BUILDING A DIGITAL COMPETENCY FRAMEWORK FOR CADRES, CIVIL SERVANTS, AND PUBLIC EMPLOYEES IN VIETNAM IN THE CURRENT CONTEXT OF DIGITAL TRANSFORMATION

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Abstract:

Digital transformation is becoming an inevitable trend in public administration, requiring cadres, civil servants, and public employees to be fully equipped with digital capacity to meet the requirements of digital government and provide effective public services. This study focuses on building a digital capacity framework for civil servants

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and public employees in the context of digital transformation in Vietnam. Based on the analysis of international models such as the European Digital Capacity Framework (DigComp), UNESCO Digital Capacity Framework, Organisation for Economic Co-operation and Development (OECD), and practices in Vietnam. The article proposes a digital capacity framework consisting of three main groups: (1) General digital capacity (including basic digital skills, digital communication, information security, and data processing); (2) Professional digital capacity (linked to the professional requirements of each public service position, data mining, information system operation); and (3) Leadership and management capacity in the digital environment (strategic vision, innovation, data governance, and evidence-based decision making). This digital capacity framework helps guide training, fostering, capacity assessment, and development of public human resources in the digital age.

Keywords: digital capacity, digital transformation, cadres, civil servants, public employees, digital government, capacity framework

1. Introduction

Digital transformation is becoming a global trend, fundamentally changing the way people live, work, and interact. The rapid development of information and communication technology has strongly impacted the way state agencies operate and the way the government provides services to the people (Carretero *et al.*, 2017). In Vietnam, the Government identifies digital transformation as a driving force for development, aiming to build a digital government, digital economy, and digital society by 2030. According to the Strategy for e-Government Development towards Digital Government for the period 2021-2025, with a vision to 2030, an important solution is to "*review and update the competency framework, IT skill standards, and integrate digital skills for state officials, civil servants, and public employees*". This emphasizes the need to research and develop a digital competency framework for civil servants and public employees to meet the requirements of the Digital Transformation process in the public sector.

Digital competence is understood as the set of knowledge, skills, and attitudes necessary for individuals to effectively use digital technology in work and life. UNESCO defines digital competence as the ability to access, manage, understand, combine, communicate, evaluate, and create information safely and appropriately through digital technology. Digital competence includes the ability to use computers and the Internet, information and communication skills, and positive attitudes and confidence in the digital environment. The Organisation for Economic Co-operation and Development (OECD) approaches this concept in a broader scope, including not only the ability to use technology but also the knowledge and qualities necessary to effectively perform assigned tasks in the digital environment. For civil servants, digital competence is the sum of knowledge, skills, attitudes, work experience, and other qualities that help them

perform their duties effectively when the work, management, and operation processes shift to a digital platform (Vrabec & Furtáková, 2024).

In the public sector, the digital capacity of civil servants is of particular importance. Experts believe that in the process of building a digital government, civil servants play a decisive role in the success of digital transformation (Jieli & Qiong, 2021). Digital capacity is the key to helping civil servants adapt to new technologies, improve work efficiency, and provide public services effectively and transparently. If civil servants are not fully equipped with the necessary digital skills, the quality of public service performance is difficult to ensure and maintain. In particular, the unprecedented impact of the COVID-19 pandemic has clarified the importance of digital capacity, forcing organizations to switch to online working, and digital capacity has become an indispensable requirement for civil servants to maintain continuous operations and serve the people in the new context. Therefore, building a digital competency framework for civil servants is an urgent issue to orient training, fostering, and developing human resources to meet the requirements of the current digital transformation (Trung, 2024).

2. Methodology

This study was conducted based on qualitative methods, combining document analysis and comparing domestic and foreign digital competency models and frameworks. Some typical digital competency frameworks in the world (European digital competency framework DigComp, UNESCO digital competency framework, and guidelines of the Organisation for Economic Co-operation and Development (OECD) are synthesized and analyzed.

At the same time, national policies and strategies on digital government development and current IT skill standards in Vietnam are reviewed. On that basis, the study compares and contrasts to draw out commonalities and differences between the models, as a basis for proposing a suitable digital competency framework for the Vietnamese civil servant team.

