

**MINISTRY OF EDUCATION AND TRAINING
LAC HONG UNIVERSITY**



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**THE IMPACT OF JOB ROTATION ON WORK
MOTIVATION AND JOB PERFORMANCE AMONG
CUSTOMS OFFICIALS AND CIVIL SERVANTS IN
THE ERA OF INDUSTRY 4.0: A CASE STUDY OF
SOUTHEASTERN VIETNAM**

SUMMARY OF THE DOCTORAL DISSERTATION

Major: Business Administration

Major code: 9340101

Dong Nai, 2026

The dissertation was completed at: **LAC HONG UNIVERSITY**

Academic Supervisors:

1. First Supervisor: Assoc. Prof. NGUYEN THANH LAM, Ph.D.
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Examiners 1:

Examiners 2:

Examiners 3:

The dissertation will be defended before the University-level Doctoral Dissertation Examination Committee at Lac Hong University at (time) on (day) (month) (year).

The dissertation is available at:

- Lac Hong University Library;
- National Library of Vietnam.

LIST OF PUBLICATIONS

1. Vy Vu Quynh Nhu and Nguyen Thanh Lam (2025), Mô hình nghiên cứu tác động của LCCV đến DL và KQCV của người lao động, *Journal of Economics and Finance Online*, <https://nghiencuu.tapchikinhhtetaichinh.vn/mo-hinh-nghien-cuu-tac-dong-cua-luan-chuyen-cong-viec-den-dong-luc-lam-viec-va-ket-qua-cong-viec-cua-nguoi-lao-dong-130819.html>
2. Vy Vu Quynh Nhu and Nguyen Thanh Lam (2026), Phát triển thang đo cảm nhận về sự đa dạng trong LCCV của CBCC Hải quan, *Journal of Economics and Finance Online*, <https://nghiencuu.tapchikinhhtetaichinh.vn/phat-trien-thang-do-cam-nhan-ve-su-da-dang-trong-luan-chuyen-cong-viec-cua-can-bo-cong-chuc-hai-quan-152161.html>
3. Vy Vu Quynh Nhu and Nguyen Thanh Lam (2026), Luân chuyển và KQCV của nhân viên: Nghiên cứu trường hợp công chức hải quan Đồng Nai, *Asian Journal of Economics and Banking*, số 238, 153-164, DOI: 10.63065/ajeb.vn.2026.238.130331.

CHAPTER 1: INTRODUCTION

1.1. Rationale for the Study

1.1.1. Theoretical Background

In management, job design is an important tool for enhancing organizational effectiveness, developing employee capabilities, and sustaining work motivation (DL). Job rotation (LCCV) is considered a job design practice that broadens employees' skills, reduces monotony, and improves their adaptability. Previous studies suggest that the effects of LCCV on job performance (KQCV) are often transmitted through mediating mechanisms, particularly DL. When employees perceive opportunities for learning, development, and task diversification, their DL is enhanced, thereby contributing to improved KQCV. However, the effectiveness of LCCV depends on implementation quality, person–job fit, and organizational support. Inadequately planned rotation or assignments that are misaligned with employee capabilities may increase adaptation pressures and adversely affect both DL and KQCV. Thus, LCCV should be viewed as a context-dependent management practice in which DL serves as a mechanism through which rotation experiences are translated into KQCV.

In the context of digital transformation, digital competence (NLS) has become an essential resource that enables employees to adapt to technological changes and maintain job effectiveness. For the Customs sector, which is strongly influenced by digitalization and modern governance requirements, the relationships among LCCV, DL, and KQCV need to be examined in consideration of NLS. Accordingly, this dissertation investigates DL as a mediating mechanism and NLS as a moderating factor in the relationship between LCCV & KQCV among Customs officials and civil servants (COCS).

1.1.2. Practical Background

In the context of globalization, trade liberalization, and digital transformation, Customs authorities are responsible not only for revenue collection and border control but also for facilitating trade, managing risks, ensuring supply chain security, and improving service quality for businesses. These requirements have made the work of COCS increasingly complex,

characterized by substantial time pressures, accountability requirements, regulatory compliance obligations, and the need to adapt to changes in policies, operational procedures, and technologies.

For Vietnam Customs, administrative reform, modernization, and the development of digital Customs have introduced new requirements for human resource management. COCS are expected to possess diverse professional competencies, cross-unit coordination capabilities, information-processing skills, and proficiency in digital systems, including electronic customs clearance, data-driven risk management, and the National Single Window mechanism. Under these conditions, LCCV has become an important management tool that facilitates the development of versatile competencies, broadens professional knowledge, and reduces job monotony. It also contributes to mitigating ethical risks, preventing the formation of entrenched spheres of influence, and strengthening integrity in public service.

Southeastern Vietnam is a dynamic economic region characterized by extensive industrial, logistics, and import–export activities, with a high concentration of industrial parks, seaports, foreign direct investment (FDI) enterprises, and substantial cargo flows. Consequently, COCS in this region frequently face heavy workloads, diverse operational responsibilities, demands for rapid customs clearance, risk control pressures, and high levels of technology adoption. When appropriately designed and implemented, LCCV can help these employees enhance their competencies, sustain DL, and improve KQCV. Conversely, inadequate training, ineffective handover procedures, insufficient organizational support, or poor alignment with individual capabilities may increase adaptation costs and negatively affect DL and KQCV.

Therefore, examining the impact of LCCV on DL and KQCV among COCS in Southeastern Vietnam is both necessary and practically significant, particularly as Vietnam Customs accelerates digital transformation and public sector modernization. On this basis, the author selected the research topic “The Impact of Job Rotation on Work Motivation and Job Performance among COCS in the Era of Industry 4.0: A Case Study of Southeastern Vietnam” for the doctoral dissertation in Business Administration at Lac Hong University.

