and Marking of Driving Licences. On 13 April 2021, the police launched a national mobile application that includes the SIM Nasional Presisi (SINAR) service for online licence renewal. Through the application, applicants register, verify their identity, take online health and psychological tests, pay, and choose to collect the licence or have it delivered, without visiting a service office. The application also lists other services that were still under development at the time of this study.

Earlier Indonesian studies of this service tend to conclude that the innovation works well, with some reservations. Utami et al. (2023) judged the program fairly effective but found that outreach was weak and that delivery of the licence could take almost a month, far beyond the estimated three to seven working days. Mustikasari and Reviandani (2024) examined the transformation of the SINAR service at a licensing office in East Java, while Yustiari and Rorrong (2025) assessed the application as practical, fast, and cost-saving from a digital governance perspective. Sulistiyo and Shihab (2023) treated the service as a case of institutional digital transformation. Most of these studies are evaluative and descriptive: they assess attributes or dimensions separately and then conclude on the degree of success.

The international literature gives reasons for more caution. Digitalization does not automatically simplify citizens' dealings with the state. It can transfer administrative work from officials to citizens (Madsen et al., 2022) and create new learning, psychological, and compliance costs (Moynihan et al., 2015). Take-up of digital government services also often falls short of expectations even as availability grows, a pattern described as the e-government paradox (Savoldelli et al., 2014). Gaps between system design and the realities of users are a common source of information system failure in developing countries (Heeks, 2002).

Although the quality of SINAR has been assessed several times, less attention has been paid to who actually adopts the service and what evidence underlies claims of its success. Rogers' (2003) framework of innovation attributes assumes an individual adopter who judges an innovation by his or her own perceptions. This assumption needs to be examined for public services that all citizens must use, including those without adequate digital skills. The study therefore asks three questions: (1) how do Rogers' five innovation attributes appear in the implementation of the app-based licence renewal service at the level of a licensing office; (2) what barriers did the office face; and (3) what measures did it take to overcome them?

The article contributes to the literature on public sector innovation and digital government in two ways. First, it shows that adoption of a digital service can be mediated, that is, carried out by or with the help of more skilled family members, so that compatibility and complexity are not determined by the individual applicant alone. Second, it distinguishes observability from the institution's point of view, which rests on shorter queues and applicant counts, from observability from the public's point of view, which depends more on interpersonal networks. The article proceeds with a review of the literature and the analytical framework, followed by the methods, the results and discussion, and the conclusions and suggestions for future research.

LITERATURE REVIEW

Public Sector Innovation and Digital Services

Public sector innovation refers to the introduction of new ideas, processes, or services, or the adaptation of existing ones, in public organizations (De Vries et al., 2016). Innovation is not limited to technology; it includes changes in practices, processes, and managerial structures that accompany technology (Damanpour & Aravind, 2012). The systematic review by De Vries et al. (2016) found that most studies of public sector innovation focus on antecedents and seldom measure outcomes adequately, so that success is often claimed without strong evidence of results.

In digital government, digital transformation is defined as a change in processes, services, and relationships with citizens enabled by digital technologies, not merely the transfer of forms to an online channel (Mergel et al., 2019). Stage models of e-government describe the progression of services from information provision to transactions and to vertical and horizontal integration (Layne & Lee, 2001). The licence renewal service examined here sits at the stage of a vertically integrated transaction. The application is managed nationally, while verification and printing are carried out by licensing offices (Satuan Penyelenggara Administrasi SIM, Satpas) in the regions.

Research on e-government adoption shows that citizens' intention to use online services depends on perceived usefulness, ease of use, compatibility with habits, and trust (Carter & Bélanger, 2005;

Venkatesh et al., 2003). Shareef et al. (2011) add that the determinants of adoption differ by service maturity: transactional services demand more trust and capability than informational ones. A licence renewal that combines biometric identity checks, health tests, and payment is therefore among the more demanding services that a citizen can be asked to complete alone.

