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# **Discontinuity of *E-Government* Service Innovation in Developing Countries: A Qualitative Study of the Pekanbaru City Government, Indonesia**

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**Abstract.** The sustainability of e-government innovation remains a major challenge in the digital transformation of the public sector, particularly in developing countries. Despite significant efforts to develop digital governance, many e-government initiatives experience discontinuity after their initial implementation. Pekanbaru City represents a clear example of this phenomenon, as only 33.5% of its e-government innovations launched between 2017 and 2023 have continued to operate. This study aims to analyze the underlying causes of e-government innovation discontinuity in local government contexts. A qualitative case study design was employed, using data collected through in-depth interviews, direct observation, and document analysis. The data were analyzed thematically based on Institutional Theory and the Technology–Organization–Environment (TOE) framework, following the steps of identifying meaning units, coding, categorizing, and formulating themes. The research was conducted over a period of three to four months. The findings reveal six key factors contributing to the discontinuity of e-government innovations: (1) infrastructure readiness and technological compatibility; (2) leadership, organizational culture, budgeting, and team coordination; (3) regulatory frameworks and vendor dependency; (4) compliance with standards, incentives, and sanctions; (5) social legitimacy and normative acceptance; and (6) organizational learning capacity and innovation effectiveness. The study contributes theoretically by strengthening the model of digital innovation sustainability through the integration of Institutional Theory and the TOE framework. Practically, it emphasizes the importance of strong institutional arrangements, consistent leadership, and cross-sectoral coordination to ensure the continuity of e-government innovations in local governance systems.

**Keywords.** e-government innovation, discontinuity, sustainability, Institutional Theory, TOE framework, local government

## **1. Introduction**

Along with the development of information technology and the ever-growing public needs, innovations in electronic-based public services have been made. Innovations in electronic-based public services in several previous literatures are referred to as *E-Government*

*Services* [1][2][3]. Referring to the Indonesian government's policy steps in e-government services innovation, it is a mandatory agenda as a basis at every level of government with an Electronic-Based Government System (SPBE). This is stated in Presidential Regulation No. 95 of 2018 concerning the Electronic-Based Government System and Presidential Regulation No. 132 of 2022 concerning the National Electronic-Based Government System Architecture, which states that e-government services innovation is an important step in supporting an electronic-based government system.

Furthermore, the implementation of e-government services is simply a shift in the process of providing government services, where service users can access government services electronically from their respective devices such as laptops, smartphones, and other handheld devices anywhere and anytime [4]. Thus, implementing *e-government service* innovations means that the use of information and communication technology is no longer a necessity but a requirement because it will make it easier for government organizations, the public, business groups, and other stakeholders to access government public services, for example, by enabling services to be accessed outside traditional office hours, saving costs and time [5].

The implementation of innovations related to *e-government services* can be carried out using a top-down, bottom-up, or combined approach. This approach emphasizes the initiation and adoption of innovation. The success of e-government service implementation often depends on the extent to which the approach taken can adapt to local needs and dynamics. Therefore, this approach is also a very decisive determinant in the success and continuity of an e-government service innovation [6][7].

Studying the concept of sustainability innovation also requires consideration of the preservation of the innovation. The basic concept of innovation is sustainability and the ability to preserve the use of technology over a long period of time [8][9]. Factors originating from the political context are the most dominant elements in influencing the sustainability of an innovation after a change in political leadership in the context of local government in Indonesia as a developing country. Several previous studies reinforce this argument, namely that political leadership plays a very important role in the successful adoption of innovation in the public sector [10][11][12].

In Indonesia, digital e-government innovation is developing rapidly in line with the central government's policy of greater transparency, speed, and accountability. Currently, there are 38 provinces consisting of the five largest islands that have implemented these policies, one of which is the city of Pekanbaru. Pekanbaru is a city in Riau Province and also the provincial capital, which has received the *Innovative Government Award* from the Ministry of Administrative and Bureaucratic Reform and the Ministry of Home Affairs for three consecutive years from 2019 to 2022. Based on data from the Pekanbaru City Research and Development Agency in 2024, every year the city government organization continues to produce innovations from 2017 to 2023, totaling more than three hundred and thirty-eight (338) e-government service innovations spread across 29 Regional Apparatus Organizations, 15 sub-districts, hospitals, the Regional Secretariat, and the DPRD Secretariat. However, only 113 innovations (33.5%) continued. The remaining 225 innovations (66.5%) did not continue.

Several previous studies analyzing the determinants of the continuity of electronic-based public service innovations were partial. Studies analyzing all determinants comprehensively are still limited, especially for e-government service innovations [13], so this study attempts to fill the gap in the body of knowledge. Several factors that influence the success or failure of these innovations include bureaucratic capacity and budget availability, political support from the government, leadership roles, and the availability of talented human resources

with adequate knowledge and skills. Other factors include innovations that do not meet the real needs of the community, unclear reward and punishment systems, risk management, lack of integration between systems, and lack of collaboration between public organizations, private sector, and non-profit organizations [14].

