

Contextualization of the Digital Maturity Model (DMM) For Analyzing Digital Readiness for the Implementation of E-Diplomas at Vocational High Schools Under the Bojonegoro Regional Education Office

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ABSTRACT

Digital transformation in educational administration has encouraged the modernization of diploma governance through the web-based e-Ijazah system. In the context of vocational high schools (SMK) under the Bojonegoro Regional Education Office, the early phase of e-Ijazah implementation still faces challenges related to lengthy bureaucratic workflows, uneven digital capacity across schools, and constraints in infrastructure and human resources' digital competence. This research aims to contextualize the Digital Maturity Model (DMM) as an analytical lens to map the readiness profile and implementation gaps of e-Ijazah at the school level and within operational coordination with the Regional Education Office; identify technical, structural, and cultural constraints; and develop evidence-based strategic recommendations to strengthen digital transformation in educational administrative services. The study adopted a qualitative case study design using document analysis, limited observation of diploma issuance processes, and semi-structured (open-ended) interviews with relevant stakeholders. Data are analyzed thematically and then mapped onto DMM dimensions (Strategy, Organization, Culture, People, Technology, and Customer), complemented by a contextual element of Data Governance & Compliance to capture traceability, access control, and data quality management required in official document services. The findings are expected to produce a readiness profile and gap diagnosis for e-Ijazah implementation, along with recommendations for improving standard operating procedures, strengthening coordination, and enhancing digital capabilities across schools and the Regional Education Office in Bojonegoro.

INTRODUCTION

Digital transformation is the comprehensive application of digital technology through the use of information, computing, communication, and connectivity technology (Alojail & Khan, 2023; Harini et al., 2024; Lozic & Cikovic, 2024; Nazari & Musilek, 2023; Shostak et al., 2023; Vermesan et al., 2022). The issue of digital transformation is increasingly emerging in various sectors, including government, in response to digital disruption that affects the way organizations create value. The idea of products, services, and digital media has been well understood since the 1990s to the 2000s. (Vial, 2019; Schallmo and Williams, 2018; Westerman et al., 2011) defines digital transformation as the use of technology that significantly improves organizational performance.

In the education sector, digital transformation also affects service administration, including diploma management (Almahdi & Al-Manzuoka, 2025; Eisinger Balassa & Buics,

2026; Kaputa et al., 2022; Khatir & Madani, 2024; Mabotha & Ngcamu, 2025; Niță & Guțu, 2023). The presence of a web-based e-Diploma system encourages the transition from manual to digital processes aimed at improving service speed, data order, and security of official documents. However, the success of the implementation of digital systems in education administration is not only determined by the existence of applications, but also by the readiness of the organization in terms of governance, work processes, human resources, organizational culture, and infrastructure support.

In this study, the implementation of e-Diploma in the study area is relatively new (± 1 year), so the readiness study is positioned in the early implementation phase. The focus of the analysis is directed at the readiness of the organization and the work process of service implementers, not on determining the level of maturity of the system through numerical measurements.

At the Vocational High School (SMK) level, the implementation of e-Diploma still faces complex challenges, especially related to bureaucracy and capacity gaps between regions. The process of issuing e-Diplomas involves long and multi-layered verification stages, starting from Dapodik operators and e-Diploma operators at schools, followed by the approval of the Vice Principal for curriculum and the Principal, then the verification process at the Service Branch, to the provincial level before reaching the authorized Directorate. This complexity has the potential to cause delays, repetition of verification, and the risk of data mismatches if not supported cross-level coordination and adequate work standards. In addition, the diversity of expertise programs at vocational schools can add to the variety of administrative needs and internal readiness of schools (Kovalchuk et al., 2022; Phakamach et al., 2023; Sudiyono et al., 2024; Suroto et al., 2024; Wahyuningsih et al., 2025; Yoto et al., 2024). In the context of non-urban areas such as Bojonegoro Regency, the gap in digital competencies of human resources and the availability of infrastructure also has the potential to widen the difference in readiness for the implementation of e-Diploma between schools. (Ministry of Primary and Secondary Education of the Republic of Indonesia, 2025).

In terms of studies, digital transformation in education highlights more technology for learning. Meanwhile, studies examining digital transformation in education administration services, especially organizational readiness in the implementation of e-Diploma in vocational schools, are still relatively limited, especially in the context of non-urban areas. These limitations show the need for research that provides evidence-based diagnoses of digital readiness conditions, gaps, as well as driving and inhibiting factors for the implementation of e-Diploma at the school and branch levels. A number of studies on the readiness/maturity of digital services show that the success of digital system implementation is not determined by the application alone, but by the organizational and governance capabilities that accompany the adoption of technology. In the digital transformation literature, organizational readiness is understood as the integration of strategies, processes, structures, work culture, and human resource capabilities to consistently generate service value (;). In line with that, the digital maturity approach and (Vial, 2019; Westerman et al., 2011) maturity model are developing as a diagnostic framework to map readiness conditions, identify gaps, and develop strengthening priorities (De Carolis et al., 2017). Various maturity frameworks emphasize that digital transformation is cross-dimensional and involves organizational and human aspects rather than just technical issues (Berghaus, Back and Kaltenrieder, 2017; Laughter et al., 2018); (Kane et

al., 2016). Therefore, this study uses the Digital Maturity Model (DMM) as a qualitative analysis framework to map the readiness profile and gaps in the implementation of e-Diploma through field data (interviews, document studies, and process observation).