1.2. Research Objectives

1.2.1. General Objective

The general objective of this dissertation is to identify and measure the effects of LCCV on DL, perceived diversity in job rotation, and KQCV, thereby proposing managerial implications for improving the KQCV of COCS and the operational effectiveness of Customs Departments through effective LCCV practices and enhanced employee DL.

1.2.2. Specific Objectives

To achieve the general objective, the dissertation pursues the following specific objectives:

- (1) To identify the relationships among LCCV, DL, perceived diversity in job rotation, and KQCV among COCS.
- (2) To quantify the effects of LCCV on DL, perceived diversity in job rotation, and KQCV among COCS.
- (3) To examine the mediating role of DL in the relationships between LCCV, perceived task variety (CNN), perceived skill variety (CNK), NLS, and KQCV among COCS.
- (4) To test the moderating role of NLS in the relationships among LCCV, perceived diversity in job rotation, DL, and KQCV among COCS.
- (5) To examine differences in the relationships within the research model across groups of COCS classified by gender, age, length of service, and educational attainment.
- (6) To propose managerial implications for improving the KQCV of COCS and the operational effectiveness of Customs Departments through the implementation of LCCV practices and the enhancement of employee DL.

1.3 Research Questions

The dissertation seeks to address the following research questions:

- (1) What are the relationships among LCCV, DL, perceived diversity in job rotation, and KQCV among COCS?
- (2) To what extent does LCCV affect DL, perceived diversity in job rotation, and KQCV among COCS?
- (3) Does DL mediate the relationships between LCCV, CNN, CNK, NLS, and

KQCV among COCS?

- (4) How does NLS moderate the relationships among LCCV, perceived diversity in job rotation, DL, and KQCV among COCS?
- (5) Do the relationships within the research model differ across groups of COCS based on gender, age, length of service, and educational attainment?
- (6) What managerial measures should Customs Departments in Vietnam in general, and Southeastern Vietnam in particular, develop and implement to improve employee KQCV and organizational effectiveness through LCCV practices and enhanced DL?

1.4. Research Subject and Scope

1.4.1. Research Subject

- Research subject: LCCV, DL, KQCV among COCS.
- Survey respondents: COCS working in Southeastern Vietnam who have experienced or are currently undergoing LCCV during their employment in the Customs sector.

1.4.2. Research Scope

- Geographical scope: The study covers Customs Departments and Sub-departments in Ho Chi Minh City, Dong Nai, Binh Duong, and Ba Ria–Vung Tau, representing four of the six provinces and centrally governed cities in Southeastern Vietnam before the provincial-level administrative reorganization under Resolution No. 202/2025/QH15 of the National Assembly.
- Temporal scope: Secondary data were collected for the period 2020–2025, while primary data were collected in 2025.

1.5. Research Methodology

1.5.1. Qualitative Research

The author conducted a systematic review of relevant literature, including foundational theories and previous domestic and international studies. Based on this review, the key research constructs and their interrelationships were identified, providing the basis for developing the proposed research model and the initial measurement scales.

Subsequently, expert group discussions were conducted to identify additional relevant factors and refine or supplement the research constructs,

conceptual model, and measurement scales to ensure their appropriateness for the practical research context. Drawing on the findings from these discussions, the research model and measurement instruments were further developed and refined, resulting in the finalized measurement scales for the quantitative research phase.

1.5.2. Quantitative Research

The study employed a sequential exploratory mixed-methods design comprising three phases: qualitative research, preliminary quantitative research, and main quantitative research.

The qualitative phase involved semi-structured interviews with 11 COCS at Dong Nai Customs Department to develop and refine the measurement scales. The preliminary quantitative phase targeted 100 COCS across Dong Nai, Ho Chi Minh City, Binh Duong, and Ba Ria–Vung Tau using convenience sampling. SmartPLS 4.0 was employed to assess the reliability, convergent validity, and discriminant validity of the lower-order construct (LOC) measurement models. The findings informed the refinement of the final questionnaire. The official quantitative phase targeted 500 COCS through direct surveys and convenience sampling in the same four localities, representing four of the six provinces and centrally governed cities in Southeastern Vietnam. Using PLS-SEM in SmartPLS 4.0, the study evaluated the measurement and structural models and tested the proposed hypotheses.

Overall, this three-stage approach aimed to strengthen methodological rigor, enhance contextual relevance, and provide empirical evidence for developing managerial implications.

1.6. Structure of the Dissertation

The dissertation consists of five chapters, organized as follows:

Chapter 1: Introduction.

Chapter 2: Theoretical Foundations and Research Model.

Chapter 3: Research Methodology.

Chapter 4: Research Findings and Discussion.

Chapter 5: Conclusions and Managerial Implications.

CHAPTER 2: THEORETICAL FOUNDATIONS & RESEARCH MODEL

2.1. Key Research Concepts

2.1.1. Job Rotation

Job rotation (LCCV) is a planned human resource management practice involving lateral reassignment across jobs, tasks, or roles to develop skills, reduce monotony, broaden experience, and enhance organizational adaptability (Ho et al., 2009; Santos et al., 2017; Azizi et al., 2010; Yu & Zhang, 2020). In this study, LCCV is viewed as a systematic job redesign practice that supports competency development, DL, risk management, organizational flexibility, and KQCV (Comper et al., 2021; Korpela et al., 2024; Tahiri et al., 2026).

2.1.2. Work Motivation

Work motivation (DL) is a psychological process that energizes, directs, and sustains employees' efforts toward individual and organizational goals (Franco et al., 2002; Dwivedula & Bredillet, 2010; Hsu et al., 2013). It reflects interactions between intrinsic factors, including needs, values, and interests, and extrinsic factors, such as rewards, recognition, and organizational support (Chen & Kanfer, 2006; Borghi et al., 2017; Brown, 2022). In this study, DL is considered a psychological mechanism linking management practices and job design to positive work behaviors, adaptability, and KQCV among COCS (Popoola & Fagbola, 2023; Gumasing et al., 2025).