The above descriptions show that there is a research gap in the literature on public sector service innovation, particularly in e-government services innovation, which mostly examines the determinants of innovation continuity but does not examine the implications of innovation continuity and discontinuity on organizational performance. Therefore, there is a need for more comprehensive research that not only examines the continuity of public service innovation based on determinants but also looks at the aspects of policy innovation that support the continuity of e-government-based public service innovation. Thus, this study raises the topic entitled "Discontinuity of E-Government Service Innovation: A Qualitative Study of the Pekanbaru City Government, Indonesia."

## 2. Methods

This is a qualitative study with a case study design [15a]. Data collection techniques were carried out through in-depth interviews with 11 informants (consisting of 9 main informants and 2 supporting informants) plus interviews with 3 expert judgment informants (Table 1). Informants in this study were selected using *purposive sampling*. The criteria for selecting informants were: (1) Direct involvement in the implementation of *e-government*, (2) Representation of policy makers, and (3) Possession of specific knowledge and expertise. The triangulation process was also carried out by adding observation and document tracing processes. Data analysis used thematic analysis with the stages of meaning unit, coding, and category to obtain themes [16]. The research lasted for 3-4 months. Observations were carried out at each government agency in the city of Pekanbaru to see the sustainability of innovation and the obstacles and barriers causing the discontinuity of innovation. Document tracing was also carried out to examine regional regulations and policies related to *e-government* innovation. Each informant gave their consent to participate in the study by filling out an informed consent form to avoid *conflicts of interest* in this research.

**Table 1. Characteristics of Research Informants**

| No | Code Informants | Position Informant   | Informant involvement in innovation  |
|----|-----------------|--|--|
| 1  | I-1             | Mayor of Pekanbaru   | Regional heads and policy makers   |
| 2  | I-2             | Regional Secretary   | Coordinator of regional government administration, controller of implementation and monitoring of innovation |
| 3  | I-3             | Head of the Communication, Information, Statistics and Coding Agency | Provider, developer, and manager of data on information technology infrastructure                            |
| 4  | I-4             | Regional Innovation Staff, Research and Development Agency           | Facilitator and evaluator of regional research and innovation  |

|    |      |   |  |
|----|------|---|--|
| 5  | I-5  | Head of the Regional Revenue Agency                   | Regional financial data integration  |
| 6  | I-6  | Head of the Population and Civil Registration Office  | Digital population data provider and manager                                 |
| 7  | I-7  | Head of OPD Division                                  | Coordinator of digital program implementation                                |
| 8  | I-8  | District Head   | Digitalization policy implementer at the sub-district level                  |
| 9  | I-9  | Deputy Head of Personnel and General Affairs, DPMPTSP | Implementer and Coordinator of digital program and service implementation.   |
| 10 | I-10 | IT Staff 1  | Designer, developer, and security assurance specialist for digital systems   |
| 11 | I-11 | IT Staff 2  | Technical support and system maintenance provider                            |
| 12 | E-1  | Expert 1  | Public policy, finance, and digital transformation expert                    |
| 13 | E-2  | Expert 2  | Digital governance & local government innovation expert                      |
| 14 | E-3  | Expert 3  | Expert in organizational learning, administrative reform & change management |

Description: I = Informant, E = Expert

### 3. Results and Discussion

#### 3.1. Overview of Digital Innovation in e-Government in Pekanbaru City

Based on the results of the study, since 2017, the city of Pekanbaru has begun to adopt the concepts of *Smart City* and e-government as part of its transformation towards digital governance. In the initial stage, the city government built a digital foundation through the implementation of e-Office, an electronic correspondence system, digital signatures, and the establishment of a *Command Center* as a control center for information and public service supervision. Entering the 2020–2022 period, the COVID-19 pandemic has accelerated the digitization of public services. Various administrative services such as ID card, family card, birth certificate, land and building tax (PBB) payment, and business licensing have been transferred to online platforms and mobile applications, including a digital queuing system at health centers to reduce direct contact.

In the 2023 to 2025 phase, the development of e-government in Pekanbaru shifted from simply digitizing services to integrating and utilizing data. The city government began implementing an Electronic-Based Government System (SPBE) connected to national platforms such as the *Online Single Submission Risk Based Approach* (OSS RBA), Satu Data Indonesia, and a centralized public service application. In addition, innovations have emerged in the form of real-time public complaint applications, digital monitoring dashboards, and the use of big data to support decision-making. Pekanbaru's digital policy direction is now moving towards responsive, transparent, and smart governance that is oriented towards easy access to

public services only through digital devices, in line with the national target of Indonesia Digital 2045.

