# Interaction Effects of Employee Innovativeness Factors on Work Performance of Academic Support Personal in Thai Higher Education Institutions

Werawat Punnitamai *
Surapong Pokao **
Khotchatrai Charoensuk ***

## Abstract

The objective of this study is to examine the joint influence of Organizational Innovation Support and Personal Innovation Attributes competency factors on the work performance of academic support Personal in higher education institutions. It seeks to assess the consistency of a structural model that demonstrates the relationships between innovative competency and work performance against empirical data, while also exploring the direct, indirect, and total effects of these factors on performance outcomes.

This quantitative research collected data from a sample of 273 academic support Personal in Thailand. The analysis of model fit indices revealed a significantly improved goodness-of-fit, indicating that the structural relationships of innovation competency factors were consistent with empirical data at an acceptable level. The findings further confirmed that the proposed model could appropriately and reliably explain the confirmatory relationships among four latent variables: Organizational Innovation Support competency, Personal Innovation Attributes competency, the process of building innovation competency in work performance, and performance outcomes.

These results reflect the comprehensive nature of innovation competency in the working context of academic support Personal. The structural model illustrates a confirmatory sequence in which Organizational Innovation Support and Personal Innovation Attributes competency influence performance outcomes through the mediating process of building innovation competency. This finding is consistent with theories of human resource management and organizational innovation.

**Keywords:** Innovation Competency, Work Performance, Academic Support Personal

*, **, *** Graduate School of Public Administration, National Institute of Development Administration
* Email: wewatpun@yahoo.com
** Email: Surapong.p@nida.ac.th
*** Email: khotchatrai2545@gmail.com
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## Introduction

At present, the rapid pace of technological and social change poses significant challenges for Thai higher education institutions in enhancing both their quality and competitiveness. Achieving these goals cannot rely solely on the capabilities of faculty members; it also depends on the efficiency of academic support staff, who serve as key mechanisms in facilitating teaching, research, and academic services. Thus, the development of this group of personnel has become a critical issue, particularly in terms of "innovation competency," which encompasses the ability to think creatively, adapt, and apply innovations within work contexts. Competency theory, as proposed by Boyatzis (1982) and McClelland (1973), highlights that competencies are sets of personal attributes such as knowledge, skills, and motivation that directly influence performance success. Consequently, competency development must address both the individual and organizational levels. Similarly, the organizational innovation perspective advanced by Damanpour and Evan (1984) emphasizes that innovation does not arise from individuals alone but requires supportive organizational conditions, such as flexible structures, cultures that encourage experimentation, clear feedback mechanisms, and opportunities for employee participation in change processes. Therefore, innovation in the work context of support Personal necessitates the alignment of Organizational Innovation Support and Personal Innovation Attributes factors.

This relationship can also be explained through Systems Theory, as articulated by Katz and Kahn (1978), which views organizations as open systems comprising interconnected components. Any change in one part of the system such as employee behavior or organizational structures inevitably affects overall performance. From this perspective, "Work performance" emerges as the outcome of collaboration between organizational systems and individual capacities, rather than being the result of personal behavior alone. However, examining these factors in isolation may fail to capture the realities of modern organizational systems, which are increasingly complex. Accordingly, this study emphasizes the analysis of **"interactive effects"** referring to the combined influence of various elements of innovation competency (e.g., creativity, initiative, learning, adaptability) working together. The study further considers these elements across two levels organizational systems and individuals while acknowledging that employee performance derives not only from personal capabilities but also from supportive work systems, such as knowledge management practices, flexible job structures, and organizational cultures that promote learning. Through this integrated approach, the researcher seeks to provide policy and strategic recommendations that can enhance both organizational systems and individual capacities, thereby improving effectiveness within the context of Thai higher education institutions.