However, in the context of education, some studies on digital transformation are still dominant in highlighting the digitalization of learning, while studies that map digital readiness in official document administration services, especially at the secondary education level and school coordination patterns, are still limited. In addition, many maturity model studies are operationalized as numerical measurements (scores/levels), so they do not always capture the dynamics of tiered coordination, verification order, and data governance practices inherent in official document services. Therefore, this study uses DMM as an analytical lens to compile a profile of readiness and gaps in the implementation of e-Diploma based on field evidence, not to determine the level of maturity of the system numerically.

If digital readiness in the implementation of e-Diploma is not adequately understood, the potential for administrative obstacles, data incompatibility, and delays in the issuance of students' official documents can increase. This impact not only affects the effectiveness of school administration services, but also has the potential to reduce the trust of service users in the implementation of educational administration (Hannum et al., 2026; Huda & Ginanjar, 2026; Kabakus et al., 2025; Khairullah et al., 2025; Mose, 2025; Rizos et al., 2022; Sudiyono et al., 2024). In addition, inequality of infrastructure and digital competence between regions risks widening the gap in the quality of education administration services between urban and district areas. Thus, systematic analytical efforts are needed to describe the condition of digital readiness and formulate relevant strengthening recommendations for schools, Service Branches, and policy makers.

Responding to bureaucratic complexity, variations in vocational school characteristics, and digital capacity inequality between regions, this study is directed to analyze the digital readiness profile in the implementation of e-Diploma using the Digital Maturity Model (DMM) framework. The DMM was chosen because it provides relevant dimensions to comprehensively read organizational readiness, covering aspects of strategy, organization, culture, technology, human resources, and service users. Through this framework, the research is expected to produce mapping of readiness conditions and gaps per dimension as well as findings-based recommendations that can be used to strengthen the digitalization of e-Diploma administration services in a sustainable manner.

Based on the background, research gap, and novelty outlined above, this study aims to contextualize the Digital Maturity Model (DMM) as an analytical lens to map the readiness profile and implementation gaps of e-Diploma at the school level and within operational coordination with the Bojonegoro Regional Education Office, identify technical, structural, and cultural constraints, and develop evidence-based strategic recommendations to strengthen digital transformation in educational administrative services. The benefits of this research are both theoretical and practical; theoretically, it contributes to the literature by demonstrating DMM as a qualitative analytical framework in the early implementation phase of digital services, enriching the understanding of how strategy, organization, culture, people, technology, and customer dimensions interact in shaping digital readiness for official document services in non-urban educational contexts while highlighting Data Governance & Compliance as a cross-dimensional element; practically, it provides an evidence-based reference for the

Bojonegoro Regional Education Office and vocational schools in formulating strategies to strengthen e-Diploma implementation through process standardization, human resource capacity building, coordination strengthening, and data governance improvement, with the strategic recommendations serving as a guide for phased digital readiness strengthening and the methodology being replicable for other regions facing similar challenges.