Some examples of innovations that were discontinued in 2021 and 2022 include: SIMUSI (Mutations Information System), SIMPONI (Civil Servant Career Pattern Information System), SIAGA (Disaster Mitigation Analysis Information System), SIPIKrI (Inspirational, Creative, and Innovative Youth Information System), SIMOLEK (Mobile Electronic Licensing Management System), and IKM (Community Satisfaction Index). In the context of developing countries such as Indonesia, existing research tends to focus only on partial determinants of continuity and does not comprehensively and thoroughly examine the determinants of electronic-based public service innovation. It explores in depth the potential causes of discontinuity from internal and external aspects and those related to the characteristics of the innovations that have been used.

Based on the results of this study, 18 causes of *e-government* innovation discontinuity were identified, divided into 6 themes, namely: (1) Infrastructure readiness and technology compatibility, (2) Local leadership, organizational culture, budget, and team coordination, (3) Government regulations and vendor availability, (4) Team compliance with standards, incentives, and sanctions, (5) Social norms and legitimacy, and (6) Team learning ability, and innovation effectiveness. The following is a description of the results of interviews, observations, and document searches.

### **3.2. Infrastructure readiness and technology compatibility**

Compatible technology is technology that can work well with other technologies, facilitating the integration of new systems into old systems and ensuring user efficiency and convenience. There are several reasons why the compatibility of innovation technology is important to avoid integration obstacles, save costs, and extend the life of devices. If innovations are not compatible, technical obstacles may arise. The application of compatible technology has been improved and better prepared, as can be seen from the following interview excerpt:

*"...we are also preparing standard innovation management procedures, which are well presented in the innovation. We have participated in regional innovation competitions and some have won at the national level. Core applications such as the Pekanbaru Smart City Dashboard, e-Permits, and Online Complaints are integrated into a single electronic-based platform..." (I-2)*

The interview excerpt explains that in addition to preparing standard innovation management procedures, public service efficiency is also being pursued to support better improvements and preparations for the implementation of compatible technology, as stated by the following informant:

*"...we are currently proposing a mayor's regulation on regional innovation management systems, so that sustainability is guaranteed by the structure..." (I-4)*

The next informant's opinion confirms that there is a proposal to the city government to ensure the sustainability of innovation through strong procedures and structures. The goal of improving public service efficiency is also added by the following informant:

*"...improving the efficiency of public services (Mayor of Pekanbaru). Bridging complaints or technical obstacles from the sub-district to the technical OPD. For example, if the sub-district application server is down, we coordinate with Kominfo (Head of Sukajadi Sub-district), we monitor uptime, response time, and integration, for maintenance and development..." (I-3)*

Meanwhile, the informant above added that the technical implementers of the OPD address each complaint with maintenance and technological development, even though in practice several other obstacles are still encountered, including: CPU/Memory *overload*, ISP network disruptions, power outages at the data center, and *errors* in the application after *updates*. The following are excerpts from the interview:

*"...the most common technical obstacles are usually CPU/Memory overload, ISP network disruptions: Sometimes the upstream is down, so we switch routes to the backup ISP. Power outages in the data center: Even though there is a UPS, if it lasts too long, we have to switch to a manual generator. Application errors after updates: Sometimes new releases are not yet optimal, causing 500 errors..." (I-10).*

*"...we need additional licensed monitoring tools, increased bandwidth, advanced security training (ethical hacking), and additional budget for server upgrades..." (I-11).*

Based on the above narrative, it appears that the digital innovations used still often encounter obstacles, such as when there is a sudden surge in transactions (e.g., tax payment day), they have to *scale up* or *load-balance*, which is to increase system capacity by expanding resources on an existing server or machine. Upstream ISP network disruptions occur and the route to *the backup* ISP must be changed. During prolonged power outages, they must switch to a manual generator.

Based on the results of the researcher's observations, they also noted Mayor Regulation No. 43 of 2019 concerning *the Roadmap* for Strengthening the Regional Innovation System of Pekanbaru City 2018-2022 and the Strategic Plan prepared by the Pekanbaru City Research and Development Agency for 2023-2026. This means that the local government also contributes to improving these digital information services. The use of information technology to simplify and improve transactions between the government and other actors, such as businesses, other government agencies, and the community.

The implementation of *e-government* at the local government level using a framework of stages of development ranging from *e-information*, *e-transaction* to *e-participation* and highlighting institutional capacity, both internal and external, as key factors for success. The author identifies triggers such as technological readiness, as well as obstacles such as weak regulations and lack of political support [17]. Other studies also explain that the development of e-government at the local government level must be integrated with an institutional perspective to understand the acceptance and implementation of e-government. This article identifies supporting factors such as technological limitations that affect the success of the implementation of public service digitalization. The author highlights that technology alone is not enough; regulations, organizational norms, and citizen desires play an important role and proposes that further research should explore citizen engagement, data-driven innovation, and the reality of e-government in different local contexts [18].

Meanwhile, according to *the World Bank*, *e-government* is the use of information technology and digital innovations such as wide area networks, the internet, and *mobile computing* by governments to transform their relationships with the public, businesses, and other stakeholders to achieve innovative forms of public information and service delivery. It further states that the exploration of digital innovation in public administration is not only the adoption of technology but also often the diffusion of administrative policies. The capacity of technological infrastructure plays a very important role in the sustainability of public digital service development [19].