Rogers' Innovation Attributes

The study uses the five innovation attributes of Rogers' (2003) diffusion of innovations theory. *Relative advantage* is the degree to which an innovation is perceived as better than the practice it replaces. *Compatibility* is the degree to which it is perceived as consistent with the values, experience, and needs of potential adopters. *Complexity* is the degree to which it is perceived as difficult to understand and use. *Trialability* is the degree to which it can be tried on a limited basis before full adoption. *Observability* is the degree to which its results are visible to others. The meta-analysis by Tornatzky and Klein (1982) found that relative advantage, compatibility, and complexity are the attributes most consistently related to adoption, and Moore and Benbasat (1991) developed these attributes into an instrument for measuring perceptions of information technology adoption.

We chose this framework because it places adopters' perceptions at the center of analysis. It has two limitations, however, that matter for digital public services. First, the unit of adoption is assumed to be an individual who decides alone, whereas public services are mandatory and citizens who cannot use the application must still obtain the service, often with the help of others. Second, the attributes are measured from the adopter's side, so the framework is insensitive to differences between the perceptions of providers and those of users.

Digital Divide and Administrative Burden

To address these limitations, we complement Rogers' framework with two perspectives. The first is the digital divide. The divide concerns not only access to devices and the internet but also the skills to use them (Hargittai, 2002; Van Dijk, 2020). Older people face a particular risk of digital disengagement when essential services move online (Olphert & Damodaran, 2013). Under such conditions, some citizens reach digital services through intermediaries such as family members, and adoption becomes mediated.

The second perspective is administrative burden, the costs that citizens experience in their interactions with the state, comprising learning, psychological, and compliance costs (Moynihan et al., 2015). Digital self-service can shift work that officials used to do, such as checking the completeness and conformity of documents, to citizens, who become "accidental caseworkers" (Madsen et al., 2022). Lindgren et al. (2019) stress that digitalization changes the nature of encounters between citizens and the state, including who bears the risk of error. Digital technologies can also turn citizens into co-producers of services, with a distribution of burdens that is not always equal (Lember et al., 2019).

Combining these perspectives yields the analytical framework shown in Fig. 1. Rogers' five attributes organize the findings. The digital divide perspective is used to read compatibility and complexity at the level of the household rather than the individual. The administrative burden perspective is used to

read complexity as a distribution of costs between provider and citizen. A systematic comparison of officers' accounts, users' accounts, and administrative data is used to examine claims of success.