2.1.3. Job Performance

Job performance (KQCV) reflects employees' contributions to organizational goals through work-related behaviors and outcomes within their control (Campbell et al., 1993; Viswesvaran & Ones, 2000). This multidimensional construct encompasses task performance, contextual performance, and counterproductive work behaviors (Borman & Motowidlo, 1993; Koopmans et al., 2014; Alaybek & Dalal, 2021). In this study, KQCV refers to COCS' fulfillment of assigned duties regarding quality, efficiency, timeliness, coordination, and regulatory compliance, influenced by individual competencies, DL, and organizational support (Susanto et al., 2022; Zheng et

al., 2024; Oweidat et al., 2025; Giday & Elantheraiyan, 2023).

2.1.4. Digital Competence

Digital competence (NLS) refers to the ability to use digital technologies effectively, critically, ethically, and responsibly for information processing, communication, collaboration, and problem-solving (Crompton & Sykora, 2021; Dai, 2023; Guzmán-Simón et al., 2017). It integrates technical skills, cognitive and social competencies, attitudes, values, and adaptability to digital transformation (Jekabsone & Anohina-Naumeca, 2024; Pisante et al., 2023). In this study, NLS is regarded as a personal resource enabling COCS to perform digitalized tasks, process data, and adapt to technological changes, potentially influencing DL and KQCV while moderating selected relationships within the research model.

2.1.5. Perceived Diversity in Job Rotation

Perceived diversity in job rotation reflects employees' recognition of differences in tasks, skills, responsibilities, and work contexts across rotated positions (Voelpel & Streb, 2010; Diego-Mas et al., 2009; Otto & Battaia, 2017). It comprises perceived task variety (CNN) and perceived skill variety (CNK), representing opportunities to experience diverse job requirements, apply competencies, and develop professional experience (Mlekus et al., 2022; Tahiri et al., 2026). In this study, perceived diversity in LCCV is considered a mechanism through which rotation may reduce monotony, facilitate learning, enhance DL, and improve KQCV. These potential benefits depend on meaningful task differences, person–job fit, and rotation implementation (Dickhout et al., 2018; Cirillo et al., 2021; Comper et al., 2021).

2.2. Underpinning Theories

Self-Determination Theory (SDT), Social Exchange Theory (SET), and Job Demands–Resources Theory (JD–R).

2.3. Review of Related Studies

Table 2.1. Summary of Factors Influencing Job Performance

No.	Factors	References
1	Individual Competence	Cirillo & c.s. (2021); Mlekus & c.s. (2022); Rinaldi & c.s. (2022)
2	Opportunity to Perform	Cirillo & c.s. (2021)

No.	Factors	References
3	Organizational Support Conditions	Foroutan & c.s. (2021); Jeong & c.s. (2023); Gumasing & c.s. (2025); Mlekus & c.s. (2022); Tahiri & c.s. (2026); Comper & c.s. (2021)
4	Job Rotation Program Design	Mlekus & c.s. (2022); Foroutan & c.s. (2021); Jeong & c.s. (2023); Gumasing & c.s. (2025)
5	Extent of Meaningful Variation in Tasks, Skills, and Job Requirements	Diego-Mas & c.s. (2009); Dickhout & c.s. (2018); Tahiri & c.s. (2026); Cirillo & c.s. (2021)
6	Degree of Alignment between Tasks, Required Skills, and Individual Competencies	Foroutan & c.s. (2021); Jeong & c.s. (2023); Gumasing & c.s. (2025); Peron & c.s. (2022); Jackson & c.s. (2023)
7	Digital Competence	Dai (2023); Crompton & Sykora (2021); Guzmán-Simón & c.s. (2017); Jekabsone & Anohina-Naumeca (2024); Pisante & c.s. (2023); Gnambs & Hawrot (2025); Gumasing & c.s. (2025); Lukito & c.s. (2025)
8	Ability to Adapt to Digital Systems, Process Data, and Collaborate through Digital Platforms	Dai (2023); Crompton & Sykora (2021); Jekabsone & Anohina-Naumeca (2024); Pisante & c.s. (2023); Gnambs & Hawrot (2025); Rukanova & c.s. (2020, 2021); Young (2021); Kunaka (2021); Mohebi & c.s. (2025)
9	Customs Modernization and Operational Automation	Rukanova & c.s. (2021); Shestak & c.s. (2022); Fang & c.s. (2023)
10	Workload, Security Requirements, Legal Complexity, and Digital Transformation	Irani & c.s. (2023); Arifin & c.s. (2024); Mohebi & c.s. (2025)
11	Professional Training, Digital Competence Development, and Support for Adaptation to Change	Gudavalleti & c.s. (2024); Irani & c.s. (2023); Thủ tướng Chính phủ (2020, 2022); Bộ Tài chính (2022); Tổng cục Hải quan (2022, 2023, 2024)
12	Work Motivation	Cirillo & c.s. (2021); Shiue & c.s. (2021); Mlekus & c.s. (2022); Gumasing & c.s. (2025); Lukito & c.s. (2025); Diego-Mas & c.s. (2009); Otto & Battaia (2017); Tahiri & c.s. (2026)

2.4 Proposed Research Model

Based on the review of related studies and the research hypotheses summarized in Table 2.2, the relationships among the research constructs and the proposed hypotheses are conceptualized in the research model presented in Figure 2.1.