Available documents and research works related to digital competency and human resource development in the context of digital transformation are carefully reviewed. Document sources include reports and guidelines of international organizations (UNESCO, OECD), scientific studies, monographs on digital competency, and policy documents of the Vietnamese Government.

The content analysis method is applied to extract core competency elements from the documents as a foundation for the development of the proposed digital competency framework. In addition, the expert consultation method is incorporated when referring to the opinions of managers in the field of digital transformation to strengthen the practical argument for the study.

3. Research content

3.1 Concept and role of digital competence in the public sector

Digital competence is used synonymously with terms such as digital skills, digital literacy, and IT proficiency, reflecting the ability to apply technology in a digital environment. UNESCO defines Digital Competence as the ability to access, manage, understand, integrate, communicate, evaluate, and create secure, relevant information through digital technology to serve work and life goals (Vuorikari *et al.*, 2022). A person with digital competence can effectively and safely use digital tools (computers, the Internet, application software) in most tasks, from basic to complex. OECD expands this concept, emphasizing that digital competence is not limited to technology skills but also includes the knowledge, thinking, and personal qualities needed to adapt and innovate in the digital environment. The digital competence of civil servants can be understood as a set of knowledge, skills, attitudes, and work experience needed to perform well in their duties and tasks in a digital-based working and management method.

The role of digital capacity in the public sector, in digital government, the digital capacity of civil servants is an important factor in determining the efficiency of the administrative apparatus and the quality of public services.

First, high digital capacity helps civil servants quickly adapt to new technologies and digitalized work processes. This is especially important when governments are increasingly deploying online services and applying technology in state management. If civil servants lack digital skills, the implementation of e-government policies and digital transformation will be hindered or even fail.

Second, good digital capacity allows civil servants to improve work performance, proficiently use information systems and databases to process records, and provide services faster and more accurately. Civil servants who know how to exploit data analysis tools will support evidence-based policy decisions, improving the quality of public administration.

Third, digital capacity also helps increase transparency and engagement with citizens. Tech-savvy civil servants can use online public service portals, social networks, and mobile applications to interact and listen to people's opinions, thereby improving public satisfaction and trust in the government.

In Vietnam, the role of digital capacity is further emphasized in the context of the country promoting digital transformation. The government aims to leave no one behind in the digital transformation process, so civil servants must have sufficient digital capacity to support people in using online public services. Domestic researchers and experts also agree that developing the digital capacity for civil servants is an urgent requirement (Le Viet & Dang Quoc, 2023).

Improving digital capacity will help civil servants be more confident in applying new technology to public service and be ready to innovate and create policy advice, creating a favorable environment for digital transformation initiatives. Without proper

preparation and training, civil servants will face difficulties, leading to reduced work efficiency in a digitalized working environment. The digital capacity of civil servants is both a prerequisite for the successful implementation of digital government and an intrinsic driving force for administrative reform and innovation in public service delivery in the digital age.

3.2 Digital competency models and frameworks in the world and Vietnam

Many countries and international organizations have developed digital competency frameworks to guide the assessment and training of digital skills for human resources. A typical example is the European Digital Competency Framework for Citizens (DigComp) published by the European Commission in 2013 and updated in later versions. The DigComp framework provides a common understanding of the basic digital competency areas that a citizen needs to have, including 5 main groups:

1) Information and data - the ability to identify, access, evaluate, store, and manage digital information;
2) Communication and collaboration - the ability to use digital technology to communicate, share information, and work in groups;
3) Digital content creation - the ability to develop new content, including writing, multimedia design, and understanding copyright and licensing;
4) Security – the ability to protect devices, personal data, privacy, health and awareness of cybersecurity issues;
5) Problem-solving – critical thinking, solving technical problems, and creativity in applying technology to new needs (Ferrari & Punie, 2013).

There are a total of 21 specific competencies spread across these 5 groups. Each competency is described according to increasing levels of proficiency (usually divided into 4 levels, including basic, intermediate, advanced, and expert) with illustrative examples of the corresponding knowledge, skills, and attitudes. The DigComp framework is currently used by many European countries and around the world as a basis for building digital skills training programs for citizens and civil servants. For the public sector, DigComp is aimed at the public, the core competencies identified by this framework (from information literacy, and digital communication to cyber security and problem-solving) are fundamental requirements for all civil servants working in the digital environment. Therefore, DigComp is considered a valuable reference when developing digital competency frameworks for civil servants in other countries. Some studies have recommended that Vietnam can selectively inherit the European digital competency framework, adapting it to the domestic context to apply to the staff of civil servants.