METHOD

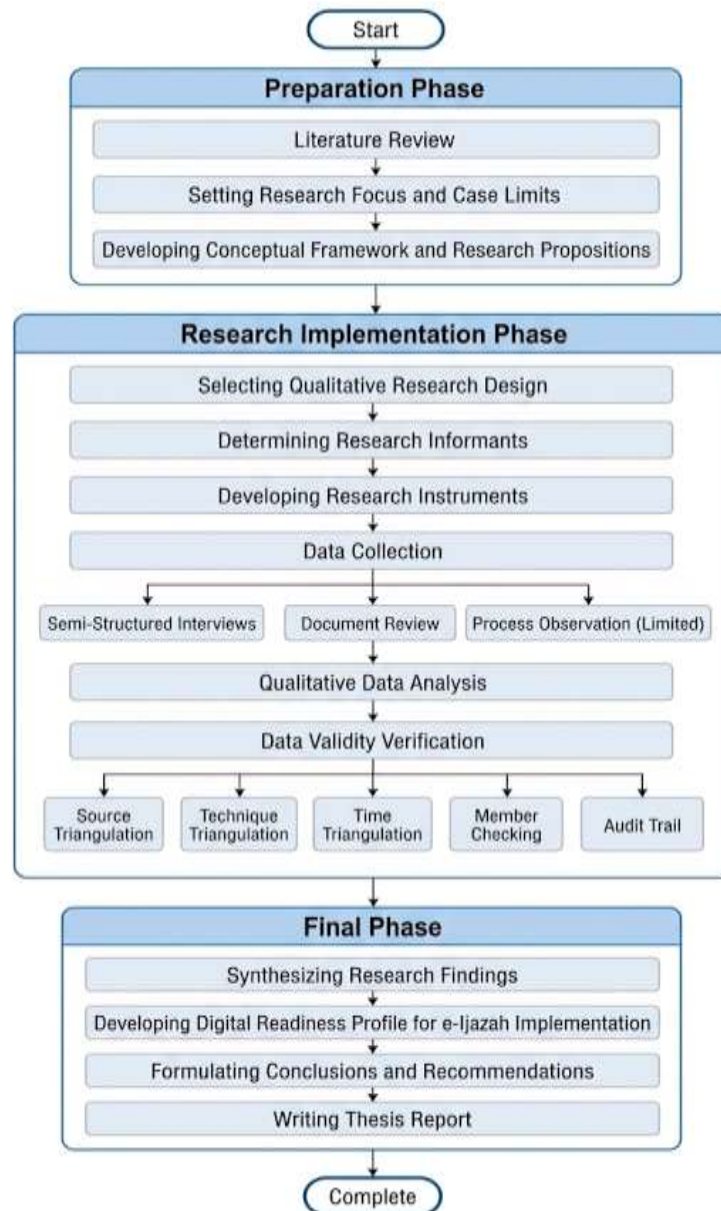


Figure 1. Research Methodology Diagram

Source: Authors' conceptual framework (2026)

The research methodology diagram in Figure 1 describes the flow of research implementation systematically, starting from the preparation stage, the research implementation stage, to the final stage. The presentation of this diagram is intended to provide an overview of the stages taken by the researcher in assessing the digital readiness of the

implementation of e-Diploma at vocational schools under the Bojonegoro Regional Education Office Branch.

Preparation Stage

The preparation stage is carried out to build a conceptual basis and direction of analysis so that the research has a clear focus and is aligned with the problems, research questions, and research objectives.

RESULT AND DISCUSSION

Strategic Recommendations for Strengthening Digital Readiness

Based on the digital readiness profile and the identification of gaps, obstacles, and implementation challenges, strengthening e-Diploma services needs to be carried out in an integrated manner. Improvements are not enough directed at the use of applications or the provision of devices, but also need to include standardization of work processes, data quality control, increase human resource capacity, strengthen coordination, mitigate technical obstacles, and organize services to users.

Strategic recommendations are prepared by considering the inter-dimensional linkages of the Digital Maturity Model (DMM), namely Strategy, Organization, Culture, People, Technology, and Customer, as well as cross-dimensional elements of Data Governance & Compliance. Recommendations are directed at the school level and coordination mechanisms with the Bojonegoro Regional Education Office Branch. The focus is not on the technical development of the central system, but on strengthening operational readiness and implementation governance at the service implementation level.

A. Strengthening data planning and validation from the start

The findings of the study show that some obstacles arise because data checks are carried out when the diploma issuance process is close to the deadline. This condition narrows the correction completion time, especially if the correction requires additional documents, parent data updates, or coordination with other parties.

Schools need to prepare an internal timeline that starts from the beginning of the school year or at least before entering the diploma issuance stage. The timeline needs to include a schedule for checking student data, updating Dapodik, checking supporting documents, follow-up on residual data, monitoring progress, and deadlines for completing corrections.

Data validation also needs to be done periodically and not only focused on final year students. An early check can reduce the accumulation of corrections before graduation and help schools ensure data consistency between physical documents, Dapodik, and the e-Diploma system.

Recommended strengthening directions include:

1. preparation of an internal timeline for the implementation of e-Diploma;
2. periodic examination of student data from the beginning;
3. the use of checklists of data and document completeness;
4. regular monitoring of data residues; and
5. setting a deadline for follow-up corrections.

Standardization of data governance and correction documentation

Data Governance & Compliance is a top priority as it affects all dimensions of readiness. Data quality, consistency of information, correction documentation, verification traceability,

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access control, and compliance with procedures are important aspects of the e-Diploma service as an official document.

The results show that the practice of corrective documentation is not completely uniform. In some cases, follow-up still relies on informal communication and operator experience. This condition has the potential to make it difficult to trace again if there are questions about the basis of the data change, the correction time, the party conducting the check, or the status of the follow-up.

Therefore, a simple but standard documentation format is required. Each correction needs to be recorded based on the type of problem, data source, supporting documents, actions taken, follow-up time, the party who inspected, and the status of the resolution. Digital archives also need to be organized using a uniform folder structure so that documents are easy to find when needed.

Recommended strengthening directions include:

1. use of data correction forms or logs;
2. uniform arrangement of digital archive folder structures;
3. recording of supporting documents as the basis for data changes;
4. documentation of the party examining and approving the correction;
5. control of access to digital accounts and documents; and
6. regular backup of documents.

Strengthening the division of roles and coordination mechanisms

The implementation of e-Diploma involves operators, homeroom teachers, vice principals for curriculum, school principals, Service Branches, and other parties according to authority. Role divisions have begun to take shape, but there is still a lack of technical information concentrated on operators and different follow-up speeds between schools.

To reduce reliance on a single individual, schools need to establish internal teams with clear division of tasks. The operator remains the main technical implementer, but the vice principal for curriculum needs to understand the progress and problems being handled. The principal also needs to obtain periodic information in order to provide direction and ensure completion according to schedule.