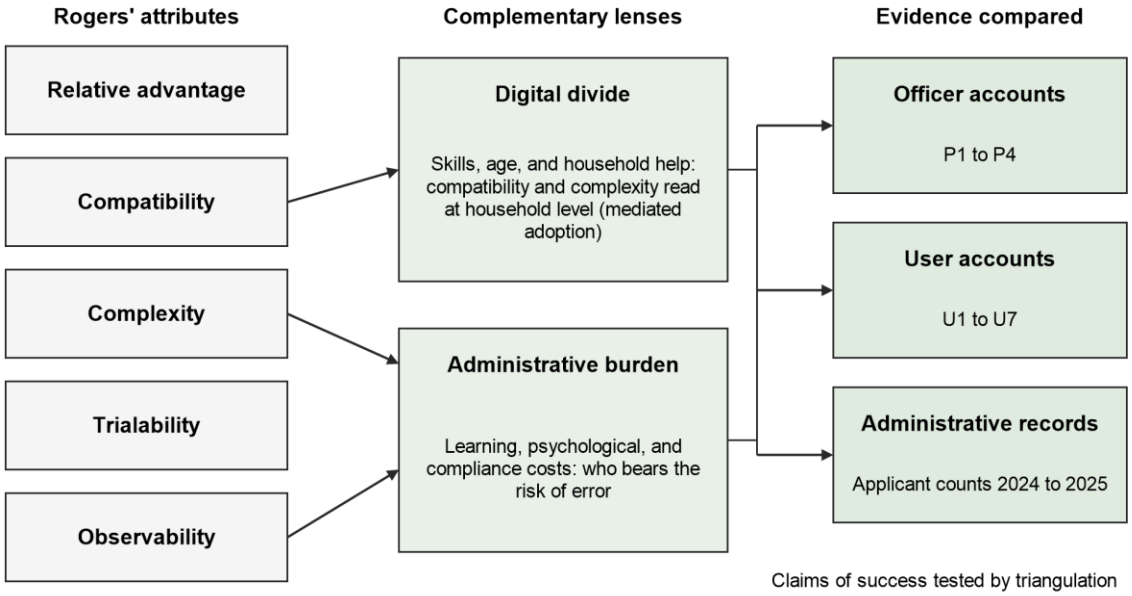

Fig. 1 Analytical framework: Rogers' five attributes read through the digital divide and administrative burden lenses, and tested against three data sources (authors' elaboration)

MATERIALS AND METHODS

Research Design and Case

We used a qualitative descriptive approach with a single case study design (Yin, 2018). The case is the implementation of the app-based licence renewal service at one Satpas under a metropolitan police command (Polrestabes) in a provincial capital in Indonesia. The office began using the application on 15 September 2021 and was one of the 54 licensing offices that offered online renewal by the end of that month (Detik Oto, 2021). The number of participating offices remained at 54 throughout the fieldwork; the national expansion to 153 offices took effect only in December 2025 (GridOto, 2025).

The case was selected for two reasons. As one of the first offices to offer online renewal, it had a relatively long implementation history, so adoption patterns could already be observed. The service is also a typical example of a national application delivered by local units, which makes it suitable for examining the relationship between central design and experience on the ground.

Informants and Data Collection

The study was conducted between November 2024 and July 2025. Eleven informants were selected purposively from two groups (Table 1). The provider group comprised four officers: the head of the registration and identification unit (P1), the online licence adjudicator responsible for verifying applications submitted through the application (P2), a licence service officer (P3), and the office treasurer (P4). The user group comprised seven citizens who had renewed their licence through the application

(U1 to U7). In April 2025 alone, 778 people applied for renewal of a motorcycle licence (SIM C) through the application; because of limits of time, resources, and access, seven users were interviewed.

Table 1. Informant profile

Code	Group	Role	Age (years)
P1	Provider	Head of registration and identification unit	36
P2	Provider	Online licence adjudicator	47
P3	Provider	Licence service officer	35
P4	Provider	Office treasurer	34
U1	User	Employee	54
U2	User	Employee; also helped a parent and a co-worker	22
U3	User	Not stated	55
U4	User	Employee	23
U5	User	Employee	25
U6	User	Employee	26
U7	User	Employee	25

Source: research data, 2025.

Data were collected through three techniques. First, semi-structured interviews were conducted with a guide based on Rogers' five attributes and on questions about barriers and measures. Interviews took place between 29 May and 20 June 2025, were noted, and were audio-recorded. They were held in Indonesian, and the excerpts below were translated by the authors. Second, we directly observed service delivery at the Satpas. Observation covered the counter service, the handling of applicants who came to the office because of problems with the application, and the information displayed to visitors. Third, we collected documents: applicant counts from the office treasurer, the standard operating procedure for the application, and posts on the office's official social media accounts.

Data Analysis and Trustworthiness

Data were analyzed with the interactive model of Miles et al. (2014), comprising data condensation, data display, and conclusion drawing and verification. Transcripts were coded deductively according to Rogers' five attributes and then inductively to capture themes that the initial framework did not cover. Two such themes emerged: the role of family helpers and the different attributions of the causes of failure. Trustworthiness was supported by source triangulation (officers, users, and documents) and method triangulation (interviews, observation, and documents) (Lincoln & Guba, 1985). Applicant counts were processed descriptively to calculate monthly averages, which were compared with informants' accounts.

The comparison between accounts and records was planned as part of the design rather than added afterwards. Claims of success in public sector innovation are often made without outcome measures (De Vries et al., 2016), and officers are the main source of such claims. Placing officers' statements next to the treasurer's records made it possible to check one against the other, while users' accounts provided a third view of the same service. Where the three sources diverged, we report the divergence rather than resolving it.

