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LEVEL OF DIGITALIZATION OF INDONESIAN LOCAL GOVERNMENT THROUGH LITERATURE REVIEW: CASE STUDIES OF SAMARINDA CITY AND BALIKPAPAN CITY

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ABSTRACT

Government digitalization is becoming vital in advancing public governance throughout numerous nations, including Indonesia. Digital government is the culmination of e-government evolution and has become a primary emphasis in local government strategies. Despite several digitization projects at the regional level, there remains a paucity of studies investigating the process of government digitalization at the district or city level, particularly with the implementation of digital government evolution. This study uses a literature review methodology to address this gap by analyzing government digitization in two cities in East Kalimantan, specifically Samarinda City and Balikpapan City. The data is derived from scientific articles obtained via Google Scholar, employing Publish or Perish software to categorize pertinent literature. The results indicate a yearly increase in government digitization research, primarily concentrating on public services in Samarinda and infrastructure development in Balikpapan. In summary, these two cities exhibit four stages of digital progress, with certain stages being more prominent than others. This report offers significant insights into the implementation and obstacles of government digitalization at Indonesia's district and city levels.

Keywords: Digital Governance; E-Government; Samarinda; Balikpapan.

ABSTRAK

Digitalisasi pemerintahan menjadi vital dalam memajukan tata kelola publik di banyak negara, termasuk Indonesia. Pemerintahan digital merupakan puncak dari evolusi e-government dan telah menjadi penekanan utama dalam strategi pemerintahan daerah. Meskipun sejauh ini telah ada beberapa proyek digitalisasi di tingkat daerah, namun masi sedikit penelitian yang menyelidiki proses digitalisasi pemerintahan di tingkat kabupaten ataupun kota, khususnya dengan penerapan evolusi pemerintahan digital. Penelitian ini menggunakan metodologi tinjauan pustaka untuk mengisi kekosongan penelitian tersebut dengan menganalisis digitalisasi pemerintahan di dua kota yang ada di Provinsi Kalimantan Timur, khususnya di Kota Samarinda dan Kota Balikpapan. Data yang dianalisis berasal dari artikel ilmiah yang diperoleh melalui Google Scholar, dengan menggunakan perangkat lunak Publish or Perish guna menghasilkan literatur yang relevan. Hasilnya menunjukkan peningkatan tahunan dalam penelitian digitalisasi pemerintahan, terutama yang berkonsentrasi pada layanan publik di Samarinda dan pembangunan infrastruktur di Balikpapan. Singkatnya, kedua kota ini menunjukkan empat tahap kemajuan digital, dengan tahap tertentu lebih menonjol daripada yang lain. Laporan ini menawarkan wawasan penting tentang pelaksanaan dan hambatan digitalisasi pemerintahan di tingkat kabupaten dan kota di Indonesia.

Keywords: Digitalisasi Pemerintahan; Pemerintahan Digital; Samarinda; Balikpapan.

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BACKGROUND

Digital technology has become a necessity in government builders' agendas. (Luna-Reyes & Gil-Garcia, 2014). At present, the Government of Indonesia has directed the development of government services towards digital government, and this is clearly stated in the two highest regulations in Indonesia which underlie its implementation, namely, the Regulation of the President of the Republic of Indonesia Number 95 of 2018 concerning Electronic-Based Government Systems. (Harisanty & Anugrah, 2022; Pemerintah Indonesia, 2018). Government Regulation of the Republic of Indonesia Number 71 of 2019 concerning Electronic Systems and Transactions Implementation. Before these two regulations, digital government development initiatives in the realm of E-Government in Indonesia had started much earlier, namely in 2003, with Presidential Instruction No. 03 of 2003 issuing the National Policy and Strategy for E-Government Development. This Presidential Instruction No. 3 of 2003 became the basis and initial step for governments at all levels, both central and regional, to take digital innovation steps to implement and develop E-Government nationally. (Kumurur & Ratnaningsih, 2008; Sinaga et al., 2014).