At the regional level, the Service Branch needs to maintain the functions of coordination, progress monitoring, and facilitation of problem solving. The escalation mechanism needs to be clearly arranged so that schools can distinguish problems that can be solved internally, problems that need to be coordinated with the Service Branch, and problems that need to be forwarded to the province or system managers.

The recommended strengthening directions include:

1. the formation of an internal e-Diploma team at the school level;
2. designation of companion operators or reserve personnel;
3. preparation of a role division matrix;
4. use of official coordination channels for important information;
5. the preparation of constraint escalation flows based on authority; and
6. regular monitoring of school progress by the Branch of the Service.

Human resource capacity building based on needs and real cases

The operator's experience in managing Dapodik is the initial capital that supports the implementation of e-Diploma. However, the understanding of the relationship between stages,

data correction paths, the use of supporting documents, and the resolution of obstacles is not completely evenly distributed.

Training needs to be designed in an applicative manner and not only contain general information delivery. Materials can be arranged based on cases that often arise, such as data differences between physical documents and systems, problematic NIK or NISN, data residues, synchronization delays, login failures, document uploads, and differences in correction paths based on the type of problem.

In addition to formal training, knowledge sharing practices between operators also need to be documented. Solutions that have been shared through communication groups can be summarized into a short guide or a list of frequently asked questions. Thus, knowledge is not only stored in certain individuals.

The recommended strengthening directions include:

1. case-based technical training;
2. guide process flows and data correction paths;
3. compiling a list of frequently asked questions (FAQs);
4. short tutorials based on recurring constraints;
5. sharing internal knowledge with the Deputy Principal for Curriculum and Companion Operators; and
6. technical assistance at critical stages.

Strengthening technological reliability and mitigating technical constraints

Most schools already have devices and networks that can be used to access the e-Diploma system. However, obstacles in the form of slow access, unstable networks, login failures, upload failures, and sync lags are still found.

At the school level, mitigation can be done through checking devices, providing alternative connections, and scheduling access at a convenient time. However, constraints stemming from servers, system features, or data change authority need to be passed through a clear escalation path.

Schools also need to strengthen account and document security practices. Personal account usage, password management, access restrictions, document backup, and digital archive storage need to be standardized so that security does not depend solely on the habits of each operator.

The recommended strengthening directions include:

1. regular checking of devices and connections;
2. provision of backup connections;
3. guidance on the identification of local constraints and system constraints;
4. clear technical escalation channels;
5. the regulation of access rights according to the authority;
6. strengthening account and password security; and
7. regular backup of supporting documents and data.

Strengthening service communication to students and parents

The involvement of students and parents is needed to ensure the suitability of student identities and the completeness of supporting documents. However, delays in response and document collection can still hinder the correction process.

Schools need to convey information concisely, clearly, and consistently through easy-to-reach channels. Homeroom teachers can be involved as the main liaison because they have closeness to students and parents. The information needs to include the data that needs to be checked, the documents that need to be prepared, the deadline for collection, the correction mechanism, and the status of the follow-up.

The recommended strengthening directions include:

1. preparation of concise and easy-to-understand service information;
2. consistent use of multiple communication channels;
3. the involvement of homeroom teachers as service liaison;
4. submission of checklist of supporting documents;
5. setting deadlines for document collection;
6. periodic reminder mechanism; and
7. recording of the status of the follow-up correction.

Continuous monitoring and evaluation

Strengthening digital readiness needs to be done on an ongoing basis. Monitoring is not only used to find out if the stages have been completed, but also to identify schools that need early assistance and prevent the accumulation of problems before the deadline.

The Dinas branch can use the progress recap as the basis for regional monitoring. Schools also need to have internal records that show the status of data, unresolved constraints, missing documents, and actions that have been taken. After one publishing cycle is completed, an evaluation can be conducted to record the most frequently occurring problems and determine corrective steps for the next period.

Recommended strengthening directions include:

1. Step-by-step progress monitoring;
2. recap of obstacles and status of solutions;
3. periodic reminders of deadlines;
4. identify schools that require additional assistance;
5. evaluation after one implementation cycle; and
6. Updates of the guidance based on field findings.

Strategic Recommendation Matrix

To ensure that strategic recommendations are not structured normatively, each direction of reinforcement is retraced based on empirical findings, codes of analysis, gaps or implementation constraints, and impacts found. The traceability is summarized in Table 1.

Table 1. Traceability Matrix of Findings, Gaps, and Strategic Recommendations for Strengthening Digital Readiness

Strengthenin g Focus	Basic Findings and Code of Analysis	Major Gaps or Obstacles	Strategic Recommendations	Main Actors	Expected Externalitie s
Initial planning and validation	Data checks in some cases are still being carried out closer to the deadline. Related codes: STR Gap,	Correction completion time is narrow and work has the potential to	Compile internal timelines, data and document checklists, periodic validation, and data residue monitoring	Schools and Branches of the Service	Data checks are carried out early and corrections towards finalization