In addition to DigComp, organizations such as UNESCO and OECD have introduced notable digital competency frameworks. In 2018, UNESCO published the global reference framework for digital skills to support the assessment of the sustainable development index on digital skills. This framework emphasizes core competencies such

as accessing, evaluating, and managing information; communicating and collaborating through technology; creating content and creative thinking; ensuring safety and security; and solving problems in the digital environment. More recently, UNESCO continued to develop the competency framework on Artificial Intelligence and digital transformation for civil servants to support governments in enhancing the capacity of their staff in the context of the increasingly widespread application of AI and digital technology. This framework proposes three main groups of competencies for civil servants in the digital era, including:

1) Digital planning and design – the capacity to build visions, policies, and digital transformation projects;
2) Data use and management – the capacity to exploit data, analyze and make decisions based on data, and manage public data;
3) Digital implementation and management – the capacity to deploy technology solutions, manage information systems and lead the transformation process in the agency.

The development of a digital competency framework for civil servants and public employees has been initially mentioned in national strategies and policies. The Ministry of Information and Communications has issued the National Digital Transformation Program and the Digital Transformation Handbook, which emphasizes the need to improve digital skills for public employees. Vietnam has a system of Basic and Advanced IT Skills Standards (according to Circular 03/2014/TT-BTTTT and the replacement circular in 2021) as a standard for assessing IT skills for civil servants and public employees. However, these standards mainly focus on office IT skills and computer usage, not fully covering soft digital competencies and management competencies in the digital environment. The development of a comprehensive digital competency framework for civil servants and public employees is necessary to supplement existing technical standards (Mai *et al.*, 2024). Some domestic studies have initially proposed a digital competency framework for civil servants and public employees based on international experience.

Vietnam does not yet have an official digital competency framework specifically for civil servants, but the need and direction for its development are clear. Existing IT skill standards will be a component of the future digital competency framework, in addition to the need to supplement soft skills in management, data analysis, information security, and innovative thinking in the digital environment. This is the premise for designing training and fostering programs that are close to reality and help Vietnamese civil servants be ready for digital government (Chuc & Anh, 2023).

3.3 Proposed digital competency framework for civil servants and public employees
Based on a synthesis of theories and reference to international models, a digital competency framework for civil servants and public employees can be proposed, consisting of three main groups including:

1) General competency group;
2) Professional competency group;
3) Leadership and management competency group (applied to leadership positions).

This structure is similar to the classification of competencies in public service (including general competencies, competencies by job position, leadership, and management competencies) but integrates additional requirements for digital skills at all levels (Tuoi & Thanh, 2023).

First, general digital competencies are the basic competencies that all civil servants and public employees need to work effectively in a digital environment, regardless of the field of work. The general competency group focuses on basic digital skills similar to DigComp fields, including:

- **Understanding of information technology and data**. Basic knowledge of computers, digital devices, network systems; understanding the operating principles of the Internet; knowing how to manage and protect information and digital data. This capacity requires civil servants to have a firm grasp of concepts such as hardware, software, databases, cloud computing, and awareness of information security when working with public data.

- **Communication and collaboration in a digital environment.** Ability to interact and exchange information through digital tools; proficient use of email, work management systems, and online conferences; knowing how to exploit social networks and information portals to communicate with people and colleagues. Including remote teamwork skills, inter-departmental cooperation through digital platforms, and civilized behavior in the online environment.

- **Exploiting and managing information and digital data.** Skills in searching and collecting information online to serve work; knowing how to use data management software and agency information systems. Civil servants need to be able to analyze, process, and store digital data scientifically, as well as read and understand data reports to support decision-making.

- **Create and process digital content.** Ability to draft and use advanced office tools (Word, Excel, PowerPoint), create electronic documents, design digital forms, use electronic document interconnection systems to circulate documents between agencies. In addition, this capacity also includes the ability to create digital communication content (articles, images, infographics) when necessary for propaganda work and guidance for the people.