A different opinion is expressed that, in addition to technology compatibility, efforts to adapt through innovative behavior that continues to be developed in the sustainability of digital innovation are needed so that the resulting innovations can develop in line with future technological advances [20]. This is reinforced by the TOE framework, which states that there must be strong integration between technology, organization, and environment because these three aspects influence the adoption of innovation, but not all factors have been optimally implemented. For example, aspects such as system reliability, organizational capacity, and employee knowledge still receive little attention [21].

Finally, the author argues that the compatibility of technology and the readiness of an innovation's infrastructure are closely related to other aspects such as system reliability, regulations, organizational capacity, norms, and public desire. All of these things must be in harmony and integrated to ensure the continuity of the innovation.

### **3.3. Regional Leadership, Organizational Culture, Budget, and Team Coordination**

Leadership plays a very important role in encouraging the sustainability of innovation, guiding direction, providing support, and maintaining commitment to innovation. Without strong support and leadership, innovation tends to be unsustainable, even if the technology is adequate. Some of the leadership roles identified in this study include: being responsible for the continuity of innovation, ensuring the continuity of innovation programs, bridging technical implementation, and regenerating innovators. The following is an excerpt from the interview:

*"...I always emphasize to all department heads and sub-district heads that innovation is not a temporary project. It must be maintained. If it is not maintained by the leadership, the point is that there must be consistent direction..." (I-1).*

*"...maintaining the continuity of program implementation, issuing assignment letters, and regulating the digital innovation reporting system. One of the main challenges. I have instructed that employee transfers must be consulted first. We want there to be innovation-based rewards in functional position assessments, so we formed a Regional Innovation Coordination Team..." (I-2)*

*"...the budget is still limited, sometimes the innovation funding scheme has to compete with routine OPD programs (I-4)*

Based on the interviews, regional officials continue to remind and instruct staff to maintain innovation, but consistency in these instructions is also necessary. There are still cases of employee transfers without consultation with leaders, resulting in vacancies in certain positions. Budget constraints are also still an issue in terms of digital innovation. The informant

added that performance-based *rewards* need to be given to employees. In addition, the competence of human resources in agencies needs to be improved or optimized in its implementation. The following is an excerpt from the interview:

*"...human resources and user commitment are already good, but the agency is not using them optimally..." (I-3)*

*"...it is necessary to strengthen human resources by building a reflective culture: evaluation, documentation, and dissemination of innovation learning on a regular basis..." (E-1)*

The interview excerpts illustrate that existing human resources are adequate, but optimization has not been fully implemented. Experts also emphasize that strengthening human resources is necessary to improve efficiency and foster a culture of continuous learning. This ensures that if a position becomes vacant, existing human resources are already trained in the implementation of digital innovation.

Leadership plays a central role in shaping policy direction, mobilizing resources, and creating an organizational culture that supports digital transformation, facilitates collaboration and coordination, encourages rapid response to change, and emphasizes continuous learning. The article "*An Empirical Analysis of Factors Influencing Internet and E-Business Technologies Adoption*" explains that there is an element of leadership, and specifically, management and top-level management support are cited as one of the organizational factors that influence technology adoption in Canada. It further explains that the sustainability of innovation depends on the commitment, vision, and active involvement of organizational leaders. Leadership that supports digital innovation encourages the allocation of resources, financing, and organizational culture change so that employees are better prepared to accept new technologies. This study found that leadership support has a positive and significant influence on the level of innovation adoption because proactive leaders not only set the strategic direction but also act as agents of change who reduce internal resistance to new technologies [22].

The role of the government in this case is more about policy orientation in a region. How the national innovation system and mission-oriented strategies outlined by the government are developed. This means that the role of leadership is global in creating innovation policies [23]. Other studies add that through the commitment and consistency of leaders, a strong government organization will continue to foster an organizational culture based on integrity values. This shows that the role of leadership in the context of organizational culture has an influence on the continuity of innovation [24]. However, without effective coordination, innovation tends to experience stagnation, overlapping functions, or even rejection from other units if there is no element of collaboration between leadership and organizational culture [25]. In addition, the availability of budget funds or fund allocation is one of the main challenges in the implementation of *e-government*. Insufficient budget assignment can hamper the development of e-government service innovation. It should also be added that the budget allocation is also intended for development, maintenance, training for the innovation team, and equipment upgrades, which are forms of tangible support for the sustainability of innovation [26].

The author argues that the causes of innovation discontinuity in public services in Pekanbaru City are inseparable from many aspects, apart from leadership, organizational

culture, budget, and the role of the team. Therefore, in this study, there are many causes of innovation discontinuity that must be considered by local government leaders in the future.