Table 2.2. Summary of the Proposed Research Hypotheses

Research Hypotheses		Expectations
G1	LCCV has a positive effect on KQCV among COCS.	+
G2	LCCV has a positive effect on DL among COCS.	+
G3	LCCV has a positive effect on CNN among COCS.	+
G4	LCCV has a positive effect on CNK among COCS.	+
G5	DL has a positive effect on KQCV among COCS.	+
G6	CNN has a positive effect on DL among COCS.	+
G7	CNK has a positive effect on DL among COCS.	+
G8	CNN has a positive effect on KQCV among COCS.	+
G9	CNK has a positive effect on KQCV among COCS.	+
G10	NLS has a positive effect on DL among COCS.	+
G11	NLS has a positive effect on KQCV among COCS.	+
G12	NLS moderates the relationship between DL and KQCV.	+
G13	NLS moderates the relationship between CNN and DL.	+
G14	NLS moderates the relationship between CNK and DL.	+
G15	NLS moderates the relationship between CNN and KQCV among COCS.	+
G16	NLS moderates the relationship between CNK and KQCV.	+
G17	NLS moderates the relationship between LCCV and KQCV.	+
G18	DL mediates the relationship between LCCV and KQCV.	+
G19	DL mediates the relationship between CNN and KQCV.	+
G20	DL mediates the relationship between CNK and KQCV.	+
G21	DL mediates the relationship between NLS and KQCV.	+

(Nguồn: Đề xuất của tác giả)

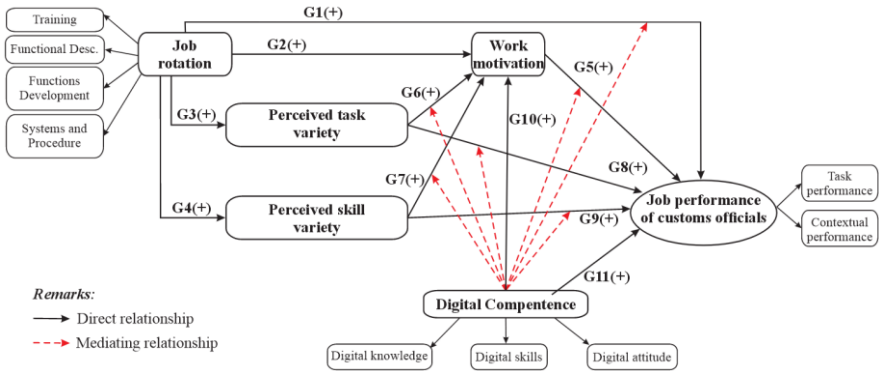
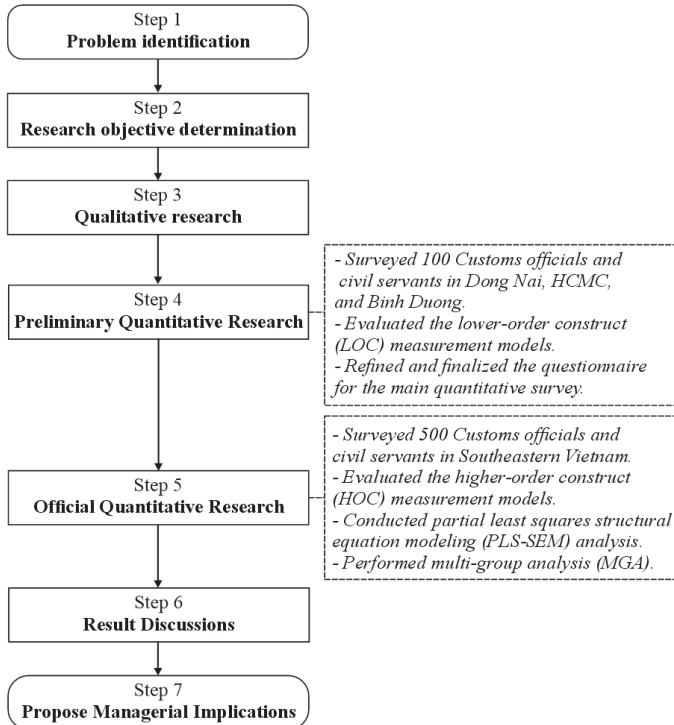


Fig. 2.1: Proposed research model

CHAPTER 3: RESEARCH DESIGN

3.1. Research Process



3.2. Qualitative Research Findings

3.3.1. Job Rotation Measurement Scale

Table 3.1. Job Rotation Measurement Scale

No.	Code	Proposed Measurement Items
		<i>Training</i>
1	LDT1	The Customs Department places emphasis on identifying the training needs of COCS.
2	LDT2	The Customs Department employs various training methods.
3	LDT3	COCS receive adequate training before being assigned to new positions through job rotation.
4	LDT4	Training helps COCS clearly understand the requirements of other jobs.
5	LDT5	Following training, COCS feel capable of adapting to the jobs to which they are rotated.
6	LDT6	The Customs Department places importance on assessing the competencies of individual COCS to ensure their adaptability to different jobs.
		<i>Job Description</i>
7	LMT1	Job descriptions specify the different skills required for implementing job rotation policies.
8	LMT2	Jobs within the Customs Department are clearly defined and described to facilitate job rotation.
9	LMT3	Job descriptions facilitate the monitoring of the job rotation process.
10	LMT4	Work-related obstacles are identified to enable appropriate corrective measures.
11	LMT5	Job performance is evaluated based on clearly defined criteria for each position.
		<i>Job Development</i>
12	LPT1	Job rotation is one of the techniques and methods used for job development.
13	LPT2	Job rotation provides COCS with opportunities for professional development and career growth.
14	LPT3	Job development strategies help fill vacant positions within the organization.
15	LPT4	Technological advancements have encouraged the adoption of job rotation policies as a means of improving organizational practices.
		<i>Systems and Procedures</i>
16	LHQ1	Work systems and procedures enable COCS to demonstrate their skills

No.	Code	Proposed Measurement Items
		and competencies in performing assigned duties.
17	LHQ2	The Customs Department's systems and procedures specify the mechanisms and methods used in job rotation.
18	LHQ3	Job rotation is among the organizational systems and procedures that receive particular attention and are continuously improved by the Customs Department.
19	LHQ4	Systems and procedures within the Customs sector help reduce psychological stress among COCS when they are rotated to different jobs.
20	LHQ5	Regulations and procedures issued by the General Department of Vietnam Customs emphasize job rotation among COCS.