Strengthening Focus	Basic Findings and Code of Analysis	Major Gaps or Obstacles	Strategic Recommendations	Main Actors	Expected Externalities
	CUL_Disiplin_Waktu, and DGC_Risiko_Data	pile up towards finalization			can be reduced
Data governance and correction documentation	Correction records and digital archives have not been uniformly arranged. Related codes: DGC_Dokumentasi_Koreksi, DGC_Audit_Trail, and DGC_Gap	The basis of data changes, the parties who checked, and the status of follow-up were not always easy to trace	Use correction logs, a standard digital archive folder structure, and evidence of supporting documents and approvals	School	The correction process becomes more traceable and accountable
Role division	Technical information and workload in some cases are still concentrated on the operator. Related codes: ORG_Pembagian_Peran, ORG_Gap, and PPL_Ketergantungan_Individu	Processes are at risk of being hampered if the main operator has other workloads or is hindered	Forming an internal team, assigning companion operators, and drafting a role sharing matrix	Principal, vice principal for curriculum, and operator	Responsibilities are more evenly distributed and dependency on specific individuals is reduced
Coordination and escalation	The speed of follow-up differs between schools and not all obstacles can be solved at the school level. Related codes: ORG_Koordinasi_Sekolah_Cabdin, ORG_Tindak_Lanjut_Koreksi, and ORG_Gap	Problem solving has not always followed a uniform path	Develop escalation flows based on authority and use official coordination channels for important information	Schools, Service Branches, and technical parties	Problem solving becomes faster and more targeted
HR Capacity	The understanding of the process flow and correction path is not completely evenly distributed. Related codes: PPL_Pemahaman_Prosedur, PPL_Pendampingan, and PPL_Gap	Implementers still need support when dealing with specific cases	Organize case-based training, compile FAQs, create short tutorials, and provide assistance at critical stages	Branches of Dinas and schools	Collective ability increases and basic constraints can be handled more independently

Strengthenin g Focus	Basic Findings and Code of Analysis	Major Gaps or Obstacles	Strategic Recommendations	Main Actors	Expected Externalitie s
Technology reliability	There are still slow access, unstable networks, login failures, problems with uploading documents, and synchronization breaks. Related codes: TEC_Akses_Siste m, TEC_Kendala_Tek nis, TEC_Integrasi_Da podik_eIjazah, and TEC_Gap	Verification and finalization stages have the potential to be delayed	Set up backup connections, obstacle mitigation guidance, and technical escalation channels	Schools, Service Branches, and technical parties	Operational bottlenecks at critical stages can be reduced
Account and data security	The practices of account management, access restrictions, and document backup are not yet completely uniform. Related codes: TEC_Keamanan_Akun_Data, DGC_Kontrol_Ak ses, and DGC_Gap	Data and document security still has the potential to depend on the habits of the operator	Establish SOPs for account management, password security, access restrictions, and document backup	School	Data and digital document protection becomes more consistent
Service to users	The response of students or parents and the completeness of documents are not always on time. Related codes: CUS_Kejelasan_In formasi, CUS_Koreksi_Dat a_Pengguna, and CUS_Gap	Data corrections cannot be processed immediately because supporting documents are not yet available	Provides concise information, document checklists, deadlines, periodic reminders, and follow-up status tracking	School and homeroom teachers	Correction of user data becomes faster and more transparent
Monitoring and evaluation	The speed of follow-up varies between schools and some schools still require reminders. Related codes: ORG_Monitoring_Progres, CUL_Disiplin_Wa ktu, and STR_Rencana_Ker ja	Schools that experience obstacles have not always been identified early on	Use progress recaps, periodic reminders, identify mentoring needs, and evaluate each cycle	Branches of Dinas and schools	Continuous improvement and mentoring become more targeted

Source: Authors' analysis based on interview and document study findings (2026)

Priority Implementation of Recommendations

Strategic recommendations need to be implemented gradually to match the capacity of the school and the authority of the parties involved. Implementation priorities can be divided into three stages.

1. Short-term priorities
2. Medium-term priorities
3. Long-term priorities

The priority stages of strengthening digital readiness for the implementation of e-Diploma are visualized in Figure 4.6. The visualization shows that recommendations need to be implemented gradually, starting from operational improvements that can be carried out immediately, followed by process standardization and capacity building, then directed at strengthening service governance in a sustainable manner.



Figure 1. Priority Stages of Strengthening Digital Readiness for the Implementation of e-Diploma

Source: Authors' analysis based on research findings (2026)

Figure 2 shows that strengthening the digital readiness for the implementation of e-Diploma needs to be carried out through three stages. Short-term priorities are directed at data validation from the beginning, the formation of internal teams, the use of checklists, the arrangement of digital archives, and the strengthening of communication with students and parents. Medium-term priorities emphasize standardization of SOPs, case-based training, standardization of escalation flows, progress monitoring, and evaluation after one issuance cycle. Meanwhile, long-term priorities are directed at integrating data quality control into routine school processes, strengthening audit trails, digital documentation, knowledge sharing culture, and continuous cross-level coordination. All of these stages are strengthened by Data Governance & Compliance as a cross-dimensional foundation.