Research Ethics

Informants' names are replaced by codes. The research was conducted with the permission of the head of the local police command. Informants took part voluntarily after being told the purpose of the study.

RESULTS AND DISCUSSION

The results follow the three research questions: the innovation attributes, the barriers, and the measures. We first describe the service flow and the applicant data, which serve as a reference point for the officers' accounts. Table 3 summarizes the findings by attribute.

Service Flow and Applicant Data

Renewal through the application involves eight steps: downloading the application; registration and identification (account verification, electronic identity card, and facial recognition); uploading

documents (old licence, identity card, photograph, and signature); health and psychological tests through two connected partner applications; choosing the Satpas, the collection or delivery method, and a refund account; payment through a bank virtual account; verification and printing by the Satpas; and delivery and confirmation of receipt through the application. The estimated time for production and delivery is three to seven working days.

According to P4, 22,870 people applied through the application in 2024, comprising 6,999 applicants for a car licence (SIM A) and 15,871 for a motorcycle licence (SIM C). Data for January to May 2025 are shown in Table 2.

Table 2. Licence renewal applications through the application, January to May 2025

Month	SIM A	SIM C	Total
January	438	947	1,385
February	704	1,399	2,103
March	677	1,355	2,032
April	408	778	1,186
May	518	1,098	1,616
Total	2,745	5,577	8,322

Source: Satpas treasurer, 2025; monthly totals calculated by the authors.

Officers described applicant numbers as "continuing to grow". P2 estimated about 100 registrations per day, or roughly 2,500 over 25 working days a month. The records give a different picture. The highest monthly count in January to May 2025 was 2,103 (February), and the monthly average was about 1,664, lower than the 2024 monthly average of about 1,906 (22,870 divided by 12). We return to this comparison below.

Innovation Attributes

Relative Advantage

All interviewed users considered the application superior to renewal at the Satpas or at mobile licence units. The advantages mentioned most often were time savings, freedom from the schedules of mobile units, and not having to take leave from work. P2 explained:

> *"Of course the benefit is very large, especially in terms of time efficiency for the public. With this digital application people can renew their licence from home. For beginners the process may take about two hours, but in that time they can complete the whole renewal. [...] As long as they understand how to use it, the process is actually very simple and efficient." (P2)*

Users confirmed this and added savings in money:

> *"This application helps me a lot. I save time and money, especially since I live in [district], which is quite far from [the police office] [...] So I am very grateful for this application, I don't have to take leave from work or spend extra on petrol or meals outside." (U5)*

> *"This application has an advantage over the manual way. I don't have to take leave from work just to renew my licence." (U4)*

P2 attached a condition: "as long as they understand how to use it". Relative advantage was thus conditional on the ability to use the application, which is taken up under complexity.

Compatibility

Officers presented the application as a response to two things: restrictions on face-to-face contact during the COVID-19 pandemic (P1) and citizens' familiarity with technology (P2, P3). Users described the application as consistent with their habit of transacting by phone and with the time constraints of their

jobs. U1 said that the renewal could be arranged from home after work and that the system matched the habit of using of the phone for banking and online shopping. U6 said:

> *"I think this application already fits what people need now, especially for someone like me who likes and is used to technology for everything, because it is more flexible and efficient, and my work leaves me with little time." (U6)*

Observation showed, however, that compatibility was not even. Older citizens and those used to manual procedures tended to struggle. Users' accounts showed how this gap was bridged in practice: U2 used the application to renew a parent's licence.

> *"This application helps me and my parents a lot, especially since I am used to technology. My father also feels helped, because he no longer has to go to the mobile unit or the Satpas [...]" (U2)*

Complexity

Assessments of complexity differed sharply between officers and users. P2 considered the application "already fairly easy" and said that frequent problems were mostly technical errors by users, such as uploading a photograph with the wrong background or wearing prohibited items such as glasses.

