Developing Adaptive ASN Leadership in the Society 5.0 Era: An Integrated Conceptual Framework for Education and Training

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Abstract

Purpose - This study aims to formulate strategic education and training models to prepare Civil Servant (ASN) leadership in the era of Society 5.0, addressing a critical gap in the literature regarding the integration of digital transformation, merit systems, and leadership development in public sector governance. The research seeks to generate conceptual insights into how leadership competencies can be systematically developed to respond to VUCA dynamics and the increasing demand for adaptive, technology-enabled public administration.

Design/Methodology/Approach - The study employs a qualitative approach using a descriptive-analytical literature review. Data were collected through systematic identification, screening, and selection of relevant academic publications focusing on digital leadership, adaptive governance, merit systems, and public sector training models. The analysis was conducted using a systematic literature review framework complemented by thematic synthesis and systematic mapping to construct a layered conceptual framework model for ASN leadership development.

Findings - The findings reveal that ASN leadership in the Society 5.0 era must be characterized by digital leadership capability, adaptive and transformational capacity, collaborative governance orientation, and agile bureaucratic behavior. The study further identifies that effective education and training strategies should integrate digital-based training systems, HRIS-based needs assessment, blended learning models, and talent management aligned with merit principles. The proposed conceptual framework model demonstrates that leadership development must be designed as an integrated and dynamic ecosystem linking strategic context, training processes, competency outputs, and institutional transformation outcomes.

Originality/Value - This research offers a novel conceptual framework for ASN leadership development by integrating digital transformation, adaptive leadership theory, and public sector training strategy within the context of Society 5.0. The study contributes theoretically to the discourse on public administration reform and practically provides strategic guidance for policymakers and training institutions in redesigning ASN education and leadership development programs to support sustainable bureaucratic transformation.

Keywords: Society 5.0; ASN Leadership; Digital Leadership; Public Sector Training; Merit System; Bureaucratic Transformation

I. INTRODUCTION

Global developments in recent decades show the acceleration of increasingly complex social, economic, and technological changes. This transformation has begun to strengthen since the emergence of the Industrial Revolution 4.0 which is characterized by the integration of cyber-physical systems, automation, artificial intelligence, and digital connectivity in various aspects of life (Westpal, 2002). In a relatively short time, the global community then entered a new phase known as the Society 5.0 Era, a concept that emphasizes the integration of advanced technology with human life in a more human-centered manner. If the Industrial Revolution 4.0 focuses on technology-based automation and efficiency, then Society 5.0 seeks to harmonize digital innovation with human values to create an inclusive, sustainable, and social-welfare-oriented society (Deguchi & Hirai, 2020).

The acceleration of digital transformation is increasingly felt when the world faces the COVID-19 pandemic in the 2019–2023 period. The pandemic has not only become a global health crisis, but has also accelerated the adoption of digital technology in various sectors of life, including education, economics, and governance (Ridani & Sudadi, 2025). At the same time, the world is also faced with the increasingly real challenges of climate change. This condition gives rise to what is often referred to as triple disruption, namely massive digital transformation, the impact of global pandemics, and pressures due to climate change. These three factors simultaneously encourage public and private institutions to adapt quickly to an increasingly dynamic, uncertain, and digitized environment (Yunas et al., 2023).

In the government context, public services and bureaucracy are strategic arenas directly affected by these dynamics. The public now holds high expectations for fast, transparent, and technology-based services (Lailiyah, 2022). Governments must utilize innovations such as Artificial Intelligence, the Internet of Things (IoT), and big data analytics to increase service efficiency. Consequently, bureaucratic reform must transcend administrative simplification to include digital transformation and the strengthening of human resource capacity (Supriadi et al., 2024).

The sustainability of bureaucratic reform is highly dependent on the quality and competence of the State Civil Apparatus (ASN) as the main actor in the administration of government. ASN not only functions as policy implementers, but also as drivers of innovation and agents of change in public governance. The Society 5.0 era demands the presence of bureaucratic leadership that is adaptive, visionary, collaborative, and has adequate digital literacy (Asad et al., 2026). Mastery of technology is an important prerequisite, but it is not enough if it is not accompanied by integrity, public service ethics, and the ability to make decisions in complex and rapidly changing situations.