### **3.4. Government Regulations and Vendor Availability**

The government's role in regulating innovation is to encourage the acceptance of innovation. The government issues regulations that encourage organizations, especially government agencies, to digitize, provide technology-based public services, and be open in data management. The central government, through the Ministry of Home Affairs and other agencies, encourages innovation at the regional level, for example through the Public Service Innovation Competition organized by the Ministry of Administrative and Bureaucratic Reform. The Regional Innovation Competition held by the Ministry of Home Affairs is part of the implementation of Article 386 of Law No. 23 of 2014 concerning Regional Government.

Several regulations have been drafted by local governments, including *the Roadmap for Strengthening the Regional Innovation System of Pekanbaru City 2018-2022* and the Strategic Plan drafted by the Pekanbaru City Research and Development Agency for 2023-2026 and the Regional Medium-Term Development Plan (RPJMD). This can be seen in the following three interview excerpts:

*“...We cannot innovate as we please; we must follow the national guidelines. Sometimes this limits the flexibility of the region, but on the other hand, it provides clear direction and standards...” (I-2).*

*“...We have included it in the Regional Medium-Term Development Plan (RPJMD) and strategic planning. Even digital innovation performance indicators have been included in the performance evaluation of regional apparatus (I-4).*

*“...Our vendors open tickets in accordance with the SLA, then coordinate through tickets and monthly meetings. In addition, we have begun to promote sustainability through the procurement of Maintenance Service Agreements (MSA) with vendors...” (I-3)*

Based on the interview excerpts, the informant added that the availability of technology vendors shows how well local governments can collaborate with experienced and trustworthy technology providers or IT consultants. Vendors with technical capabilities and an understanding of the needs of the public sector can support sustainable system development, both in terms of technology and change management. The existence of vendors in local government innovation in Indonesia is an important element that often presents both challenges and opportunities in the implementation of innovation, especially those related to technology and digitalization.

Government regulations reflect the influence of central and local rules or policies on the implementation of digital innovation. Regulations can be a driving or inhibiting factor for innovation, depending on the flexibility and clarity of the policy. Government regulations are an important external factor that influences the level of innovation adoption, especially in developing countries where policy and regulatory support play a major role in accelerating or hindering technology diffusion. The results show that conducive regulations strengthen organizational readiness and accelerate the digital innovation process, while policy uncertainty can be a major obstacle to the application of new technologies [27]. Other research in the United States adds that government regulations, both economic and social, can influence innovation.

Regulatory attributes such as strictness or the level of regulatory burden in terms of flexibility of implementation and availability of information affect innovation capacity. This means that regulations do not always close the space for innovation; in some cases, regulations can encourage innovation, but this depends heavily on the design of the regulations and their context [28].

The role of vendors in *e-government* digital innovation is crucial because they not only function as technology providers but also as strategic partners of the government in realizing the digital transformation of the public sector. First, vendors act as technology solution providers by delivering digital infrastructure, software, security systems, and data platforms that form the basis for the implementation of electronic-based government services. Second, in the context of public partnerships, vendors function as co-creators of innovation, being involved from the planning stage to implementation to design digital solutions that suit the needs of the community and government policies. Third, they also play a role in knowledge transfer and digital capacity building by providing technical training to government officials so that they are able to independently manage and develop digital systems. Fourth, vendors are also responsible for system maintenance and updates to ensure sustainability, security, and interoperability between agencies in the use of government information technology. Finally, vendors play an important role as mediators between innovation and regulation, helping the government adjust the application of new technologies to remain compliant with policies, data security standards, and applicable regulations.

Thus, effective collaboration between the government and vendors can accelerate the creation of a more efficient, transparent, and responsive bureaucracy to public needs in the digital era. Vendors with technical capacity and an understanding of the needs of the public sector can assist in the development of sustainable systems, both from a technical and change management perspective.

### **3.5. Team Compliance with Standards, Availability of Incentives and Sanctions.**

Compliance with standards refers to the obligation of government organizations to follow rules, procedures, technical guidelines, and formal operational standards set by higher authorities. This is part of an external pressure mechanism that encourages organizations to adopt certain practices, including in terms of public service innovation, digitization, or internal management. Incentives are a form of reward given by external authorities to encourage public organizations to comply with certain rules, regulations, and standards, including in the implementation of innovation. In other words, incentives are a positive motivational tool to encourage government agencies to innovate in accordance with formal policies regulated within the regulatory framework.

Compliance with innovation standards begins at the innovation proposal submission stage, covering the completeness of the format to the preparation of internal standard procedures related to innovation. There are several standards that must be complied with. The following is an excerpt from the interview:

*"...in the selection of innovation proposals, there are three selection stages, namely description and administration sheets: format feasibility, completeness of attachments, regulatory status..." (Balitbangda, Kominfo, BPKAD). Technical, financial, impact, and public testing aspects are examined. If the proposal is considered strategic enough, we hold an open presentation in front of stakeholders..." (I-4).*

“...we have internal operational standards for the implementation of online services, including service process flowcharts, application usage guidelines, and digital complaint protocols. These standards are also updated annually to keep pace with system developments...” (I-9)

“...we hope there will be incentives or recognition for OPDs that consistently maintain the sustainability of their innovations...” (I-9)

The results of the interviews with the informants above explain that the procedure for submitting digital innovations is carried out in several stages and follows existing standards. Technical checks and public impact tests are also carried out. The innovations created also have operational procedures for their use and are continuously updated every year. Meanwhile, the implementation of incentives and sanctions has not yet been seen.