(Source: Compiled by the author)

3.3.2. Work Motivation Measurement Scale

Table 3.2. Work Motivation Measurement Scale

No.	Code	Proposed Measurement Items
1	DL01	I really enjoy doing this job.
2	DL02	I feel happy when performing my job.
3	DL03	I enjoy the interesting moments that this job brings me.
4	DL04	I chose this job because it allows me to achieve my life goals.
5	DL05	This job aligns with my career development plans.
6	DL05	This job is consistent with my personal values.
7	DL07	I always strive to perform my job to the best of my ability.
8	DL08	I do not want to fail in my job.
9	DL09	My reputation depends on the job I perform.
10	DL10	This job enables me to maintain a certain standard of living.
11	DL11	This job allows me to earn a substantial income.
12	DL12	I do this job because of its attractive salary.

(Source: Compiled by the author)

3.3.3. Digital Competence Measurement Scale

Table 3.3. Digital Competence Measurement Scale

No.	Code	Proposed Measurement Items
		<i>Digital Technology Knowledge</i>
1	NKT1	I am satisfied with my knowledge of digital technologies.
2	NKT2	I am familiar with the digital technologies used in my workplace.
3	NKT3	I am knowledgeable about current laws and regulations concerning

No.	Code	Proposed Measurement Items
		data security in my workplace.
4	NKT4	COCS use digital technologies to manage their own work.
5	NKT5	I am familiar with digital technologies used in the Customs sector in Vietnam.
6	NKT6	I am familiar with digital technologies used in Customs administrations worldwide.
7	NKT7	I am aware of digital technologies that effectively support the work of COCS.
		<i>Digital Technology Skills</i>
8	NKN1	I can support my team in adopting digital technologies.
9	NKN2	I am confident in sharing knowledge with colleagues on using digital technologies to improve work efficiency.
10	NKN3	I am confident in addressing security issues related to digital technologies in my workplace.
11	NKN4	I am confident in using digital technologies to share information.
12	NKN5	I am confident in using digital technologies to collect and process work-related data.
13	NKN6	I can draw conclusions based on information obtained through digital technologies.
14	NKN7	I am confident in using digital technologies for communication.
15	NKN8	I am confident in using digital technologies to manage data security within my organization.
16	NKN9	I am confident in using digital technologies to search for relevant information.
		<i>Attitudes toward Digital Technologies</i>
17	NT01	COCS need to continuously update their digital technology knowledge and skills.
18	NT02	I am willing to support the development of useful digital technologies.
19	NT03	Digital technologies help me perform my job more effectively.
20	NT04	Digital technologies facilitate active communication and interaction between COCS and businesses.
21	NT05	Digital technologies will make my daily work easier.
22	NT06	I am always willing to learn about digital technologies in my workplace.
23	NT07	I enjoy using digital technologies in my workplace.

No.	Code	Proposed Measurement Items
24	NT08	I am willing to improve my ability to use digital technologies through additional training.
25	NT09	I believe that digital technologies enhance the quality of work.
26	NT10	I believe that digital technologies improve work efficiency.
27	NT11	I believe that digital technologies increase work productivity.
28	NT12	I believe that digital technologies benefit Customs Departments and businesses.

(Source: Compiled by the author)

3.3.4. Job Performance Measurement Scale

Table 3.4. Job Performance Measurement Scale

No.	Code	Proposed Measurement Items
	<i>KQN</i>	<i>Task Performance in Customs Service</i>
1	KQN1	I planned my work to ensure that tasks were completed on time.
2	KQN2	My work planning was optimal.
3	KQN3	I always kept in mind the results I needed to achieve in my work.
4	KQN4	I was able to distinguish between major and minor issues in my work.
5	KQN5	I knew how to set the right priorities.
6	KQN6	I performed my work effectively with minimal time and effort.
7	KQN7	My collaboration with colleagues was highly effective.
	<i>KQB</i>	<i>Contextual Performance in Customs Service</i>
8	KQB1	I was able to take on additional responsibilities.
9	KQB2	I initiated new tasks on my own after completing my previous assignments.
10	KQB3	I took on challenging work assignments when opportunities arose.
11	KQB4	I consistently kept my job-related knowledge up to date.
12	KQB5	I worked on improving my professional skills.
13	KQB6	I proposed creative solutions to new problems.
14	KQB7	I consistently sought new challenges in my work.
15	KQB8	I actively looked for ways to improve my job performance.
16	KQB9	I proactively addressed work-related situations.

(Source: Compiled by the author)

3.3.5. Perceived Task Variety Measurement Scale

Table 3.5. Perceived Task Variety Measurement Scale

No.	Code	Proposed Measurement Items
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No.	Code	Proposed Measurement Items
1	CNN1	I feel that my job remains fresh and engaging because it involves a variety of different tasks.
2	CNN2	I perceive that my job requires me to perform a variety of activities within a single task.
3	CNN3	I find that my job often requires me to handle tasks with varying levels of complexity.
4	CNN4	I feel that my job frequently requires me to demonstrate appropriate flexibility in performing assigned tasks.

(Source: Compiled by the author)

3.3.6. Perceived Skill Variety Measurement Scale

Table 3.6. Perceived Skill Variety Measurement Scale

No.	Code	Proposed Measurement Items
1	CNK1	I perceive that my job requires the use of a wide range of skills, contributing to my professional development.
2	CNK2	I feel that my job requires me to flexibly apply different skills in various work situations.
3	CNK3	I find that my job encourages me to apply advanced skills, providing a sense of challenge.
4	CNK4	I feel that my job requires the integration of different types of skills to achieve optimal performance.