Normatively, the development of ASN competencies has been mandated in Undang-Undang Nomor 20 Tahun 2023 About Aparatur Sipil Negara, which affirms the obligation of every ASN to continue to improve their competence through continuous learning. This provision shows that capacity building is no longer an option, but an institutional obligation. However, the reality on the ground shows that there is still a gap between the expected competency standards and the actual capabilities of some apparatus. Data submitted at the 2022 National Personnel Coordination Meeting shows that the proportion of civil servants who have low competence and performance is still quite significant compared to the total number of existing civil servants. This condition indicates that the ASN education and training system has not been fully able to respond to the demands of changing the strategic environment (Simandjorang & Kurniawan, 2022).

The competency gap has implications for the emergence of performance gaps in the bureaucracy, especially in facing the demands of digital transformation and public service innovation. ASN leadership education and training need to be redesigned to be more responsive to the dynamics of Society 5.0. Conventional training models that are administrative and procedural are no longer adequate to form agile, adaptive, and technology-based bureaucratic leaders. An integrated, competency-based development strategy is needed and utilizes a contextual digital and experiential learning approach.

Based on this background, this article seeks to examine in depth the characteristics of ASN leadership that are relevant to the demands of the Society 5.0 Era and analyze education and training strategies that can prepare bureaucratic leadership that is adaptive to digital transformation. Through a literature study approach, this research also aims to formulate a conceptual model for ASN leadership development that is more responsive, innovative, and oriented towards improving the quality of public services in the midst of increasingly complex global changes.

II. METHOD

This study uses a descriptive-analytical approach with a library research design. This approach was chosen because the purpose of the research focuses on tracing, reviewing, and synthesizing various scientific literature relevant to education and training strategies in preparing the leadership of the State Civil Apparatus (ASN) in the era of Society 5.0 (Moleong, 2010). Through this method, the author does not collect field data but relies on written sources such as reputable scientific journal articles, academic books, policy reports, and regulatory documents related to ASN competency development, public sector leadership, and bureaucratic digital transformation. The descriptive-analytical approach allows researchers to not only describe the findings of the literature systematically but also analyze the tendencies, gaps, and conceptual relevance between the sources studied (Van Bruggen et al., 2015).

The data collection process is carried out through several structured stages, covering a search period of the last ten years (2014–2024) to ensure the novelty and relevance of the synthesized data. The initial stage begins with the identification of topics and the determination of key keywords such as "ASN leadership", "digital leadership", "public sector leadership development", "Society 5.0", and

"bureaucratic education and training". These keywords are used to search for scientific sources through national and international academic databases (e.g., Google Scholar, Scopus, and Garuda).

Furthermore, a data screening process is conducted based on strict inclusion and exclusion criteria. The inclusion criteria focus on peer-reviewed articles specifically discussing Indonesian bureaucratic reform, leadership competency frameworks, and digital transformation in the public sector. Literature that was redundant, lacked methodological clarity, or did not directly relate to the ASN context was eliminated. From the initial search results, 14 key literatures were selected for the final synthesis table because they provided the most comprehensive empirical evidence and strategic models that directly address the research objectives. Each selected source is then systematically recorded through the notetaking technique, which includes recording key ideas, research findings, and conceptual implications. The next stage is contextualization and criticism, placing each finding in the context of Indonesian bureaucratic reform to identify strengths and opportunities for future ASN leadership models.

The data analysis technique in this study adopts the Systematic Literature Review (SLR) approach with the PRISMA (*Preferred Reporting Items for Systematic Reviews and Meta-Analyses*) model to ensure that the literature selection process is carried out in a transparent and systematic manner. Through the stages of identification, screening, feasibility, and inclusion, the PRISMA framework helps researchers map the flow of source selection methodologically. In addition, a systematic mapping approach is also used to classify literature based on themes, conceptual approaches, development models, and developing research trends (Parums, 2021). The combination of these two techniques allows for a comprehensive analysis, not only in summarizing the findings of previous research but also in identifying research patterns, gaps, and formulating a conceptual model for ASN leadership development that is adaptive to digital transformation in the Society 5.0 era.