- **Safety, network security.** Awareness and skills to ensure information security in the digital environment. All civil servants must know the basic security principles, such as password management, encryption of sensitive information, malware prevention, and protection of personal devices and organizational data. At the same time, clearly understand the legal regulations on data protection and privacy when providing online public services.

- **Troubleshooting and technology adaptation.** Ability to handle common technical problems, self-learning new system features; creativity in applying technology to solve work problems. This ability requires problem-solving thinking and proactively seeking solutions when faced with new technology situations or when IT incidents occur instead of being completely dependent on the technical department.

The digital capacity of civil servants and public employees is related to their role as digital citizens. Each civil servant is also a citizen in the digital society, so it is necessary to have the right understanding and attitude about digital identity, rights, and responsibilities in cyberspace. These competencies help civil servants become exemplary users and understand and effectively support the community in the process of national digital transformation (Ovcharuk, 2020).

Second, professional digital competencies. This group of competencies is closely linked to the specific requirements of each professional field in the public sector. In addition to general digital competencies, each civil servant in a professional position needs to have knowledge and skills on digital transformation appropriate to the field in charge. Some outstanding professional competencies in the context of digital government development include:

- **Managing digital transformation processes and projects.** Ability to apply project management methods and specialized processes in the digital environment. This competency helps civil servants and public employees smoothly operate digital transformation programs and projects within their scope of work.
- **Exploiting and analyzing specialized data**. Understanding and using technological tools to collect and process data in the field in charge. Data analysis skills help civil servants make more accurate professional decisions and contribute to the development of new data-based management models.
- **Understanding of digital government and digital economy in the field.** Ability to update and apply knowledge of digital government and digital economy development strategies related to the industry and field in which they work. For example, civil servants in the tourism sector need to understand digital economic trends in tourism; civil servants in the agricultural sector understand digital transformation in the agricultural supply chain. This ensures that each civil servant is in tune with the national digital transformation orientation within their field, performing tasks in line with the general strategy.
- **Applying specialized digital technologies.** Ability to proficiently use specialized IT systems and comply with information security procedures in that field. For example, tax officers must be good at using the electronic tax declaration system and securing taxpayer data; archivists must be good at managing the document digitization system and ensuring the integrity of archived data. This capacity requires civil servants to not only know how to operate the system but also

coordinate with the technical department to promptly detect and fix problems within the scope of work.

- **Developing digital infrastructure and services.** For some positions, professional capacity also includes the ability to participate in building and developing technology infrastructure in the agency. These capacities ensure that the digital infrastructure of state agencies is always operated and improved to meet actual needs.

The group of professional capacities is highly flexible, depending on the functions and tasks of each agency and each job position. Therefore, when building a detailed digital competency framework, it is necessary to specifically identify professional competencies for each group of civil servants (Shubha, 2017). Although different in content, the common point is that all of these professional competencies are associated with the effective application of digital technology in specialized professional activities, helping to improve productivity and professional quality in state agencies.

Third, leadership and management competencies in the digital environment. The group of competencies is for leaders and managers at all levels (department, department, agency, and ministry levels). In addition to the general and specialized competencies mentioned above, managers in the context of digital transformation should have additional specific competencies to lead the organization to successfully transform. The factors identified for the success of digital transformation are proper leadership and appropriate organizational culture. The proposed digital competency framework for leaders focuses on competencies that support them in performing the role of "captain" in the digital age.

- Strategic vision and digital thinking. Digital leaders should have a clear vision of the organization's Digital Transformation strategy, visualize the big picture, and set specific goals. This capacity includes the ability to determine the direction, goals, and tasks for the unit in the digital age; build a transformation plan and roadmap; and correctly assess the interactions and benefits of stakeholders. Leaders should have systemic thinking, analytical thinking, and critical thinking to look at problems from many perspectives and be ready to consider new models and approaches in management. Digital strategic thinking helps leaders lead the organization in the right direction in a rapidly changing context.
- **Ability to lead innovation and adapt flexibly.** Digital transformation requires leaders to be pioneers in changing thinking and working methods. This capacity is demonstrated by the willingness to accept new things, proactively seek digital transformation initiatives, encourage a culture of experimentation, and learn from failure. Leaders should be flexible in adjusting organizational models and operating processes when applying new technology; They should be able to make decisions in uncertain conditions and know how to take advantage of uncertain factors for development goals. A leader with the ability to innovate will create a

creative, daring atmosphere in the organization, thereby dynamically promoting the digital transformation process.