The rationale for analyzing the factors influencing the performance of academic support Personal in Thai higher education institutions thus rests on two primary levels: Organizational Innovation Support factors and Personal Innovation Attributes factors. This dual-level approach is grounded in both theoretical insights and empirical evidence, which consistently demonstrate that employee performance results from the interaction between individuals and the organizational systems in which they operate, rather than from any single factor alone. Limiting analysis to the individual level risks overlooking critical contextual dimensions, while focusing solely on organizational-level conditions without considering individual capacities provides an incomplete explanation of performance outcomes. For this reason, the present study adopts an integrated perspective, recognizing that performance is shaped by the interplay between individual and organizational factors. Such a multi-factor approach enables more comprehensive analysis and more effective design of human resource development strategies for higher education institutions. By addressing both systemic and individual dimensions, this study aims to generate actionable strategic recommendations that will strengthen the competitiveness of Thai higher education institutions within the evolving context of the twenty-first century.

## Literature Review

The concept of Management by Objectives together with Peter F. Drucker's (1954) principles of innovation management established a fundamental foundation for modern management, underscoring participation, accountability, and the systematic creation of value through innovation. The integration of these two perspectives enables organizations to enhance their capacity to foster entrepreneurship and to develop sustainable innovations ranging from the generation of initial ideas and their practical application to the broader impacts on business and society. Although introduced more than seventy years ago, these concepts remain highly relevant and have evolved into contemporary frameworks such as OKRs and modern Innovation Management Systems. Their success, however, depends critically on genuine implementation, effective communication, and an organizational culture that consistently supports both participation and continuous innovation.

According to Drucker's (1954) framework, organizational capability in fostering entrepreneurship involves the creation and utilization of diverse forms of innovation. This process spans the upstream, midstream, and downstream stages, reflecting the importance of an organization's ability to continuously develop, apply, and sustain innovation to achieve competitive advantage or enhance operational efficiency. Such innovation may take the form of products, services, processes, or business models. Grounded in Drucker's (1954) principle that "innovation and marketing are the two

basic functions of business" as innovation is not merely the invention of something new, but rather the systematic management of opportunities. It should therefore constitute a core mission of the organization and may arise from both internal and external sources.

The development of innovation is not an instantaneous occurrence but a sequential process that begins with idea generation, proceeds through development, and culminates in the delivery of value to users. Within the context of strategic management, innovation can be categorized into three stages: upstream innovation, midstream innovation, and downstream innovation. Each stage plays a vital role in advancing organizational innovation capability in a systematic manner, as explained below:

Upstream innovation focuses on exploring problems, identifying new opportunities, and uncovering unmet needs. Key components at this stage include research and development (R&D), the creation of new knowledge, and the promotion of creative thinking, all of which form the foundation for future innovation. Drucker (1954) identified sources of innovation that directly relate to this stage, such as unexpected events that may inadvertently lead to new directions, incongruities between current realities and what ought to be, and the need to improve existing processes for greater efficiency. Thus, the upstream stage serves as a crucial platform for laying the groundwork of innovation by fostering conditions conducive to the creation of valuable new ideas. Midstream Innovation The midstream stage involves transforming concepts or new knowledge into viable products, services, or processes. Key activities include developing business models, designing systems or services, and experimenting with and refining prototypes. Drucker (1954) highlighted changes in industry and market structures as significant sources of innovation in this stage, as such shifts create opportunities for new approaches to competition or service provision. Process improvements also serve as vital mechanisms that enable organizations to enhance quality, reduce costs, and improve operational efficiency. Midstream innovation thus functions as a **"bridge"** linking the conceptual groundwork of upstream innovation with the value delivery achieved in the downstream stage.

Downstream innovation emphasizes the implementation of innovation outcomes in the market or society. The primary activities include scaling up, communicating the value of innovation to users, and assessing its impact. According to Drucker (1954), sources of downstream innovation stem from demographic shifts, evolving consumer behaviors or expectations, and changes in social perspectives and values, all of which can drive the development of innovations that address emerging needs. This stage also encompasses the application of scientific knowledge or new technologies to creatively enhance products or services. The aim of downstream innovation is to generate clearly perceivable value from the perspective of users and society at large.