III. RESULT AND DISCUSSION

RESULT
A. Definition and Characteristics of Society 5.0

The concept of Society 5.0 represents a phase of community development that puts humans at the center of digital transformation. This idea was first introduced by the Japanese government in response to the massive global technological disruption, as well as an effort to balance economic growth with solving social problems. In contrast to the Industrial Revolution 4.0 era which tends to emphasize technology-based automation and efficiency, Society 5.0 prioritizes the harmonious integration of physical and cyber space to improve the quality of human life. Thus, technology is not positioned as the ultimate goal, but rather as an instrument to strengthen human values, inclusivity, and sustainability (Akman & Erdirençelebi, 2024).

In this context, the Information Systems 5.0 paradigm was born in response to the complexity of the modern world marked by the explosion of data (big data), the acceleration of technological innovation, and the increasing public demand for more personalized, fast, and sustainable services. This system no longer functions just as a data processing tool, but as a digital ecosystem that is able to learn, adapt, and collaborate dynamically. The results of the literature review show that there are three main characters that distinguish Information System 5.0 from the previous generation, namely adaptive, intelligent, and collaborative (Sheikh et al., 2024).

Adaptive character is reflected in the system's ability to adapt to changing environments and user needs on an ongoing basis. This adaptivity is realized through the use of real-time data analysis, so that organizations can respond to market dynamics or changes in the situation quickly and precisely. In addition, the system is designed with a high level of scalability, allowing capacity development without having to rebuild existing technology foundations. The user-centered design approach is also an important element, as the design of the interface and features is tailored to the characteristics and preferences of the user. In the healthcare sector, for example, the integration of Internet of Things (IoT) devices allows the system to monitor patients' conditions on a daily basis and automatically update treatment recommendations based on changes in clinical data changes (Pebriani, 2025).

The second character is intelligence, which relies on the integration of Artificial Intelligence (AI) and large-scale data analytics. Information Systems 5.0 not only presents descriptive information, but is also able to conduct predictive analysis to anticipate trends and potential risks. Through processing historical data patterns, the system can generate relevant recommendations and automate routine processes that previously required human intervention. In practice, digital commerce platforms are able to recommend products with precision based on transaction history, user behavior, and market

trends simultaneously (Özdemir & Hekim, 2018). This shows that system intelligence not only improves operational efficiency, but also strengthens the personalized user experience.

Meanwhile, the collaborative character emphasizes that Information Systems 5.0 is built on the basis of synergy between humans, machines, and organizations in an interconnected digital ecosystem. This collaboration is possible through cross-platform interconnectivity, integration of cloud-based technologies, as well as the use of IoT that enables simultaneous data exchange. The concept of co-creation is also an important feature, where users, partners, and institutions play an active role in the innovation process. An open and interoperable ecosystem encourages the creation of broader service integration (Khosravy et al., 2024). In smart city implementation, for example, governments, the private sector, and communities can share data and information to create transparent, responsive, and efficient public services.

Information Systems 5.0 is not just an evolution of digital technology, but a paradigm transformation towards a system that is human-centered, adaptive to change, supported by artificial intelligence, and based on multi-actor collaboration. The integration of these three characteristics becomes an important foundation for modern organizations, including government bureaucracies, in building competitiveness and quality of public services that are relevant to the demands of the Society 5.0 era.

B. Future ASN Leadership Competencies

Changes in the increasingly dynamic strategic environment characterized by VUCA (volatility, uncertainty, complexity, ambiguity) require a fundamental transformation in the mindset and leadership practices of the State Civil Apparatus (ASN) (Baran & Woznyj, 2021). The complexity of public issues—from digital transformation, health crises, to climate change—can no longer be addressed with a conventional and procedural administrative approach alone. The leadership of future ASN is required to be visionary, adaptive, collaborative, and based on technology and data. In other words, the orientation of leadership shifts from just compliance with regulations to public value creation that has a real impact on society. Based on the synthesis of literature and the dynamics of bureaucratic reform, there are five main competency pillars that need to be developed systematically through ASN leadership education and training.