(Source: Compiled by the author)

3.4. Quantitative Research

3.4.1. Preliminary Quantitative Study

The preliminary quantitative study assessed the clarity, reliability, and validity of the measurement scales. Using convenience sampling, 100 questionnaires were distributed directly to COCS in Dong Nai, Ho Chi Minh City, Binh Duong, and Ba Ria–Vung Tau. Of the 52 returned questionnaires (52% response rate), four were excluded due to substantial missing data, leaving 48 valid responses. After coding and cleaning, the data were analyzed using SmartPLS through the following procedures:

- ✓ Assessment of outer loadings: Outer loadings of ≥ 0.70 were required to establish an adequate association between observed indicators and their corresponding latent constructs.
- ✓ Assessment of internal consistency reliability: Cronbach's Alpha and

composite reliability (CR) values of ≥ 0.70 were required.

- ✓ Assessment of convergent validity: An average variance extracted (AVE) value of ≥ 0.50 was required.
- ✓ Assessment of discriminant validity: The heterotrait–monotrait ratio (HTMT) was evaluated using a threshold of ≤ 0.85 .

3.4.1. Official Quantitative Study

(i) Assessment of the Higher-Order Measurement Models

Reflective measurement models were assessed using outer loadings ≥ 0.708 , Cronbach's Alpha and CR ≥ 0.70 , AVE ≥ 0.50 , and HTMT ≤ 0.85 . For formative models, convergent validity was evaluated using outer loadings ≥ 0.708 , $R^2 \geq 0.64$. Multicollinearity was assessed using VIF < 5 , while outer-weight sig. was tested through bootstrapping at the 5% significance level.

(ii) Assessment of the Structural Model

- ✓ Collinearity and model fit assessment: VIF < 5 used to assess potential multicollinearity, while a SRMR < 0.08 applied to evaluate model fit.
- ✓ Assessment of explanatory power and predictive relevance: An R^2 value of ≥ 0.35 was considered indicative of satisfactory explanatory power. Q^2 was used to evaluate predictive performance, with the following thresholds: $Q^2 < 0.25$ (low), $0.25 \leq Q^2 < 0.50$ (moderate), $Q^2 \geq 0.50$ (high).
- ✓ Assessment of effect sizes and statistical significance: The f^2 statistic was used to evaluate the effect size of each predictor, while bootstrapping with 5,000 resamples was employed to test the statistical significance of the hypothesized relationships.
- ✓ Assessment of mediating effects: Following the mediation assessment approaches proposed by Zhao and Nitzl, full or partial mediation was determined based on bootstrapping results, confidence intervals (CIs), and the variance accounted for (VAF) index.

(iii) Multi-Group Analysis (MGA)

PLS-based multi-group analysis (PLS-MGA) was employed to examine differences in the structural relationships across groups defined by categorical characteristics, thereby assessing whether these characteristics influence the relationships associated with KQCV.

CHAPTER 4: RESEARCH FINDINGS AND DISCUSSION

4.1. Overview of Customs Departments in Southeastern Vietnam

Southeastern Vietnam, comprising Ho Chi Minh City, Dong Nai, Binh Duong, Ba Ria–Vung Tau, Tay Ninh, and Binh Phuoc, is a major hub for industrial, logistics, and import–export activities. Its diverse Customs operations encompass seaports, airports, industrial parks, export processing, border control, and anti-smuggling. Growing trade volumes, alongside requirements for trade facilitation, risk management, VNACCS/VCIS, the National Single Window, and digital transformation, place increasing demands on COCS’ professional competence, processing efficiency, regulatory compliance, and technological capabilities. Furthermore, the restructuring of Customs operations under Regional Customs Sub-departments II, XVII, and XVIII highlights the importance of LCCV, staff reassignment, and position rotation in strengthening adaptability, operational continuity, transparency, and KQCV (Thái Bình, 2025; Sở Công Thương tỉnh Đồng Nai, 2026; Phú Quý, 2025; Cục Hải quan, 2025b).

4.2. Descriptive Statistics of the Survey Sample

Table 4.1. Descriptive Statistics of the Survey Sample

Characteristics		Quantity	Ratio (%)
Gender	Male	169	57,09
	Female	127	42,91
Ages	From 18-30	64	21,62
	30-40	50	16,89
	40-50	96	32,43
	50-60	42	14,19
	≥60	44	14,87
Length of Service in the Customs Sector	<5 years	61	20,61
	5-10 years	48	16,22
	10-15 years	96	32,43
	≥15 years	91	30,74
Educational Attainment	Postgraduate	42	14,19
	University	133	44,93
	College	79	26,69

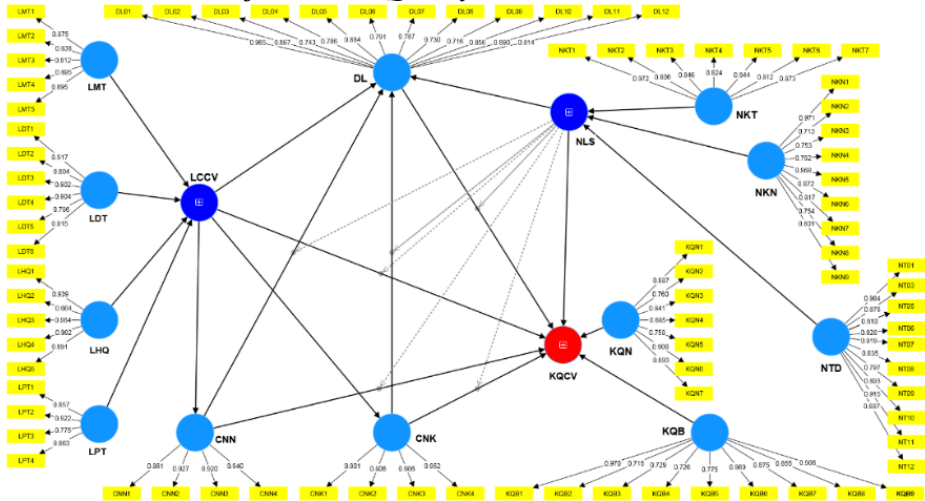
Characteristics		Quantity	Ratio (%)
Working positions	Others	42	14,19
	Officials	44	14,86
	Civil servants	252	85,14