> *"Actually this application is already fairly easy. People only need to meet the requirements set out in the application, and the explanations are already there." (P2)*

Users generally agreed that the application as a whole was not very complicated. Four of the five users who commented on complexity (U1, U2, U5, and U6), however, named the same stage as a point of repeated failure, namely verification of the electronic identity card or face:

> *"Of course there are complicated parts, especially the e-KTP verification. I had to try several times because it kept failing, but thank God it worked in the end, and even then my child helped me." (U1)*

> *"I wouldn't call it complicated, except for the e-KTP verification, which kept failing and had to be tried several times. Overall it is not too complicated because there are explanations." (U2)*

> *"The difficulty was mostly in uploading documents, especially the photo for the e-KTP verification. It kept failing at the time, but overall it was fine." (U5)*

The second stage mentioned was the health test. U4 had to follow the instructions in the application and study tutorial videos to complete the test online. U6, by contrast, had to visit a hospital designated by the application:

> *"[...] and for the health check, if it is online then everything should be in the application, but for the health check we had to go to the hospital the application referred us to." (U6)*

Trialability

Officers and users considered the application fairly easy to try because each step carried explanations and the application had a complaints feature. The mechanism mentioned most often was a three-day grace period (3 × 24 hours) to continue or correct an application before it lapsed.

> *"When applying through the application they are given three days. For example, if their time is limited and they have not finished the process, they have three days to continue before the application is considered lapsed or failed." (P2)*

U4 said that at first the intention was "just to try it", and the online process then turned out easier than the manual one. At the organizational level, implementation began in a limited group of offices, and adjudicators were trained and tried the application before launch. There was, however, no simulation or test mode for citizens. To try the service, a citizen had to start a real application with his or her own identity data.

Observability

For officers, the results of the innovation were visible in shorter queues at the Satpas and mobile units and in applicant numbers (P2, P4). The public, by contrast, learned about the benefits of the application mostly from other users. Observation showed that institutional outreach was limited to notice boards and leaflets, and the office's social media posts covered only the schedules of mobile units and the opening hours of the public service mall. Users, meanwhile, actively spread their experience. U1

posted a positive review in the app store, U2 recommended the application to a co-worker and helped the co-worker succeed, and U4 recommended it to friends and to a parent.

> *"I even recommended it to a co-worker and told them to try it right away, because their licence was about to expire too, and I helped them, and thank God it worked." (U2)*

Table 3. Summary of findings by Rogers' innovation attributes

Attribute	Provider accounts	User accounts and observation	Assessment
Relative advantage	Time efficiency; accessible at night; "as long as they understand how to use it"	Saves time, money, and leave; independent of mobile unit schedules	Strong, conditional on digital skills
Compatibility	Response to the pandemic and to citizens' digital habits	Fits phone-savvy users; older citizens struggle and are helped by family	Strong for skilled users; mediated for others
Complexity	Easy; failures caused by user error	Generally easy, but repeated failure at e-KTP or facial verification (4 of 5); health test sometimes physical	Not yet optimal; concentrated at identity verification
Trialability	3 × 24 hour grace period; phased roll-out; officer training	Step explanations and complaints feature help; no simulation mode	Limited to tolerance, not commitment-free trial
Observability	Shorter queues; applicants "continuing to grow"	Little institutional outreach; information spreads by word of mouth	High for the institution, low for non-users

Source: research data, 2025.

Barriers

Three main barriers were identified. The first was network disruption or an inaccessible system, especially when many people registered at once. P2 reported that in some cases the system could not be accessed for several days, delaying verification and printing and causing anxiety among applicants whose licences were about to expire. The second was limited digital literacy, especially among older users. According to P2, many users did not read instructions carefully, uploaded photographs that did not meet the requirements (wrong background, glasses, or a cap), or did not check e-mails asking for document corrections, so that applications failed or were delayed. The third was limited outreach. Although outreach had been carried out through schools and social media, not all groups understood how to use the application, and the lack of assistance made some citizens hesitant to try.