TABLE I
KEY COMPETENCIES OF ASN LEADERSHIP IN THE SOCIETY 5.0 ERA

Competencies	Key Focus	Expected Output
Digital Leadership	Technology utilization and data-driven decision-making	Efficiency of digital-based public service governance and innovation
Adaptive Leadership	Resilience, flexibility, and ability to respond to uncertainty	Organizational sustainability in the midst of crises and rapid changes
Transformational Leadership	Inspiration, strategic vision, and change in work culture	Increased motivation, performance, and organizational behavior change
Collaborative Governance	Cross-sector partnership and synergy network (Pentahelix)	Inclusive and sustainable policy solutions
Agile Bureaucracy	Speed, flexibility of structure, and orientation to results	Responsive, targeted, and impactful public services

Digital leadership is the initial foundation in the context of Society 5.0, where ASN leaders are not enough to only understand technology, but must have a digital mindset that allows them to strategically direct bureaucratic transformation. Data-driven decision-making and the creation of a secure and integrated digital work ecosystem are the main indicators. Furthermore, adaptive leadership emphasizes the ability to distinguish technical problems that have procedural solutions from adaptive challenges that require changes in mindset and work culture [18]. Adaptive leaders dare to experiment, learn from failures, and stay on top of the organization's direction in the midst of uncertainty. Transformational leadership complements the previous two competencies with the ability to inspire and build a collective vision, so that civil servants no longer work simply to abort administrative obligations, but are driven by a commitment to performance and public services. On the other hand, collaborative governance is a necessity in dealing with cross-sectoral public issues, which require strategic partnerships between the government, the business world, academia, the community, and the

media. Finally, the concept of agile bureaucracy emphasizes the need to simplify processes, trim the chain of command, build cross-functional teams, and focus on outcomes rather than just procedural compliance.

Overall, the five pillars of competence show that ASN leadership in the Society 5.0 era is no longer an alternative choice, but a strategic need to realize a world-class bureaucracy and support the vision of a Golden Indonesia. Future public leaders are required to move beyond a normative orientation to the rules and shift to an approach that focuses on creating added value for society through innovative, effective, and integrity ways.

C. Systematic Literature Review

The Systematic Literature Review (SLR) stage in this study is directed not to identify research gaps, but to map relevant empirical and conceptual data as the basis for analysis in the discussion section. The selected literature represents a spectrum of strategic issues in the development of ASN leadership and competencies, including the dimensions of facilities, vocational education, leadership training, digital transformation, talent management, merit systems, e-government, to data-based approaches in competency development. The mapping process was carried out by classifying each article based on the focus of the problem, methodological approach, and main findings, thereby producing a comprehensive picture of actual trends, patterns, and challenges in the management and development of ASN in the digital era and Society 5.0.

TABLE III
MAPPING AND SYNTHESIS OF LITERATURE ON ASN COMPETENCY AND LEADERSHIP DEVELOPMENT

No	Author & Year	Study Focus	Method	Key Findings
1	Langkai (2019) [19]	Implementation of higher education infrastructure standards	Descriptive survey	The facilities are not proportional to the number of students; Facility imbalance has an impact on the quality of learning.
2	Adriwati (2019) [20]	ASN vocational education in the MEA era	Descriptive-qualitative	Vocational education is effective if it is based on real work practices and market needs; relevant to increase the competitiveness of ASN.
3	Pangestu & Eprilianto (2022) [21]	ASN leadership training	Qualitative	Training participation is still low; Not all officials have participated in leadership training so that it has an impact on performance.
4	Djafar et al. (2022) [22]	Effectiveness of Diklatpim IV	Descriptive-qualitative	The integrity, planning, and creativity of echelon IV officials are still weak; Training has not had an optimal impact on behavior change.
5	Permadi et al. (2025) [23]	Strategies to improve ASN performance in the digital era	Descriptive qualitative	The implementation of FWS, digital reporting, and mandatory 20 hours of training/year improves digital adaptation and performance.
6	Dewi et al. (2025) [24]	ASN competency development strategy	Qualitative (SWOT)	Structured strategies, technology utilization, and incentives strengthen needs-based competency development.
7	Herwanto et al. (2024) [25]	Conceptual framework of digital ASN competencies	Literature review	The competence of ASN is divided into public service competencies and digital competencies (eGov, cybersecurity, data analytics, etc.).
8	Ikhwal et al. (2025) [26]	ASN talent management	Literature Research	The digitalization of the merit system (SIASN, e-SKP) is already underway, but it is constrained by rotation, budget, and data integration.