(Source: Author's data analysis results)

4.3. Measurement Model Assessment

4.2.1. Assessment of Lower-Order Construct (LOC) Measurement Models

4.2.1.1. Assessment of Indicator Quality



Hình 4.1. Outer Loadings, Path Coefficients, and CA of the LOC Model

(Source: Author's data analysis results)

4.3.1.2. Assessment of Internal Consistency Reliability and Convergent Validity

Table 4.2. Results of Convergent Validity Assessment of the Measurement Model

No.	Measurement Scale	CR	AVE
1	CNK- Perceived Skill Variety	0,927	0,761
2	CNN- Perceived Task Variety	0,952	0,832
3	DL- Work Motivation	0,962	0,683

(Source: Author's data analysis results)

4.3.1.3. Assessment of Discriminant Validity

The maximum heterotrait–monotrait ratio (HTMT) value was 0.594, which is below the threshold of 0.85. This finding indicates that, although the research constructs are correlated, they remain empirically distinct from one another, supporting the discriminant validity of the measurement model.

4.2.3. Assessment of Higher-Order Construct (HOC) Measurement Models

a) Reflective Measurement Models: (i) The outer loadings of all observed indicators exceeded 0.80; (ii) Cronbach's Alpha and composite reliability (CR) values were all greater than 0.80, while all average variance extracted (AVE) values exceeded 0.60; (iii) The measurement model demonstrated satisfactory discriminant validity, with the maximum HTMT value of 0.356, which was below the recommended threshold of 0.85.

b) Formative Measurement Models: (i) The p-values associated with the outer loadings of all lower-order constructs were below 0.01%; (ii) The outer loading of each indicator on its corresponding construct was higher than its cross-loadings on all other constructs in the model; (iii) The indicators of the higher-order constructs, including LCCV, NLS, and KQCV, exhibited variance inflation factor (VIF) values below 3, indicating no serious multicollinearity concerns; (iv) All outer weights were statistically significant.

4.4. Structural Model Assessment

4.4.1. Assessment of Discriminant Validity

Table 4.3. Cross-Loadings for Discriminant Validity Assessment

	CNK	CNN	DL	KQCV	LCCV	NLS
KQB	0,110	0,023	0,126	0,518	0,087	0,219
KQN	0,037	0,210	0,329	0,994	0,080	0,198
LDT	0,399	0,396	0,363	0,020	0,910	0,246
LHQ	0,033	0,096	0,185	0,303	0,501	0,200
LMT	0,318	0,121	0,130	0,094	0,467	0,176
LPT	0,109	0,160	0,070	0,167	0,426	0,028
NKN	0,320	0,234	0,299	0,116	0,226	0,570
NKT	0,078	0,031	0,051	0,008	0,146	0,479
NTD	0,250	0,402	0,498	0,206	0,320	0,958

(Source: Author's data analysis results)

4.4.2. Assessment of Collinearity among Variables in the Structural Model

Table 4.4. Results of Collinearity Assessment in the Structural Model

	VIF
CNK → DL	1,685
CNK → KQCV	1,845
CNN → DL	1,854
CNN → KQCV	2,021

	VIF
DL → KQCV	1,871
LCCV → CNK	1,000
LCCV → CNN	1,000
LCCV → DL	1,545
LCCV → KQCV	1,615
NLS → DL	1,566
NLS → KQCV	2,173
NLS × DL → KQCV	3,809
NLS × CNN → DL	2,344
NLS × CNN → KQCV	3,212
NLS × LCCV → KQCV	2,756
NLS × CNK → DL	2,718
NLS × CNK → KQCV	3,399

(Source: Author's data analysis results)

4.4.3. Assessment of the Effects of Independent Variables

a) Assessment of Effect Sizes: The results indicated that the effect sizes (f^2) of the relationships between constructs ranged from 0.015 to 0.390.

b) Assessment of Direct Effects: The original sample estimates were consistent with the mean estimates obtained through bootstrapping, with all original estimates falling within their respective 95% confidence intervals.

Table 4.5. Results of Research Hypothesis Testing

Research Hypothesis		Conclusion
G1	Job rotation (LCCV) has a positive effect on job performance (KQCV) among COCS.	Accepted
G2	LCCV has a positive effect on work motivation (DL) among COCS.	Accepted
G3	LCCV has a positive effect on perceived task variety (CNN) among COCS.	Accepted
G4	LCCV has a positive effect on perceived skill variety (CNK) among COCS.	Accepted
G5	DL has a positive effect on KQCV among COCS.	Accepted
G6	CNN has a positive effect on DL among COCS.	Accepted
G7	CNK has a positive effect on DL among COCS.	Accepted
G8	CNN has a positive effect on KQCV among COCS.	Accepted
G9	CNK has a positive effect on KQCV among COCS.	Accepted

Research Hypothesis		Conclusion
G10	Digital competence (NLS) has a positive effect on DL among COCS.	Accepted
G11	NLS has a positive effect on KQCV among COCS.	Accepted
G12	NLS moderates the relationship between DL and KQCV.	Accepted
G13	NLS moderates the relationship between CNN and DL.	Accepted
G14	NLS moderates the relationship between CNK and DL.	Rejected
G15	NLS moderates the relationship between CNN and KQCV among COCS.	Rejected
G16	NLS moderates the relationship between CNK and KQCV.	Accepted
G17	NLS moderates the relationship between LCCV and KQCV.	Rejected

(Source: Author's data analysis results, 2024)