Synthesis of Strategic Recommendations

Based on these recommendations, strengthening the digital readiness for the implementation of e-Diploma needs to be carried out through an integrated and gradual approach. At the school level, the main priorities are directed to data validation from the beginning, clear division of roles, correction documentation, arrangement of digital archives, and strengthening services to users. At the Agency Branch level, priorities are directed to

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monitoring progress, technical assistance, standardizing operational guidelines, and strengthening the obstacle escalation mechanism.

In all of these stages, Data Governance & Compliance needs to be placed as a foundation for strengthening because it affects the quality and consistency of data, process traceability, compliance with procedures, access security, and service accountability. With the gradual implementation of the recommendations, the implementation of e-Diploma is expected to not only run operationally, but also develop into a more consistent, documented, secure, and sustainable digital administration service.

Discussion of Findings on the Literature and Research Propositions

This subchapter discusses the results of the research by relating the field findings to the literature and research propositions that have been formulated in Chapter II. The discussion is not directed to test the relationship statistically, but to interpret the suitability between the empirical evidence, conceptual framework, and characteristics of the implementation of e-Diploma as an official document administration service.

The results of the study show that the digital readiness of the implementation of e-Diploma is not only determined by the availability of web-based systems. Readiness is also formed by the integration of policy direction, division of roles, work culture, human resource capacity, technological reliability, service orientation to users, as well as data governance and compliance with procedures. The findings show that the implementation of e-Diploma is part of the digital transformation of education administration services that are multidimensional.

Discussion of Findings in the Perspective of Digital Transformation and Digital Maturity

Digital transformation does not only refer to the use of new technologies, but also includes changes in work processes, organizational structures, coordination mechanisms, and service value creation. Explaining that digital transformation is a process of organizational change that is influenced by the use of digital technology and has an impact on organizational strategies, structures, and practices. This perspective is relevant to the implementation of e-Diploma because the changes that occur do not stop at the transition from physical documents to digital documents, but also affect data check flows, coordination patterns, role divisions, correction mechanisms, and services to users.(Vial, 2019)

The results of the study show that schools have used a web-based system, updated data, utilized the Dapodik e-Diploma integration, and carried out a multi-level verification process. However, implementation still faces variations in human resource readiness, network quality, follow-up discipline, and correction documentation. This condition shows that the existence of applications has not automatically resulted in equal digital readiness.

These findings are in line with a view that places digital transformation as a cross-dimensional change. Service digitalization needs to be read through the integration of (Bumann & Peter, 2019)Strategy, Organization, Culture, People, Technology, and Customer. In this study, the six dimensions help explain that the implementation of e-Diploma is influenced by the relationship between technical and non-technical aspects.

The use of the Digital Maturity Model (DMM) as an analytical lens is also in line with, which emphasizes that digital maturity mapping can be used to understand actual conditions, identify gaps, and formulate reinforcement directions. In this study, DMM was not used to determine a numerical score or maturity level. The framework is used to compile a qualitative

diagnosis of the readiness conditions that have been formed and areas that still need strengthening.(De Carolis et al. , 2017)

The results of the study show that the digital readiness of the implementation of e-Diploma can be described as operational readiness that is relatively supportive, but has not been institutionalized consistently throughout schools. This condition is relevant to the initial implementation phase because schools have been able to carry out the main stages, but still require standardization of processes, equitable capacity distribution, and strengthening of governance so that supportive practices do not only depend on certain individuals.

Discussion of Findings Per DMM Dimension

A. Strategy Dimension

The Strategy dimension is related to policy direction, implementation objectives, leadership support, work priorities, and internal planning. The results of the study show that the purpose of e-Diploma has been understood as an effort to improve the order, accuracy, security, and accountability of graduation administration services. Directions have also been conveyed through official letters, technical instructions, socialization, and operational communication channels.

The findings are consistent with the view that digital transformation requires direction and priorities that are translated into organizational practices. Digital strategies are not only available in the form of formal policies, but need to be realized through operational decisions, task sharing, and resource allocation.(Berghaus et al., 2017)At the school level, leadership support is an important factor. The principal plays a role in providing direction, forming a team, monitoring progress, and ensuring the completion of stages according to schedule. The findings are in line with (Kane et al. , 2016), which emphasizes the importance of leadership in building organizational readiness to face digital change.

The results of the study also show that the translation of policies into internal work plans is not completely uniform. Some schools have checked the data from the beginning, while others still need reminders not to delay the process until the deadline approaches. Therefore, strengthening the Strategy dimension needs to be directed at internal timelines, periodic data validation, and more consistent monitoring mechanisms.

B. Dimension Organization

The Organization dimension deals with role sharing, cross-actor coordination, verification flows, progress monitoring, and correction follow-up. The results of the study show that the implementation of e-Diploma involves operators, homeroom teachers, vice principals for curriculum, school principals, Service Branches, and other parties according to authority. The findings support the view that digital transformation requires process structuring and cross-functional coordination. In the implementation of e-Ijazah, the smooth running of services cannot be charged only to operators because data quality and correction completion require the contribution of several actors.(Laughter) et al. , 2018)

The results of the study also show the importance of the role of the Service Branch as a liaison, coach, and facilitator of problem solving. The Dinas branch not only conveys directions, but also monitors progress and helps schools determine the escalation path of problems according to their authority. Although the operational structure has been running, there is still technical information concentrated on the operator as well as differences in follow-up speed between schools. This condition shows that the readiness of the organization has not

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been fully institutionalized. Strengthening needs to be directed at the formation of internal teams, information distribution, companion operators, stage checklists, and more standard escalation flows.