On the other hand, Internet use in daily activities in Indonesia has increased in recent years. (Nuswantoro, 2015; Yohana, 2018). Based on data from the Internet Survey Report of the Association of Indonesian Internet Service Providers (APJII), internet user penetration in Indonesia in 2021-2022 reached 77.02%, an increase compared to internet usage penetration in 2019-2020, which was 73.70% (APJJI, 2022). The growth in penetration of internet users from 2021-2022 can be seen in Figure 1 below. Figure 1 shows that 210.02 million Indonesians have used the Internet to support their daily activities. With a high number of Internet users, the presence of the Internet can be a good resource in improving the quality of communication between communities and stakeholders, in this case, the government/ institutions, in providing public services. (L. Agustina et al., 2018; Meladia et al., 2018). In addition to internet user penetration, in terms of digital literacy, the level of digital literacy index in Indonesia has continued to increase from an index score of 3.47 points in 2020 to 3.49 points in 2021 (Kominfo, 2020, 2022)Although this score is moderate, it shows how internet use and digital understanding in Indonesia grow yearly. Based on this fact, the presence of the Internet must be considered an opportunity to improve the quality of public services through the use of ICT based on the Internet network. (Crothers, 2015; Fanida, 2018; Slamet et al., 2009).

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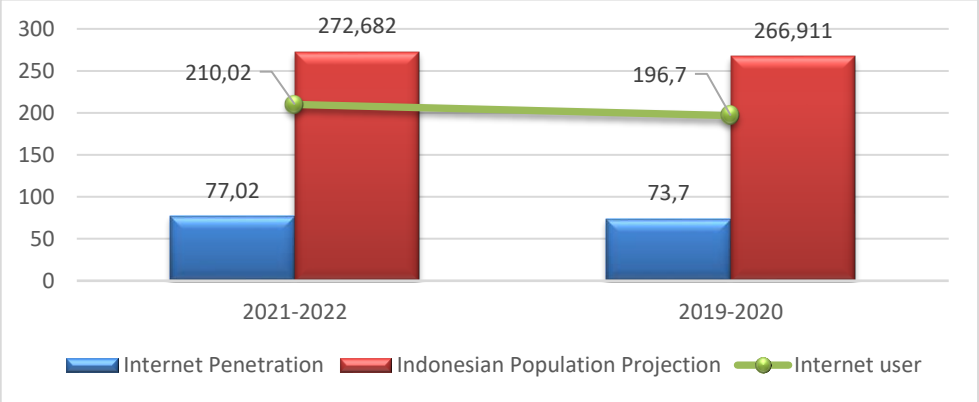
Figure 1. Internet Penetration and Use 2021-2022



Sources: (APJJI, 2022)

Currently, the presence of digital government is considered the end point of achievement in developing e-government. (Joon Kim et al., 2016). In other words, the presence of digital government will be impossible if the development and growth of a healthy E-Government environment does not accompany it. The condition of a country's readiness to adopt public services based on digital services must pay attention to several aspects of preparedness, namely in terms of Strategy, Technology, Organization, People, Environment, and Budget. (Nugroho, 2020)External factors, such as the health crisis several years ago, can also influence the acceleration of digital transformation in public services. (Ilyas & Bahagia, 2021).

In terms of benefits, the presence of digital government has improved various public service fields, such as health services. (Cai & Chen, 2021; Liu & Shi, 2021; Setianto, 2016), tourism services (Kalbaska et al., 2017; Sianipar & Liyushiana, 2019; Sudirman et al., 2020), local-level government services, local (Afriyani et al., 2021; D. P. Agustina, 2021; Ruru et al., 2020) as well as services in general elections (Akbar et al., 2021; Bertot et al., 2020). However, at the implementation stage, Kupi & McBride (2021) and (Mutiarin et al., 2021) Underlined the concept of agile development (Agile Development) in digital government development as a powerful way to increase the presence of digital government more effectively and efficiently.

Based on regulatory certainty, internet user numbers, digital literacy rates, and increasing awareness of the quality of public services with digitalization in government services, the opportunity for an ideal digital government is undoubtedly wide open in Indonesia.

Many digital government development initiatives have been implemented at the local government level. (Tampubolon, 2016; Tonggiroh, 2018). Based on the observations that the author has made, the author finds that current research on the digital government theme has focused a lot on the issue of the quality of digital services that have been presented. (D. P. Agustina, 2021; Nugroho, 2020; Prakoso, 2022) as well as evaluating available web

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service portals (Andhika & Restuputri, 2016; Irawan & Hidayat, 2021; Tonggiroh, 2018; Wibawa, 2020).

Although there have been many digitalization initiatives at the local government level, their implementation at the district/city level is still limited. This study aims to fill this gap by examining the level of government digitalization in two large cities in East Kalimantan Province, Samarinda and Balikpapan. These two cities have different characteristics, thus providing diverse perspectives on implementing digitalization at the local level. So far, no research has examined the extent to which digital government development has been carried out at the district/city level using the digital government evolution classification variable approach designed byThomasz Janowski (2015). The author conducted this study to fill these two gaps using the following problem formulation.