- **Human resource management in the digital age.** Leaders not only understand technology but, more importantly, manage people in a digital environment. This ability includes building an organizational culture that encourages employees to learn new technology and empowers and motivates them to propose initiatives. Leaders should know how to train and develop teams, focus on fostering digital skills for employees, and build effective working groups both remotely and directly. In addition, communication and persuasion skills in the digital context are also very important - leaders must be able to inspire and create trust and consensus for employees in the digital transformation vision. Leaders should set an example in using technology: actively applying digital tools in management, making data-based decisions, and taking responsibility for the unit's digital transformation results (Van der Waldt, 2016).

- **Data-driven decision-making and change management.** An important aspect of digital leadership is knowing how to harness the power of data in management. This requires the ability to understand and analyze big data reports, evaluate the effectiveness of digital initiatives with specific data, and make accurate and timely policy decisions. Along with that, leaders need to have change management skills: planning, communicating, implementing digital transformation initiatives, and effectively handling resistance to change in the organization. They must know how to draw lessons from failures in the digital reform process, considering failures as learning opportunities to adjust strategies more appropriately.

Leadership and management capacity in digital transformation is a high-level expansion of general and professional competencies, combined with personal qualities such as decisiveness, courage to innovate, and creative thinking. Many agencies have begun to have the position of Chief Digital Officer (CDO), demonstrating the importance of the role of a specialized leader in digital transformation. This confirms that the digital leadership competency group is indispensable in the digital competency framework of civil servants.

The proposed digital competency framework includes three competency groups (general, professional, and leadership) with specific components that will be an important basis for designing appropriate training and development programs for civil servants. When applied, agencies can build a detailed competency dictionary for each position, along with criteria for assessing the level of achievement of each digital competency. Based on the competency framework, human resource management agencies can identify the competency gap of civil servants compared to requirements, thereby having a training and development plan to improve the missing competencies (Vanganjil *et al.*, 2023).

Assessment can be conducted through self-assessment surveys, digital skills tests, or direct interviews to grasp the actual situation and learning needs of each individual.

The digital competency framework will help standardize competency requirements in recruiting, using, and developing civil servants in the digital age, creating the premise for building a team of professional and modern civil servants, and actively contributing to the success of the national digital transformation program.

4. Conclusion

In the context of current digital transformation, building a digital competency framework for cadres, civil servants and public employees is an urgent and strategic task. This study has clarified the concept of digital competency and its importance to the public sector and analyzed some typical digital competency framework models in the world and Vietnam. The article proposes a digital competency framework for Vietnamese civil servants and public employees, including a general competency group (basic digital skills for all civil servants), a professional competency group (digital skills associated with specialized fields), and a leadership and management competency group (the ability to lead an organization in a digital environment). This competency framework emphasizes the comprehensive development from technical skills to thinking and qualities required of civil servants in the digital age, in line with the orientation of building a digital government and digital administration in Vietnam.

This study is a theoretical framework proposal, so the next steps can focus on verifying and perfecting the digital competency framework through practice. Conduct surveys and in-depth interviews at several agencies to collect opinions on the suitability of the proposed competencies or test the application of the competency framework in assessment and training in a locality to gain experience before replicating. Consider how the specific cultural and social factors of Vietnam affect the formation of digital competencies, thereby adding appropriate soft competency factors.

Building a digital competency framework for civil servants is both an urgent requirement and a fundamental solution to developing high-quality human resources in the digital age. The digital competency framework helps to orient civil servants of the new era, proficient in technology and effective service. Doing this well will contribute to building a modern, transparent administration and successfully promoting the national digital transformation process. The findings and recommendations in the article are expected to be a useful reference for policymakers, public human resource managers, and researchers interested in the topic of digital capacity and digital human resource development in the public sector.

Authors' Contribution
All authors contributed equally to the conception and writing of the manuscript.

Conflict of Interest Statement
The authors declare no conflicts of interest.

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