9	Firdaus et al. (2025) [27]	Competency assessment & talent pool	Qualitative	Nine-Box Matrix-based assessments have been implemented, but they are not optimal as a basis for promotion to positions.
10	Ella et al. (2024) [28]	Blended learning training collaboration model	Mixed method (Delphi)	The collaborative model increases the effectiveness of blended learning-based ASN training.
11	Manurung & Anza (2017) [29]	E-government & PPP	Literature studies & interviews	Institutional barriers and regulatory inequities hinder the optimization of digital partnerships.
12	Basuki (2022) [30]	Vocational digital archive simulator	R&D	Immersive digital media improves technology-based learning skills and motivation.
13	Rajagukguk et al. (2025) [31]	Data-driven needs analysis	Thematic synthesis	HRIS and transformational leadership are essential for needs-based training; Ceremonial training is still dominant.
14	Siregar et al. (2025) [32]	Performance-based ASN management	Descriptive-qualitative	The main obstacles: digital divide, culture of non-outcomes, regional disparities; It needs to integrate the merit system and digitalization.

Based on the mapping of the literature, it can be identified that the central issue in the development of ASN leadership and competencies is centered on three main axes, namely strengthening individual capacity through relevant education and training, digital transformation of the bureaucracy supported by integrated information systems, and the implementation of merit-based talent management and performance. Although various policies and innovations have been implemented—such as digitization of performance reporting, competency assessment, blended learning, and strengthening HRIS—structural challenges, organizational culture, and limited infrastructure remain significant obstacles. This mapping will then be analyzed in more depth in the discussion section to formulate a strategic model for ASN leadership education and training that is adaptive to the demands of Society 5.0.

DISCUSSION
A. Mapping Trends in ASN Leadership Training & Education

Based on the results of the Systematic Literature Review that has been mapped, the next stage in the discussion is to conduct systematic mapping to identify thematic patterns, issue trends, and inter-variable relationships in the development of ASN leadership and competencies in the Society 5.0 era. This approach allows researchers to not only summarize the findings, but also organize them into conceptual clusters that represent the direction of bureaucratic transformation. From the literature analyzed, it can be seen that there is a convergence in three major currents, namely the digital transformation of the bureaucracy, the strengthening of the merit system and talent management, and the reform of education and training based on needs and performance. These three currents intersect and form a strategic foundation in preparing ASN leadership that is adaptive, collaborative, and results-oriented.

However, the synthesis of these findings reveals significant systemic barriers. For instance, the infrastructure imbalances identified by Langkai (2019) do not merely affect students but specifically hinder the implementation of the "Digital-Based Training System" within the proposed model. Without equitable digital facilities, the shift toward immersive learning and simulators—as suggested by Basuki (2022)—will remain inaccessible to many regions, deepening the digital divide. Furthermore, the "ceremonial training" culture identified by Rajagukguk et al. (2025) serves as a primary obstacle to creating a merit-based talent pool.
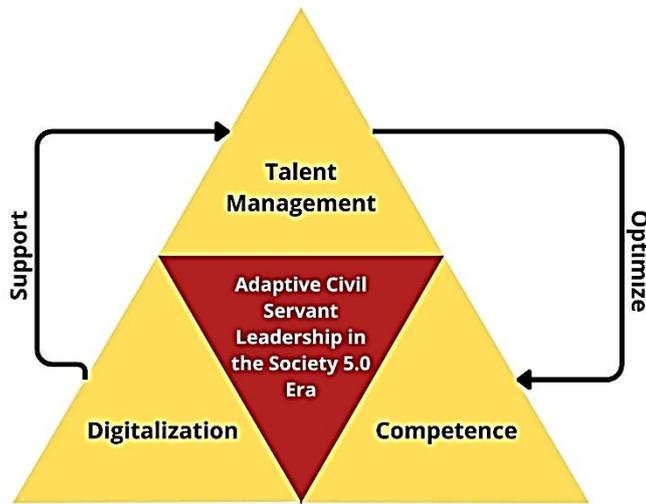
Fig. 1 Example of an unacceptable low-resolution image