Based on the results of observations, there are no strict sanctions for discontinuing innovations that have been created. The reason for this is likely due to the many factors that influence the continuity of an innovation that has been created. In *Institutional Theory*, compliance with standards in the regulatory pillar is a form of organizational adjustment to legal and administrative pressure from higher authorities. In the context of government innovation, this means that every form of innovation, whether in public services, information systems, or internal management, must be in line with established rules and standards in order to obtain legitimacy, efficiency, and sustainability [30].

In the regulatory pillar of *Institutional Theory*, incentives are positive mechanisms used by external authorities to encourage government organizations to comply with rules and implement innovations appropriately. Incentives can take the form of funds, awards, rankings, training, or other forms of support, all of which are designed to accelerate and stimulate the innovation process in the public sector [31]. Innovation incentives focus on how public support, such as research and development subsidies and government funding, encourages continuous innovation. Incentives serve as external stimuli that reduce financial risk and uncertainty, which are often major obstacles to innovative activities. The study also analyzes the effectiveness and sustainability of the impact of incentives, highlighting the risk of dependence on government assistance if it is not accompanied by an increase in the internal capacity of agencies [32][33].

Meanwhile, sanctions in *e-government* digital innovation play an important role in enforcing compliance, maintaining system security, and ensuring the accountability of government digital program implementation. Through sanctions, officials and partners are encouraged to comply with operational standards, use budgets efficiently, and avoid data misuse or digital ethics violations. In addition to functioning as a control and deterrent to violations, sanctions also help build a culture of discipline, professionalism, and responsibility in the development and application of digital innovation in the government environment.

### **3.6. Social Norms and Legitimacy**

Social norms are the collective expectations of society or the community regarding how organizations, including the government, should act or behave. Social norms are not legally written, but are instilled through culture, customs, public opinion, or community moral standards. In the context of innovation in local government, social norms can be seen from the level of public trust in the digital services provided. There is enthusiasm or resistance to change in the way services are provided. The administrative habits of the community also play a role. Community participation in complaint applications, surveys, and so on.

Although support for digital services continues to increase, their distribution is still uneven. In big cities such as Jakarta, Bandung, and Surabaya, the public is becoming familiar with service applications such as SIMPEL, PEKA, JAKI, and e-Lapor. However, in many regencies or cities, residents still prefer direct services due to low digital literacy, concerns about personal data security, and doubts about the speed of digital services offered by the government. The following are some excerpts from interviews with informants.

*"...we monitor from the automatic reporting system, and also take feedback from residents. We also participate in SPBE audits and community satisfaction index evaluations..."*  
(I-6)

*"...on the technical side, we monitor uptime, response time, and integration, evaluating based on user satisfaction. We ask the Ministry of Communication and Information Technology to collaborate with universities to conduct independent evaluations of the applications used..."*  
(I-3)

The interview excerpts explain that the functions of norms and socialization have been carried out in the form of *feedback* from the community in the form of a community satisfaction questionnaire. Another thing that has been done is to collaborate with the university's Student Affairs Office ( ), in this case with the University of Riau, in conducting an independent evaluation.

Based on the observation results, a concrete example of a survey in Pekanbaru is the satisfaction survey on the Disdukcapil Service Application (2021). On the official Disdukcapil Pekanbaru website, they note a number of innovations that were evaluated through the survey, including: SINOPSIS (recording of electronic ID cards for students), SIPINTAR (services for homeless people), MENWA (PDF delivery assistance via WhatsApp), BAMSOS (information via social media), AKAPELA (active complaint contact), Waiting Services, SCHOOL DICTIONARY (recording of new students), KENALI AKSI DUKCAPIL (mobile services). This shows that Disdukcapil has systematically collected user feedback on their innovations. The Kulim Subdistrict Community Satisfaction Survey (SKM) (2021–2022) introduced this innovation as a platform for evaluating subdistrict public services. This innovation allows residents to provide *feedback* at any time via a *Google Forms* link and is integrated into the subdistrict's social media.

Social norms in public service innovation in Pekanbaru City, as in many other regions in Indonesia, can influence the acceptance, use, and sustainability of innovation. The following are some of the real obstacles that occur based on the social conditions of the Pekanbaru community, namely: a culture of dependence on face-to-face interaction, low digital and technological literacy, skepticism towards change, innovations that are transparent or automatic are often rejected because they are considered to eliminate the "informal space", and low active community participation. This is also supported by research explaining that in the context of e-government, "the intensity of a person's desire to evaluate an activity constitutes behavioral intention. Based on the idea of intention, user behavior and IT adoption are driven by the initial purpose behind IT use. This means that the attitudes and behaviors of community acceptance are highly variable in evaluating and using innovation [34].