C. Dimension Culture

The Culture dimension is related to work habits, adaptation to change, data accuracy, time discipline, collaboration, and learning from obstacles. The results of the study show that implementers are starting to get used to digital-based services and show relatively positive acceptance of the implementation of e-Diploma. The most prominent work culture is the meticulousness in examining data and the discipline of following the stages. Implementers need to match the identity of students with supporting documents, follow up on corrections, and avoid stacking work towards deadlines. In addition, operators also share information and solutions through communication groups when facing obstacles.

The findings are in line with (Berghaus et al., 2017), which places organizational culture as an important part of digital transformation. The application of technology requires work habits that support learning, collaboration, and continuous improvement. The results of the study show that the work culture is not yet completely uniform. Some schools can follow up on directions quickly, while others still require periodic reminders. The practice of sharing solutions is also still largely informal and has not been fully documented. Therefore, strengthening work culture needs to be directed at getting used to data validation from the beginning, documentation of good practices, evaluation after obstacles, and cross-school learning.

D. Dimension People

The People dimension is related to competence, experience, understanding of procedures, training, mentoring, and knowledge distribution. The results of the study show that the operator's experience in using Dapodik is the initial capital that helps the adaptation process to the e-Diploma. However, technical skills alone are not enough because the implementer also needs to understand the relationship between stages, supporting documents, data correction paths, and problem escalation mechanisms.

The findings are in line with (Ifenthaler & Egloffstein, 2020), which emphasizes that digital transformation readiness requires capacity building and organizational learning processes. In the context of e-Diploma, the training needed is not only in the form of general socialization, but also needs to use examples of cases that are often faced by schools. Technical assistance is an important aspect because a number of obstacles cannot be solved just by reading the guide. Schools need consultation and support from the Branch of the Agency when facing problems related to synchronization, data residue, correction authority, or system constraints.

Another finding is that there is still a dependence on certain operators. This condition shows that digital capacity needs to be built as a collective ability, not just an individual ability. Therefore, schools need to prepare accompanying operators, involve the vice principal in curriculum, and document technical knowledge so that the sustainability of the process is maintained.

E. Dimension Technology

Dimension Technology is related to device availability, internet network, system access, data integration, account security, and mitigation of technical obstacles. The results of the study

show that most schools already have devices and networks that can be used to support the e-Diploma process.

The use of web-based systems and integration with Dapodik helps schools run the process in a more orderly manner. However, the results of the study also show that technical obstacles are still found, such as slow access, unstable networks, login failures, failed to upload documents, data residues, and synchronization lags. The findings show that technological readiness is not only determined by the existence of the device. Access reliability, connection quality, disruption mitigation capabilities, and technical escalation mechanisms are also important parts of supporting service sustainability.

The integration of Dapodik e-Diploma reinforces the importance of master data quality. If the data on Dapodik is not appropriate, the problem can be carried over to the e-Diploma process. This condition shows that the Technology dimension is closely related to Data Governance & Compliance, especially on data consistency, synchronization, and correction paths.

F. Customer Dimension

The Customer dimension relates to service orientation to students, parents or guardians, and alumni. The results of the study show that users are starting to be involved in checking data suitability and fulfilling supporting documents. Service information is delivered through homeroom teachers, communication groups, letters, social media, and direct communication.

The findings are relevant to (Schallmo & Williams, 2018) as well as, (from Leipzig et al., 2017) which places user orientation as an important part of digital transformation. Technology needs to produce better service value, not just speed up the organization's internal processes. In the implementation of e-Diploma, user orientation can be seen from efforts to ensure that student data is appropriate before the document is issued. However, the delay in the response of students or parents and the completeness of supporting documents are still obstacles. This condition shows that service communication needs to be more structured through clear schedules, document checklists, periodic reminders, and follow-up status recording.

Data Governance & Compliance as a Cross-Dimensional Contextual Element

One of the important findings in this study is the position of Data Governance & Compliance as a cross-dimensional element. This element is not placed as the seventh dimension of the DMM, but as a contextual reinforcement because e-Diploma is an official document service that demands validity, accuracy, legality, security, and accountability.

(ISO, 2016) Regarding records management, emphasizes the need for policies, responsibilities, controls, and mechanisms that ensure documents are reliable as evidence of organizational activities. This principle is relevant to e-Diploma because the issuance process needs to be supported by data quality, tiered verification, correction documentation, access restrictions, and traceability of approvals.

(W3C, 2025) also emphasizes the importance of verification and integrity protection in digital credentials. Although the implementation of e-Diploma in this study was not analyzed as a technical implementation of verifiable credentials, this principle strengthens the argument that digital-based official document services require a clear verification mechanism and protection of data integrity.