Measures to Overcome the Barriers

The Satpas reported three measures. The first was periodic optimization of servers and networks in coordination with the national digital infrastructure provider, together with real-time notifications about server status so that users would not be confused when the service was disrupted. The second was digital literacy education through tutorial videos posted on social media and the official video channel. The third was stronger assistance: the adjudicator answered complaints submitted through the application and served applicants who came to the Satpas in person because of difficulties, including applicants worried that their payment had not appeared in the application although their data had been received and were being processed.

Conditional Relative Advantage

The finding that users experienced strong relative advantage and compatibility agrees with earlier studies of this service (Mustikasari & Reviandani, 2024; Yustiari & Rorrong, 2025) and with adoption research that treats perceived usefulness as the main driver of use (Carter & Bélanger, 2005; Venkatesh et al., 2003). It must be read, however, in light of who was interviewed. All seven users had used the application successfully, and five of them were aged 22 to 26. The relative advantage they reported was the advantage of successful adopters. For citizens unable to pass verification, that advantage did not materialize, as P2's own condition, "as long as they understand how to use it", implies. Shareef et al.

(2011) show that transactional services demand more capability than informational ones, and licence renewal, which combines biometric verification, health tests, and payment, is a demanding transaction.

Mediated Adoption

The finding least anticipated by Rogers' framework concerns the role of family members. U1, the oldest user to complete verification, did so with help from a child. U2 renewed a parent's licence and helped a co-worker. U4 recommended the application to a parent. This pattern suggests that for some citizens, especially older ones, the unit of adoption is not the individual but the household or close network. Compatibility and complexity in this case were not only attributes of the relationship between the innovation and the individual applicant; they were attributes of the relationship between the innovation and the applicant's social network.

This finding extends the digital divide literature. Hargittai (2002) and Van Dijk (2020) emphasize differences in skills as the second level of the digital divide, and Olphert and Damodaran (2013) warn of digital disengagement among older people. The case shows a mechanism that bridges this gap in practice, namely informal assistance by family members. The mechanism works, but it carries risks. Citizens without a skilled helper have no equivalent route, and providers may misread mediated adoption as evidence that the application is easy to use. The co-production literature makes a related point: when digital technologies shift tasks to citizens, the capacity to carry those tasks is unevenly distributed (Lember et al., 2019). Studies applying Rogers' framework to digital public services should therefore treat mediated adoption as a distinct category.

Complexity as a Shift in Administrative Burden

The different attributions of complexity by officers and users form the second key finding. Officers located the source of failure in user error: not reading instructions, a wrong photo background, wearing glasses or a cap. Users located the difficulty in one specific system stage, the verification of the electronic identity card and face, which had to be repeated several times. The two explanations do not exclude each other, but they distribute responsibility differently.

From the administrative burden perspective (Moynihan et al., 2015), the application lowered compliance costs in the form of travel, queuing, and leave from work, but it created new learning and psychological costs at the identity verification stage. Work that officers performed in face-to-face service, ensuring that photographs and documents met the requirements, was now placed on citizens. This situation matches the description of citizens as "accidental caseworkers" by Madsen et al. (2022) and the argument of Lindgren et al. (2019) that digitalization shifts who bears the risk of error. When failures are interpreted as user error, the burden of correcting them also remains with the user.

Complexity also arose because the digital service chain was not fully connected. For some users the health test still required a visit to a designated hospital (U6), and some applicants still came to the Satpas because the payment status shown in the application did not match reality. The finding by Utami et al. (2023) that delivery could take almost a month shows a similar pattern at the final stage of the service. The gap between the design of a fully online service and the reality of stages that remain physical is what Heeks (2002) called a design-reality gap.

Claims of Success and Observability

Observability revealed the sharpest difference in perspective. For the institution, the results of the innovation were easy to see: queues were shorter and applicants could be counted. For citizens who had not used the application, these results were hard to see, because institutional communication was limited and the office's social media did not mention the application. Information spread instead through interpersonal networks, which Rogers (2003) identifies as the most influential channels at the persuasion stage. Diffusion of this innovation thus relied more on users' initiative than on the provider's communication strategy, consistent with the weak outreach reported by Utami et al. (2023).