In summary, examining innovation through the upstream, midstream, and downstream dimensions provides a systematic understanding of innovation development mechanisms. This framework enables the formulation of effective strategies to foster innovation capability. Drucker's (1954) conceptualization offers a clear structure for identifying sources of innovation at each stage, and it can be applied across diverse organizational contexts, including business enterprises, government agencies, and higher education institutions.

Thai universities require personal capabilities with high levels of job competency to support academic functions and drive institutional success. Job performance competency is therefore essential in today's higher education context. Employees must clearly understand how to work effectively, since their performance represents the most significant outcome of organizational management and sustainability. According to the Chartered Institute of Personal and Development (2022), employee performance must be considered alongside other factors such as organizational strategy, staff well-being, and environmental and social impacts that together determine organizational sustainability.

In Thailand, the Office of the Civil Service Commission (2015) requires agencies to define at least three job-specific competencies appropriate to the duties and responsibilities of general, academic, and executive positions. These competencies must correspond to the knowledge, skills, and attributes specified in job descriptions (Choocherd, 2022). Organizations should thus place strong emphasis on developing internal staff competencies. Enhancing employee competencies not only improves performance but also supports systematic learning, self-awareness, adaptation, and effective problem-solving within the organization. As Mungkhammee (2019) notes, competency development is a core process in human resource management aimed at strengthening knowledge, skills, and attributes so employees can work efficiently and effectively while enabling organizations to grow and adapt to change. Similarly, Yuwattana (2014) highlights that competency development is essential to organizational success, as outcomes depend heavily on the knowledge, abilities, skills, attitudes, and behaviors of employees. Given the continuously evolving environment in which organizations operate, the development of staff competency remains fundamental to sustainable human resource management in Thai higher education institutions.

Thai universities must therefore prioritize the development of Personal competency to ensure that staff acquire advanced skills. This development encompasses a wide range of strategies and practices aimed at enhancing both individual and organizational capacities across diverse professional and educational contexts. Such initiatives may involve acquiring new skills, improving existing ones, or adapting to new roles and responsibilities (Qizi, 2020). In the current context, higher education graduates are required not only to master professional skills relevant to their work but also

to develop essential social competency such as communication, coordination, the ability to perform under pressure, and problem-solving. To meet these demands, higher education institutions have introduced new skill development programs, such as digital literacy training, intensive professional courses, artificial intelligence knowledge programs, and professional development initiatives. These programs effectively enhance employability, integrate industry needs, and foster continuous learning and adaptability in response to changing labor markets and technological advancements. Reskilling initiatives within universities ensure alignment with technological and social transformations, equipping both staff and students with the essential skills to face future challenges. Wiggberg et al. (2022) emphasize that universities can rapidly prototype and deliver advanced training programs, which serve as constructive mechanisms for helping newcomers discover meaningful work that contributes directly to society.

In the higher education context, innovation competency is promoted through multiple initiatives. Universities organize Design Thinking workshops and Hackathons to train Personal in creative thinking and real-world problem-solving. Personal development also involves applying AI and AR technologies to increase efficiency. Institutions foster innovation by funding research and supporting the development of new learning approaches. Organizational culture is also essential: universities cultivate a "fail forward" culture that encourages experimentation without penalizing failure. Innovation hubs are established within universities as collaborative spaces for testing new ideas, supported by digital infrastructures such as academic databases, modern research tools, cloud systems, and collaborative platforms (Ximena et al., 2022).

From the perspective of input factors, the fundamental elements enabling innovation competency development include supportive leadership policies, strong information technology infrastructure, increased financial and material resources, and an organizational culture conducive to change. The innovation competency dimensions form the core of this capability: creativity, critical and innovative problem-solving, lifelong learning, collaboration and networking, digital literacy and technological utilization, and innovative leadership.