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The results show that data quality is related to various dimensions. In the Strategy dimension, data quality needs to be placed as a priority from the beginning. In the Organization dimension, a clear division of roles is required to check, refine, and approve data. In the Culture dimension, careful and disciplined work habits are needed. In the People dimension, the implementer needs to understand the procedures and correction paths. In the Technology dimension, the consistency of data is influenced by the integration of Dapodik e-Diploma and the synchronization process. In the Customer dimension, students and parents need to be involved in data checks and fulfillment of supporting documents.

The observational findings also show that correction documentation and digital archives are not yet completely uniform. Change notes, supporting document evidence, follow-up status, and approval basis need to be laid out more standardly. This condition strengthens the relevance of the addition of Data Governance & Compliance as a contextual element in reading the digital readiness of the implementation of e-Diploma. The contextual contribution of this research lies in the affirmation that the digital readiness of official document services is not sufficiently analyzed through technology and human resource capacity. Data governance and compliance procedures need to be placed as the foundation that affects the entire service process.

Synthesis of Major Propositions

The main proposition of the study states that the readiness profile of the implementation of e-Diploma in vocational schools under the Bojonegoro Regional Education Office Branch is formed by the integration of the dimensions of Strategy, Organization, Culture, People, Technology, and Customer, and strengthened by Data Governance & Compliance as a cross-dimensional element.

The results of the study show compatibility with the major proposition. In the Strategy dimension, policy direction and leadership support are the basis for translating implementation into work plans. In the Organization dimension, the division of roles and coordination ensures that the process runs in stages. In the Culture dimension, meticulous, disciplined, and collaborative work habits help maintain consistency in implementation. In the People dimension, operator experience, understanding of procedures, and mentoring affect the school's ability to solve obstacles. In the Technology dimension, devices, networks, system access, and data integration determine the smooth running of the process. In the Customer dimension, the involvement of students and parents helps ensure data suitability and service quality.

Data Governance & Compliance strengthens interdimensional relationships as data quality, correction documentation, process traceability, access control, and procedural compliance affect the entire service lifecycle. The findings show that the digital readiness of e-Diploma cannot be explained only through one dimension or only through technological readiness.

Based on this synthesis, the major proposition is supported by the results of the research. However, such support needs to be understood in the context of qualitative case studies. The research does not produce statistical generalizations, but rather contextual explanations of how digital readiness is formed and what areas need to be strengthened in the implementation of e-Diploma in vocational schools in the coordination area of the Bojonegoro Regional Education Office Branch.

Theoretical Implications of the Discussion

The results of the discussion provide several theoretical implications. First, this study strengthens the view that digital transformation in education administration services is multidimensional. The success of an implementation is not only determined by the availability of the application, but also by strategy, organization, work culture, HR, technology, and service orientation.

Second, this study shows that DMM can be used as a qualitative analytical lens in the initial implementation phase. The use of DMM does not always have to be geared towards scoring measurement or maturity levels. The framework can also be used to organize evidence, build readiness profiles, identify gaps, and formulate reinforcement priorities. Third, this study emphasizes the importance of Data Governance & Compliance as a contextual element in official document services. The addition of these elements expands the readout of readiness as aspects of data validity, information consistency, correction documentation, process traceability, access control, and procedural compliance become foundations that affect all dimensions.

Fourth, this study shows that digital readiness needs to be understood as a collective capability and not just an operator's ability. Readiness develops when there is an integration between leadership direction, role sharing, a supportive work culture, executive competence, system reliability, user engagement, and orderly data governance.

Discussion Synthesis

Overall, the results of the study show that the implementation of e-Diploma has relatively supportive operational readiness, but has not been consistently institutionalized throughout schools. These findings are in line with the literature on digital transformation and digital maturity that emphasizes the importance of integration between technology, organization, people, processes, and service orientation.

The discussion also shows that Data Governance & Compliance is an important cross-dimensional element in the context of official document services. Data quality, correction documentation, process traceability, access control, and procedural compliance are not only administrative issues, but also the foundation of service accountability.

Thus, strengthening the digital readiness of the implementation of e-Diploma needs to be carried out through integrated and gradual improvements. Strengthening is not enough to be directed only at the use of applications, but also needs to include process standardization, data quality control, team capacity building, strengthening coordination, mitigating technical obstacles, and structuring services to users. The results of the synthesis are the basis for the preparation of conclusions and suggestions in Chapter V.

CONCLUSION

This study concludes that the implementation of e-Diploma in vocational schools in the coordination area of the Bojonegoro Regional Education Office Branch has shown quite good digital readiness in terms of strategy, organization, culture, human resources, technology, and user service. However, this readiness has not been standardized evenly throughout schools, so there are still various obstacles that include structural, technical, human resource capabilities, data governance, and service quality. The findings of the study confirm that the success of the implementation of e-Diploma is not only determined by the availability of technology, but also

by the effectiveness of coordination, implementation competence, user involvement, and the implementation of good data governance and compliance procedures. Therefore, strengthening digital readiness needs to be carried out in an integrated manner through standardization of work processes, increasing human resource capacity, strengthening documentation and supervision, and implementing Data Governance & Compliance as the main foundation to ensure data quality, security, accountability, and sustainability of e-Diploma services in the school environment.

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