Through this systematic mapping, it can be seen that ASN leadership development cannot be understood as a stand-alone training program, but as part of an integrated bureaucratic transformation ecosystem. Digitalization without merit-based talent management will result in a system that is purely administrative, while training without data-based needs analysis risks becoming ceremonial and ineffective. Therefore, the integration between digital transformation, merit systems, and strategic education-training is key in building ASN leadership that is adaptive to the complexity of Society 5.0. This mapping will then be analyzed conceptually to formulate a more comprehensive and sustainable ASN leadership development model.

B. ASN Leadership Training & Education Strategy in the Society Era 5.0

Based on the synthesis of literature that has been analyzed through the systematic literature review and systematic mapping approach, this study formulates a conceptual framework model for ASN education and training strategies in the Society 5.0 era. This model is built on the assumption that ASN leadership development cannot be separated from the dynamics of digital transformation, the complexity of the VUCA environment, as well as the demands of performance-based public governance and collaboration. Therefore, training strategies are no longer administrative and ceremonial, but must be designed as an integrated system that connects organizational needs, strengthening leadership competencies, and transforming bureaucracy in a sustainable manner.

It is essential to sharpen the fundamental distinction between the leadership paradigms of the Industry 4.0 and Society 5.0 eras within the context of public service. While the primary focus of leadership in the 4.0 era was on digitalization and automation to achieve technical efficiency (with technology at the center), leadership in the Society 5.0 era shifts toward a human-centric approach. In the proposed conceptual model, technologies such as AI and Big Data are positioned not as replacements for bureaucrats, but as instruments to enhance the empathy, inclusivity, and precision of leaders in responding to complex societal needs.

Dimension	Leadership in the 4.0 Era	Leadership in the 5.0 Era
Core Focus	Automation & System Efficiency	Harmonization of Technology & Human Values
Role of Technology	Replacement of human tasks (Digitalization)	Decision support & Empathy (Augmentation)
Ultimate Goal	Bureaucratic productivity	Social welfare & Inclusive services

This conceptual framework positions education and training as strategic instruments in shaping ASN leadership that is adaptive, digital, collaborative, and results-oriented. The model formulated consists of four main layers, namely the strategic context (input), transformation mechanism (process), competency strengthening (output), and institutional impact (outcome).

Input

- The Era of Society 5.0 (human-centered & technology-based governance)
- The Challenges of VUCA (Volatility, Uncertainty, Complexity, and Ambiguity)
- Digital Disruption & the Industrial Revolution 4.0
- Bureaucratic Reform & the Merit System
- Demands for Performance-Based Public Services

Process

- Strategic components that become engines of change:
- Digital-Based Training System
- (HRIS-based training needs analysis, e-learning, LMS, AI-supported learning)
- Adaptive Leadership Development
- (problem-solving complex issues, experimental mindset, resilience training)
- Transformational Leadership Program
- (visioning, culture building, motivational leadership)
- Collaborative Governance Training
- (pentahelix model, stakeholder engagement, policy co-creation)
- Agile Bureaucracy Development
- (cross-functional team training, outcome-based management, process simplification)