RQ 1: To what extent is the level of government digitalization in East Kalimantan Province reviewed about the evolution of digital government in Indonesia?

The author realizes this study also has limitations, including limited data that rely only on secondary literature publications from existing journals and articles. Therefore, the results of this study only reflect the perspectives in the published literature and do not include direct interviews or field observations.

METHOD

This research uses secondary data from literature publications and scientific articles related to digital government in the two cities, Samarinda City and Balikpapan City. This research used the Google Scholar database as a data source to search for publication manuscripts related to digital government. The data search process uses Publish or Perish software to correctly classify the resulting publications based on the theme's relevance. Publish or Perish is software that can quickly and effectively present a collection of scientific papers based on various categories that the user can determine. (Jacsó, 2009).

Determining the keywords to use begins with carefully identifying and observing several keywords related to digital government that are familiar to researchers in the scientific articles they produce in the Google Scholar database in discussing the digital government theme. Several keywords used in this research can be seen in Table 1 below. The publication name category or document source selected in the data mining process only focuses on scientific article manuscripts originating from scientific journal publication portals.

Next, we classify the focus of the study on each city. This research highlights the title words by including the name of each city, namely Samarinda City and Balikpapan City. This step is essential so that the document produced is closely related to the city being discussed. A collection of documents related to the digital government theme in each town has been made using several document identification steps. The next step is to mine the resulting database into a RIS/References Manager-type file. This RIS/References Manager file is selected to carry out manual filtering stages on the collection of documents that have been produced. This filtering process is carried out through the Mendeley reference manager

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software. Mendeley is one of the most popular reference management software among students and students. (Zahedi et al., 2017).

After manually filtering using Mendeley by removing duplicate manuscripts and manuscripts unrelated to the study theme, the final total number of documents reached 232 for Samarinda City and 151 for Balikpapan City. This collection then becomes the final document that will be analyzed in the Nvivo 12 Plus software to explore the study's scope and then classify digital stages at certain levels according to Janowski's digital government evolution parameters. The Nvivo 12 Plus software is part of the Qualitative Data Software Analysis (QDSA) (Edwards-Jones, 2014; Paulus et al., 2017).

Table 1. Keywords and document processing steps

Component	Description
Publication Name	Only focuses on journal sources.
Title Words	Samarinda & Balikpapan
Keywords	Pemerintah Digital Digital Government Digital governance E-Government E-Government Electronic government Digitalization Digitalization
Years	Years Focusing on 2002-2022
Mendeley	Conduct manual screening for the relevance of articles to digital government issues; Screening for duplication of manuscripts; Produce relevant articles, which will then be analyzed.

Sources: processed by the author

RESULT AND DISCUSSION

The research findings are divided into three parts. The first part discusses the intensity of publications produced regarding Digital Government in each city. In the second part, we carefully identified the issues most addressed in the collection of documents made in each town. Next, last but most importantly, we classify the stages of digital evolution that have been achieved based on careful analysis through coding in QDSA Nvivo 12 Plus of the documents analyzed. This classification can then show how far the digital government stage in each city has progressed.

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Publication Intensity

The intensity of publications that have been produced discussing digital government issues in Samarinda City and Balikpapan City. Based on the document data mining process that has been carried out, a total of 2,064 documents related to the City of Samarinda and 835 documents about the City of Balikpapan have been produced. However, at a later stage, the collection of documents was filtered again through the Mendeley application to select multiple documents, which resulted in the City of Samarinda with 1,902 documents and the City of Balikpapan with 511 papers.

To ensure the relevance of the document to the issues being studied. So, a careful analysis of a collection of documents that have passed the previous multiple document selection is needed. At this stage, this study uses Mendeley as a tool to assist in filtering documents, which is then started by sorting by year and individually examining each document's title and abstract sections. The results of investigating document relevance showed that the total number of documents that passed relevance in Samarinda City was 232, and in Balikpapan City, there were 151 documents. This final amount then becomes the final amount that is processed for analysis.

The intensity of annual research trends shows that the issue of government digitalization has continued to increase in recent years. The peak in 2022 indicates that the City of Samarinda and the City of Balikpapan produced the highest number of documents on government digitization issues; in Samarinda City, it reached 77 papers, and in Balikpapan City, it reached 47 papers.