The difference in perspective also appeared in claims of growth. Officers stated that applicant numbers kept rising and estimated about 2,500 applicants a month. The records show an average of about 1,906 applicants per month in 2024 and about 1,664 per month in January to May 2025, with a peak of 2,103 in February 2025. Five months of data are not enough to establish a trend, and monthly variation may reflect seasonal factors that this study did not examine. The available data nevertheless do not support a claim of sustained growth. Moreover, applicant numbers through the application cannot be read as an adoption rate, because the study did not obtain the total number of renewals through all channels. Data on renewals at the counter and through mobile units for the same period would be needed to calculate the share of online renewals.

This finding is consistent with the critique by De Vries et al. (2016) that the success of public sector innovation is often claimed without adequate outcome measures, and with the e-government

paradox described by Savoldelli et al. (2014), in which growing availability of online services is not automatically followed by growing take-up.

Trialability: Tolerance Rather than Trial

The view that the application was easy to try rested on the three-day grace period, the explanations at each step, and the organizational pilot. In Rogers' (2003) sense, trialability refers to the opportunity to try an innovation on a limited basis without full commitment. The three-day grace period is better understood as a mechanism of error tolerance within a real application, and the pilot was an organizational trial, not a trial by citizens. The absence of a simulation mode means that citizens must risk a real application, their identity data, and their payment in order to "try". The distinction matters because a favorable rating on trialability can hide a real need for assistance and simulation among hesitant citizens.

Theoretical and Practical Implications

Theoretically, the study points to two limits of Rogers' innovation attributes in digital public services. The unit of adoption needs to be widened from the individual to the household or close network, because adoption can be mediated. Each attribute also needs to be assessed separately from the provider's and the user's perspective, because the two can differ systematically, especially on complexity and observability. Combining Rogers' framework with the administrative burden and digital divide perspectives helps explain why an innovation judged successful by its provider can still leave certain groups of citizens behind.

For providers of digital services, three practical implications follow. Identity verification should be simplified and accompanied by specific feedback on the cause of failure, with an officer-assisted route for applicants who fail repeatedly. The role of family helpers should be recognized and supported, for example through guidance for helpers and a clear proxy mechanism, alongside a help desk at the Satpas for citizens without a helper. Licensing offices and the central provider should publish service performance data regularly, such as the number of applications, the rate of verification failure, and completion times, so that claims of success can be tested and public communication does not depend on user testimonials alone.

CONCLUSION

This study found that the app-based licence renewal service largely performed well on relative advantage, compatibility, and trialability, but not yet on complexity and observability. Complexity was concentrated at electronic identity card and facial verification, while observability was held back by limited institutional outreach. The main barriers were system disruptions, limited digital literacy, and limited outreach; the measures taken were infrastructure optimization, education through tutorial videos, and direct assistance.

The main contribution of the article is to show that the success of a digital public service innovation should be read together with two questions: who actually adopts it, and what evidence underlies claims of success. Adoption by older citizens in this case took place through family mediation, and the provider's claims of user growth were not reflected in the available applicant data.

SUGGESTION FOR FUTURE RESEARCH

The limitations of this study suggest several directions for further work. All seven interviewed users were successful adopters, so the experience of citizens who failed or chose face-to-face channels is known only from officers' accounts. Future research should interview citizens who did not complete an online renewal or did not try, particularly older citizens, to establish how many rely on helpers and what happens to those who have none.

The user sample was small and mostly young, and administrative data were limited to applications through the application, without other channels, failure rates, or completion times. Analysis of verification failure data held by the central provider would show whether the problems reported here are local or systemic, and data on all renewal channels would make it possible to estimate the actual rate of online adoption. Finally, a single case limits transferability. A comparison of several licensing offices in

areas with different levels of digital access would show how far mediated adoption and the gap between institutional and public observability depend on local conditions.

CO-AUTHOR CONTRIBUTION

The authors declare no conflict of interest in this article. All authors contributed to the conception and design of the study, the analysis and interpretation of the data, and the writing and revision of the manuscript, and all authors approved the final version.

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