Output

Adaptive & Digital ASN Leader

Outcome

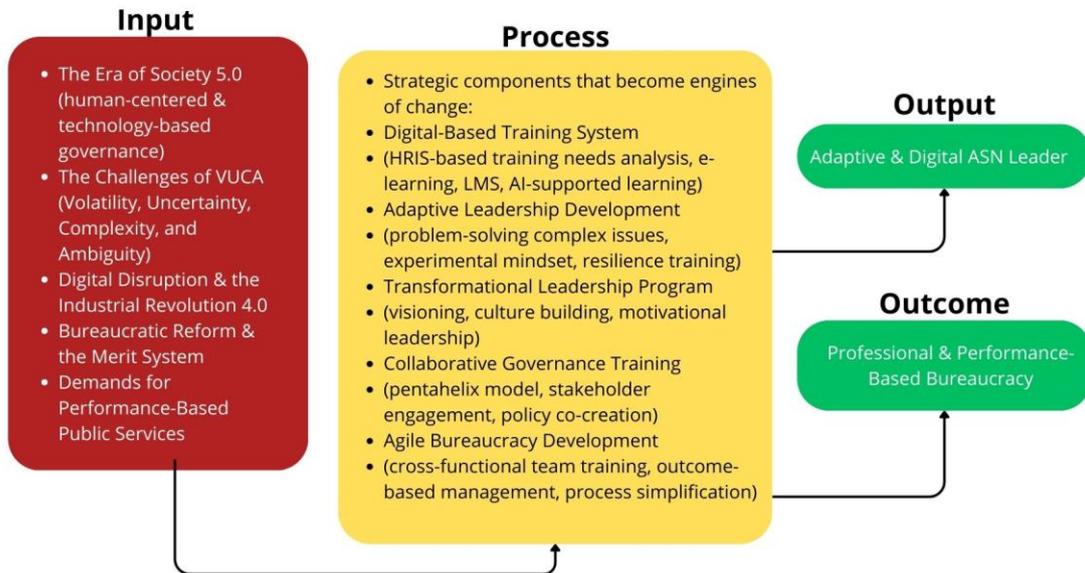Professional & Performance-Based Bureaucracy

Fig. 1 Conceptual Framework for ASN Leadership Education and Training in the Society 5.0 Era

This conceptual model emphasizes that ASN education and training strategies in the Society 5.0 era must be designed systemically, based on digital needs, and integrated with talent management and merit systems. Leadership development is no longer enough to focus on administrative aspects, but must be directed at building adaptive, transformational, and collaborative capacity that is able to answer the complexities of modern public governance. Thus, this conceptual framework provides a theoretical and strategic foundation for civil servant training reforms that are more relevant, sustainable, and have an impact on the quality of public services.

IV. CONCLUSION

This study concludes that the leadership of the State Civil Apparatus (ASN) in the Society 5.0 era is required to have a human-centered and technology-based character, with the ability to integrate digital skills, adaptability to change, transformational capacity, and collaborative competence in public governance. In the midst of the dynamics of VUCA and the acceleration of bureaucratic digital transformation, ASN leadership is no longer sufficiently oriented towards structural authority, but must be able to make data-based decisions, build a culture of performance, respond to policy complexities, and establish cross-sector synergy. In line with that, relevant education and training strategies are systems integrated strategies, starting from data-based needs analysis, the application of digital learning and blended learning models, to strengthening talent management based on the merit system. The most adaptive development model to bureaucratic digital transformation is a layered conceptual framework that connects strategic contexts, training processes, competency strengthening, and institutional impact in one dynamic and sustainable learning ecosystem.

However, this study has limitations because it is qualitatively based on literature studies so that it has not tested the model formulated empirically at certain institutions. Limited access and selection of sources also allow for the inability to accommodate all relevant studies that develop in an up-to-date manner. Therefore, further research based on field studies or quantitative approaches is needed to validate the effectiveness of the proposed conceptual model. On the practical side, ASN training management institutions and government agencies need to redesign the curriculum and competency development system that is in line with digital transformation and the merit system, while policymakers at the national level are expected to be able to integrate the agenda of bureaucratic reform, talent

strengthening, and government digitalization in one direction of coherent policies oriented towards improving the quality of public services.

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