If we look back, namely in the first decade from 2002 to 2012, the number of publications on government digitalization issues was insignificant. There were no publications related to government digitalization issues for several years. Until the second decade, from 2013 to 2022, publications about government digitization issues continued to grow and fluctuate in development every year. Overall, Samarinda City has the highest annual document contribution each year in contributing to digital government issues. In the 2019 and 2022 periods, Balikpapan City outperformed the number of documents produced by Samarinda City. In other years, Samarinda City exceeded Balikpapan City in the number of contribution documents.

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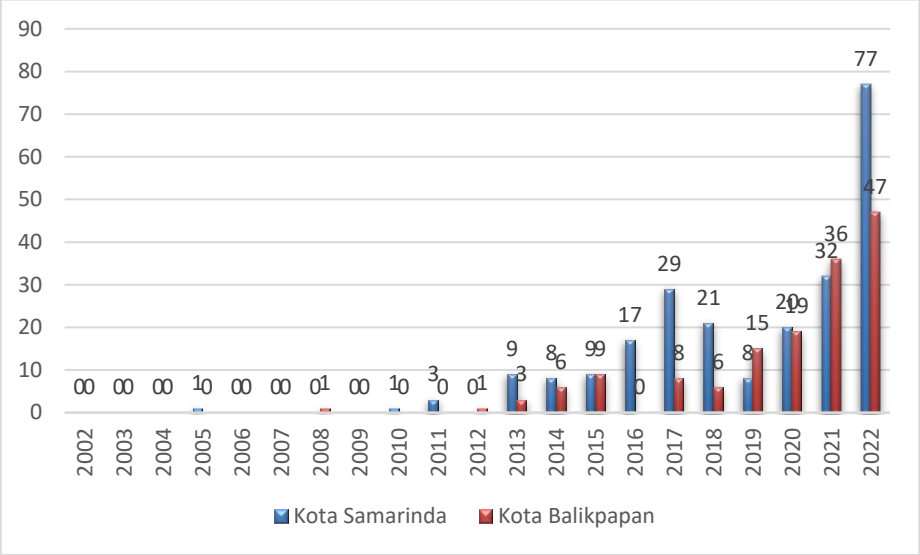
Figure 2. Annual Publication Trends



Sources: Processed by the author based on the final results of document screening

Focus Issues and Themes Digital Government

The focus on digital government issues in each city is also important to discuss in this research's findings. The 232 documents in Samarinda City show that the issues of "Services" and "Sub-District" are the two most dominant focus issues studied by researchers in Samarinda City. This is indicated by the increasing size of these two words in the word cloud collection, which was generated through the Nvivo 12 Plus software analysis. Apart from that, the two dominant words also show that digitization, which is widely discussed in the collection of documents analyzed in the City of Samarinda, is mainly related to the public services provided in the City of Samarinda, most of which are at the sub-district level, followed by the service level in Samarinda City.

Furthermore, in Balikpapan City, the issue of "Development" and the subject of "Technology" are the two most dominant issues discussed by researchers through 151 documents discussing digital government issues. These two prevalent issues show that the City of Balikpapan has discussed public service development programs a lot by increasing the presence of technology and implementation in developing services provided to the people of Balikpapan City.

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Figure 3. Dominant Issues in Digital Government Studies

Samarinda

Balikpapan

Sources: Author processed using Nvivo 12 Plus

Furthermore, this research then conducted an in-depth analysis of the collection of documents in each city to discover their dominant themes. Based on the results of autocode analysis, Samarinda City produced eleven dominant themes (11 themes), with the Service and Policy theme being the most significant percentage at 11.69%. This was followed by other themes: regions, employees, management, implementation, government, communication, development, innovation, and finance. The most dominant theme in Samarinda City aligns with the highest issue shown in previous findings.

Turning to Balikpapan City in Balikpapan City, there are four dominant themes (4 themes) resulting from the processing of 151 documents related to government digitalization. The four themes are Program, Community, Infrastructure, and Implementation. Of the four themes, the Program theme was the most frequently found theme, with a percentage reaching 8.68%, followed by the Infrastructure theme at 6.64%. The findings of this dominant theme are also in line with the prevalent issues that arise in discussing government digitalization in Balikpapan City, where development efforts through programs continue to be ongoing and are the focus of attention of digital government researchers in Balikpapan City. Apart from that, from these findings, it is also known that the program carried out in developing government digitalization in Balikpapan City tends to focus on developing the physical domain, namely infrastructure.