Social norms influence the adoption of digital public services. There was a large-scale field experiment in Finland based on social information. There were interventions that showed

how other people in the environment who had used digital services successfully increased the level of digital service usage for groups that were previously slow to adopt them [35].

This also illustrates that the role of social norms in the community of innovation users can also determine the continuity of e-government innovation. However, in Pekanbaru City itself, the form of socialization or introduction of digital innovation is perceived to be uneven, as reflected in the community's response on the community satisfaction website. Therefore, massive socialization of the use of innovation is needed, and the government also needs to conduct a more in-depth study to create innovations for the community, especially those with low levels of education and knowledge about innovation.

### **3.7 Team Learning Ability and Innovation Effectiveness.**

Organizational learning ability in the context of public service innovation in the Pekanbaru City Government is the capacity of government agencies to identify experiences, review mistakes or successes, and then turn them into lessons that can improve service quality and innovation in a sustainable manner.

A concrete example is the improvement of the service system at the Population and Civil Registration Office (Disdukcapil). Initially, there were many complaints from the community regarding long queues and irregularities in service at the office. By listening to these complaints, Disdukcapil took the initiative to innovate with by launching AKAPELA (service via WhatsApp) and SILADUK (a digital-based Dukcapil service system). As a result, service time became faster, complaints decreased, and satisfaction levels increased. This is the result of a continuous learning process based on previous manual service experiences.

Based on observations, organizational learning is also evident in Kulim District, which launched five digital innovations from 2022 to 2024. The background to this was Kulim District's difficulty in reaching the community and obtaining feedback efficiently. As a solution, they developed innovations in the form of online forms, social media for public services, and online SKM. This learning was based on an evaluation of the lack of community participation and the need for a fast reporting system.

The learning and development process also took place at the Public Service Mall. Initially, several services in the agency were not integrated. The lesson learned was that the city government learned from the practices of other cities and local community complaints about slow bureaucracy. To overcome this, the public service mall was established to combine the services of various agencies in one place. As a result, the city of Pekanbaru won an award in the "Excellent Service" category from the Ministry of Administrative and Bureaucratic Reform.

Based on interviews with several informants, technical and operational learning processes have also been conducted to improve services. The following are excerpts from the interviews:

*"... The addition of licensed monitoring tools (currently still open-source, often delay alerts). Increased bandwidth for servers to the data center to avoid bottlenecks. Advanced security training (ethical hacking) so that we can conduct independent penetration tests..." (I-10)*

*"... We conducted data analysis training for agency staff so that proposals are more evidence-based. We hope that the Ministry of Communication and Information Technology can provide advanced technical training for internal administrators..." (I-4)*

*"...we must regularly conduct refresher training, as some employees are adaptive to technology, while others need intensive assistance (I-9).*

*"...the main challenges are digital literacy and inequality of resources. Not all sub-district offices have adequate computer equipment and networks. Therefore, it is necessary to improve digital literacy (I-8)*

*"... advanced training for users so they can create better user stories and test cases (I-3).*

The expert's opinion regarding organizational learning capabilities is considered very important because it can be used as a moderator or mediator that bridges the continuity of innovation. Without organizational learning, all frameworks will collapse during implementation. The following is an excerpt from the interview:

*"...innovation often does not become a lesson, but merely a project. However, I suggest adding the dimension of organizational learning as a moderator or mediator. Without organizational learning, all frameworks will collapse during implementation..." (E-3)*

*"...an internal learning unit (knowledge management) is needed. Internal innovation teams can become agents of change if given space and appreciation. Employee rotation must consider the sustainability of competencies..." (E-2)*