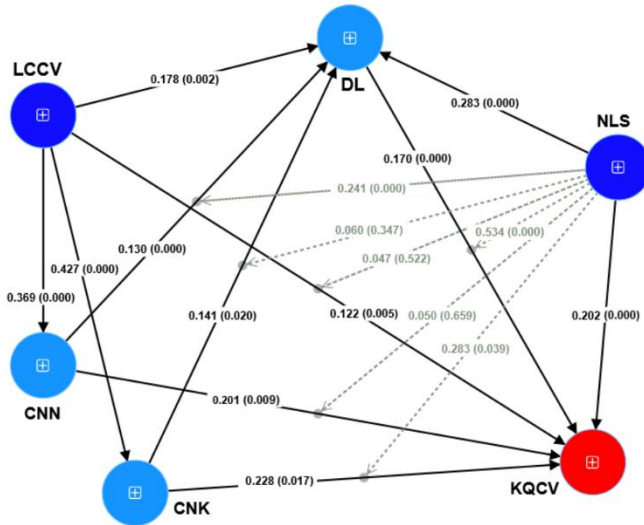


Figure 4.2. Standardized Path Coefficients of the Structural Model

d) Assessment of Mediating Effects

Table 4.5. Indirect Effects of the Hypothesized Relationships

Relationship	Indirect effects	p
CNN → DL → KQCV	0,022	0,000
NLS → DL → KQCV	0,048	0,023
LCCV → CNK → DL	0,060	0,019
LCCV → DL → KQCV	0,030	0,000
LCCV → CNN → DL	0,048	0,067
LCCV → CNN → DL → KQCV	0,008	0,000
LCCV → CNK → KQCV	0,097	0,026

Relationship	Indirect effects	p
LCCV → CNN → KQCV	0,074	0,000
LCCV → CNK → DL → KQCV	0,010	0,000
CNK → DL → KQCV	0,024	0,000

(Source: Author's data analysis results)

4.5. Multi-Group Analysis across Categorical Variables

4.5.1. Multi-Group Analysis by Gender

4.5.2. Multi-Group Analysis by Age

4.5.3. Multi-Group Analysis by Length of Service

4.5.4. Multi-Group Analysis by Educational Attainment

4.6. Discussion of Research Findings

4.6.1. Discussion of Supported Hypotheses

4.6.2. Discussion of Unsupported Hypotheses

4.6.3. Summary of Research Findings and Discussion

Chapter 4 presents the PLS-SEM results examining the effects of job rotation (JR) on work motivation (WM) and job performance (JP) among Customs officials and civil servants in Southeastern Vietnam. The measurement models demonstrated satisfactory reliability, convergent validity, and discriminant validity. The structural model revealed that JR positively influenced perceived task variety (PTV) and perceived skill variety (PSV), which subsequently enhanced WM. WM positively affected JP and mediated certain relationships within the model. Furthermore, digital competence (DC) significantly moderated the WM–JP relationship, strengthening the positive effect of WM on JP. These findings provide an empirical basis for the managerial implications presented in Chapter 5.

CHAPTER 5: CONCLUSIONS AND MANAGERIAL IMPLICATIONS

5.1 Conclusions

This study employed PLS-SEM to examine the effects of job rotation (JR), perceived task variety (PTV), perceived skill variety (PSV), work motivation (WM), and digital competence (DC) on job performance (JP) among 296 Customs officials and civil servants in Southeastern Vietnam. The findings confirmed that JR positively influenced PTV, PSV, WM, and JP, while WM mediated certain relationships within the model. DC directly affected WM and JP and moderated the WM–JP relationship, strengthening the positive effect of WM on JP. Multi-group analysis revealed differences across demographic groups, suggesting the need for tailored human resource policies. Overall, the study provides empirical evidence of the mechanisms linking JR to JP and highlights the importance of DC in Customs digital transformation.

5.2. Contributions of the Dissertation

5.2.1 Theoretical Contributions

The dissertation develops an integrated framework combining Social Exchange Theory (SET), Job Demands–Resources Theory (JD–R), Self-Determination Theory (SDT), and a DC perspective to explain the mechanisms linking JR to JP. The findings highlight the roles of PTV, PSV, and WM in improving JP and confirm the moderating role of DC, thereby extending the application of these theories to digital public service contexts. The study also contributes empirical evidence and refined measurement scales specific to the Customs sector.

5.2.2 Practical Contributions

The dissertation provides empirical support for designing evidence-based JR policies aligned with job requirements, employee competencies, and organizational objectives. It emphasizes enhancing task and skill variety, sustaining WM through effective handover, guidance, feedback, and recognition, and developing DC to improve JP. Integrating JR with digital skills development and appropriate rotation cycles can strengthen workforce

adaptability, transparency, and public service integrity.

5.3 Managerial Implications

Based on the empirical findings, the dissertation proposes managerial implications focusing on key areas directly relevant to enhancing WM and JP among Customs officials and civil servants in the context of digital transformation. Rather than presenting isolated measures, the implications are organized into four major areas: JR policies, WM management through job design, DC development, and policy implementation tailored to employee characteristics and organizational conditions. This approach strengthens the alignment between the proposed implications and the research findings while enhancing their practical applicability to human resource management within the Customs sector. Specifically, these areas include:

5.3.1. Competency-Oriented Job Rotation and Public Service Integrity

5.3.2. Managing Work Motivation through Job Design

5.3.3. Developing Digital Competence in the Context of Customs Digital Transformation

5.3.4. Tailoring Policy Implementation to Employee Characteristics and Organizational Conditions

5.4. Research Limitations and Directions for Future Research

(i) The cross-sectional research design limits the ability to establish causal relationships and examine changes in WM and JP over time following JR; (ii) the study provides limited consideration of contextual factors that may influence the relationships within the research model; and (iii) JP was primarily measured through self-assessments by Customs officials and civil servants, highlighting the need to incorporate objective performance data in future research.