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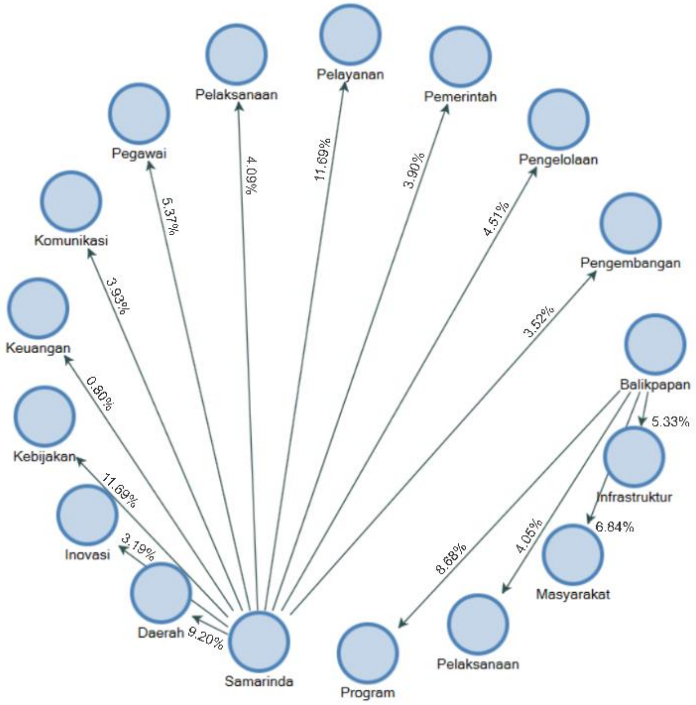
Figure 4. Dominant Theme in each City



Sources: Author processed using Nvivo 12 Plus

Levels of Digital Government Evolution

As explained at the beginning of this paper, Thomasz Janowski (2015) It has categorized four stages of digital government evolution, namely Digitalization, Transformation, Engagement, and Contextualization, where each stage will run if it meets the characteristic variables that have been determined as an illustration of the achievement of a stage of government evolution. Digital. Some of these variables can be seen in the table below.

Table 2. Digital Government Evolution Model

No	Stage	Variables		
		Internal government transformation	The transformation affects external relationships	Transformation is context-specific
1	Digitization (Technology in Government)	no	no	no
2	Transformation (Electronic Government)	yes	no	no
3	Engagement (Electronic Governance)	yes	yes	no

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4	Contextualization (Policy-Driven Electronic Governance)	yes	yes	yes

Sources: (Janowski, 2015)

Starting from several variables, this research then coded a collection of scientific papers in the two cities by categorizing each written document according to the relevance or relevance of the written document to specific stages of digital government evolution, which was then categorized in detail. Using existing variables. The coding stage is carried out by identifying the title, abstract, and contents of each written work one by one or document by document. Then, it will be classified based on the category of digital government evolution stages achieved.

The data processing results show that in the two cities, Samarinda City and Balikpapan City, the stage of digital evolution most studied is stage one, the digitalization stage. In Samarinda City, the digital government evolution stage at the digitization stage reached 42.71%. Meanwhile, in Balikpapan City, the percentage of the digitization stage reached 45.24% of all documents that were coded manually.

Furthermore, the second stage, transformation, is the second highest stage in the analyzed document collection. In Samarinda City, achievement in the transformation stage reached 37.97% of the total document analysis results. Meanwhile, in Balikpapan City, the rate of the transformation stage reached 27.14%.

Enter the third stage, namely the engagement stage. Samarinda City produced 17.63% of documents, which discussed the presence of the engagement stage of all documents processed. Meanwhile, in Balikpapan City, the percentage of scientific papers discussing this stage reached 20%, a higher rate than in Samarinda City. The next stage, which is the peak stage of digital government evolution designed by Thomasz Janowski (2015), namely the Contextualization Stage of achieving the percentage of documents between two cities, is the stage that contributes a minor portion of the four existing stages. If you look at what is available in Samarinda City, the scope of collecting 232 documents for the contextualization stage only reaches 1.69% of documents related to the contextualization stage. Meanwhile, in Balikpapan City, many documents discuss digital government issues related to the contextualization stage, reaching 7.62%. This shows that digital government studies in Balikpapan City have discussed many specific problems related to digital government technology, which impacts particular sectors and communities.