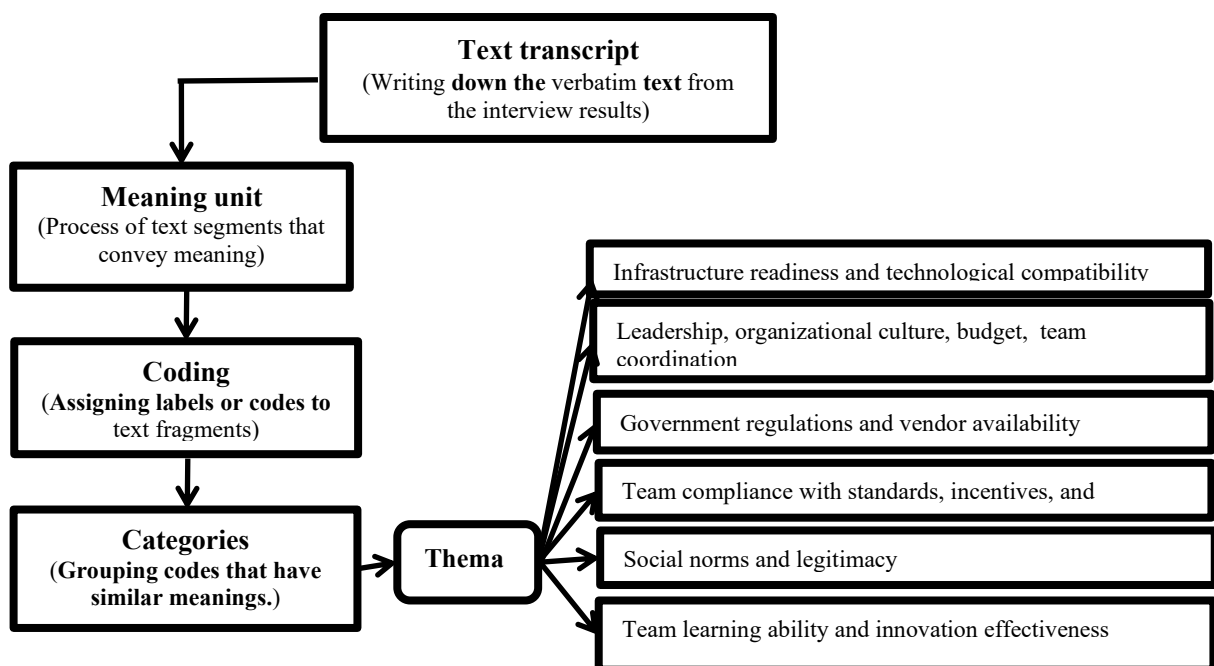
*"...Human resources must be strengthened through continuous training, talent mapping, and the formation of internal innovator communities. The key is not only training, but also building a culture of learning and knowledge sharing..." (E-1)*

Often, innovation fails because employees are unable to adapt. Organizational learning encourages training, knowledge recording, and responsive regeneration. Inter-unit learning and the exchange of best practices will accelerate the spread of innovation across sectors and regions. Organizational learning ability in the cognitive pillar of institutional theory is the ability of government organizations to collectively acquire, process, and internalize knowledge and experience, then use it to improve performance, adopt innovation, and adapt to environmental changes [36]

Learning capabilities in digital transformation innovation emphasize collaboration with universities. In this learning process, higher education institutions need to adjust their structure, values, operational processes, and organizational culture so that digital transformation is not only technical but also comprehensive. The success of digital transformation depends on the institution's readiness to engage in continuous learning [37]. The innovation learning process in this context is not only about adopting new technologies, but also about learning how to work within institutional frameworks, creating legitimacy, organizing new collaborations, and systematically changing learning and teaching practices at the institutional level. This avoids "isolated innovation" that only exists in one agency. Maintaining the Relevance of Innovation to Social and Technological Change. Without learning, innovations that were previously effective can become outdated. Learning organizations make local governments more sensitive to changes in community needs and technological developments [38].

In the context of research on digital e-government innovation in the city of Pekanbaru, the learning process has not yet been carried out continuously. This can be seen when there is a change of employees, as innovation experiences obstacles in its continuity. Therefore, it is necessary to strengthen human resources in the innovation team, supported by all related parties.

In general, based on the results of the study, there are many aspects of digital innovation discontinuity in Pekanbaru City. The researchers attempted to summarize the results of this study, as shown in Figure 1. There are six causes of innovation discontinuity in *e-government* services in Pekanbaru City. The results of this analysis can be seen in the following figure.



**Figure 1. Research Summary**

After conducting a thematic analysis, the results of the research on the discontinuity of digital *e-government* innovation in the city of Pekanbaru revealed six causes, as outlined in the summary in Figure 1. Based on the findings of this study, several aspects need to be strengthened, including: the need to strengthen servers and update applications regularly according to user needs, a high level of commitment from leaders, in this case regional heads, the availability of adequate budgets, proposing performance-based incentives, as well as binding sanctions in accordance with applicable regulations. Last but not least, improving employee capabilities in the concept of *organizational learning* culture must continue to be developed for the effectiveness and efficiency of implementing digital e-government innovation continuity in the city of Pekanbaru.

#### **4. Conclusion and Suggestion**

The results of this study describe six causes of discontinuity in e-government innovation in Pekanbaru City, including: infrastructure readiness and technology compatibility, regional leadership, organizational culture, budget, and team coordination, government regulations and vendor availability, team compliance with standards, incentives and sanctions, social norms and legitimacy, and team learning and innovation effectiveness.

Recommendations and suggestions for relevant parties such as the local government of Pekanbaru City include: strengthening the innovation server, consistency in the commitment of local leaders, and the need to improve the concept of a continuous learning culture.

The limitation of this research is that the researchers did not directly involve the community as users of the innovation, although this was minimized by conducting observations to see the Community Satisfaction Index of users of the service application. Therefore, for future researchers, we suggest using quantitative research to see the response of innovation users more broadly. This study provides theoretical implications for strengthening the digital innovation sustainability model and, in practical terms, encourages the need for strong institutional and cross-sector coordination to maintain the continuity of *e-government* innovation.

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