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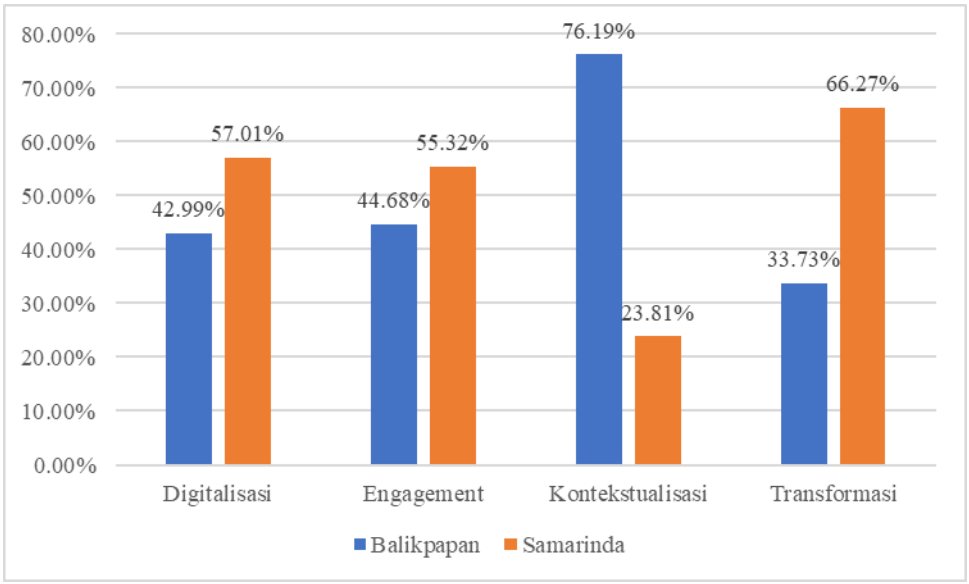
Figure 5. Percentage of digital government stages

Sources: Author processed using Nvivo 12 Plus

Let's compare each stage of evolution in the two cities. Samarinda City has the highest advantage in the Transformation stage, which reaches 66.27% in the entire collection of documents that examine digital government. Meanwhile, at another stage, namely the digitalization and engagement stages, Samarinda City has again become the city with the highest percentage compared to Balikpapan City. In the digitalization stage, Samarinda City reached 57.01% and Balikpapan City only 42.99%, while in the engagement stage, Samarinda City reached 55.32% and Balikpapan City reached 44.68%. Furthermore, Balikpapan City had a superior percentage to Samarinda City at the contextualization stage, 76.19%. A detailed comparison of the focus stages of digital evolution in the document collection for each city can be seen in the following image.

Figure 6. Comparison of percentages of digital government stages



Sources: Author processed using Nvivo 12 Plus

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Based on the findings shown in the previous section, it can be seen that the two cities have carried out government digitalization efforts from the earliest evolutionary context, namely the digital government digitalization stage, to the highest stage, namely the digital government contextualization stage. This is shown from the coding results at each stage, which appear but with different percentages.

In the city of Samarinda, several studies that discuss the digitalization stage include Alameka et al., (2016) , which discusses the design of digital services at Samarinda's sub-district and sub-district levels. Irawan et al., (2022) Outline how assistance and training for developing website digitization services are key to improving digital services. As well as other research, such as how to involve digitalization of services in tourism (Wiyanda et al., 2022). As well as efforts to increase digital understanding in improving the digital literacy of the people of Samarinda city (Fatimatuzzahra et al., 2022). Some of these studies are examples of research related to the digitization stage.

CONCLUSION

This research uses a literature review methodology to investigate the digitalization of government in East Kalimantan: Samarinda City and Balikpapan City. The study's findings suggest that the digitalization of government in these two cities has progressed to the digitalization and transformation phase, although it has not yet attained the contextualization phase. Samarinda City and Balikpapan City exhibit a notable rise in research about government digitalization, primarily concentrating on public services in Samarinda City and infrastructure development in Balikpapan City.

Samarinda City and Balikpapan City are positioned within the four stages of digital transformation delineated by Janowski (2015). Nonetheless, the digitization and transformation phases are predominant, suggesting both are still nascent stages of executing digital governance. This study offers significant insights into the obstacles and opportunities associated with the digitalization of government at the district or city level, as well as how this digitalization process might enhance the quality of public services.

This study has significant drawbacks, notably its reliance on secondary data derived solely from published literature, excluding original data from interviews or field observations. The study's scope, confined to two cities, restricts the generalizability of the findings to other regions.

This study significantly enhances the comprehension of government digitization progress in Indonesia at the local tier. Future studies must involve primary data collection, including interviews with local stakeholders, to improve understanding of the obstacles and implementation of government digitalization. Furthermore, studies conducted in other Indonesian cities can offer a more comprehensive understanding of the achievements and challenges associated with implementing e-government at the district or city level.

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