The outcomes of innovation competency can be observed in the development of educational innovations, applied research with practical impact, and academic outputs that strengthen graduates' competitiveness in the labor market. These outcomes also enhance institutional capacity at both national and international levels. In addition, the performance outcomes of academic support staff reflect the extent of success in delivering academic services. Such outcomes indicate the quality, efficiency, and cost-effectiveness of academic support operations, with measurable results aligned with institutional goals and missions. These are assessed through service users' perspectives, supervisors' evaluations, and tangible work achievements. Nevertheless, although higher education institutions

have increased their promotion of innovation development in recent years, translating policy into practice at the individual level remains challenging. Limitations in attitudes, skills, and support structures continue to pose significant obstacles to building sustainable innovation competency.

However, a critical issue clearly visible in the application of competencies for Personal development is the lack of understanding of the processes involved in defining competency, or the specification of competency attributes that do not align with behavior leading to success in each job function. Moreover, without establishing clear directions and control mechanisms, the competency framework becomes superficial treated merely as a fashionable management trend without producing tangible improvements in personal capability.

In the current context of higher education institutions, the job performance competencies of academic support Personal in Thai universities are not determined solely by support factors, motivational factors, sustaining factors, or personal factors. Additional factors, including those exerting significant influence (Palaniappan, 2024), play a role in defining both core competencies and job-specific competencies. Each position requires specific competencies; however, human resource development divisions frequently organize collective training programs without first examining the actual competency levels of individuals or considering whether personal have previously received similar training, either during their tenure in the current institution or prior to joining (Litina & Miltuze, 2023). Digital competency has become increasingly important in both personal and professional work contexts in the 21st century, where adaptability and the ability to engage with new forms of knowledge are critical. Accordingly, education systems should adopt new approaches for development in what is termed the information and knowledge society. Recent comprehensive research highlights the factors influencing digital competency among higher education personal, consistent (Lalaeng, Subongkod, & Sinlapasawet, 2024) who stress the importance of cultivating new educational competencies that promote continuous learning, adaptability, and systems thinking in the acquisition of new knowledge.

To achieve effective performance, academic personal in higher education institutions must also develop cultural competency, which includes cultural awareness, cultural knowledge and understanding, and cultural skills. These serve as a critical foundation for work performance. Cultural competency directly contributes to enhanced effectiveness, enabling academic personal to strengthen both core and job-specific competency, ultimately leading to optimal outcomes. (Ximena et al., 2022) also highlights that teamwork, sustainability, leadership, creativity, communication, collaboration, digital skills, flexibility, analytical thinking, and goal orientation are essential for universities in assessing and developing innovative capabilities. core competencies are those that enable one to perform a

role more effectively than others (Pannitamai, 2021). Competency is typically composed of Knowledge, Skills, and Abilities (KSA).

Understanding innovation competence in higher education requires a clear theoretical framework to explain the relationships among Organizational Innovation Support factors, Personal Innovation Attributes factors, innovation processes, and performance outcomes. Systems Theory posits that higher education institutions represent social systems comprising multiple interconnected subsystems that operate dynamically across structural, cultural, support, and technological dimensions. These subsystems function as system-level enablers that shape and define the development of innovation competence among academic support staff. Concurrently, Competency Theory elucidates that innovation competence constitutes a set of knowledge, skills, capabilities, and behavioral attributes which, when stimulated by appropriate organizational contexts, develop into creative behaviors, innovative problem-solving, and effective technology utilization.

Innovation competency thus serves as a mediating mechanism that connects organizational-level factors—including strategic vision, learning-conducive structures, innovation-supportive culture, and knowledge systems—to Personal Innovation Attributes competency such as creativity, innovative problem-solving, digital capability, innovation-oriented leadership, and collaborative skills. This mechanism reflects the logic of systems theory, which posits that structural, technological, and human resource subsystems directly influence employees' learning processes, decision-making, and job performance through the provision of contextual resources and psychological conditions that foster innovation initiatives. At the individual level, innovation competency functions as a behavioral driver that enables personal to identify opportunities, develop new approaches, and apply technology to continuously improve work systems.

Furthermore, competency development at two levels—the organizational work system level and the operational individual level—can be explained through subsystems theory, which indicates that organizational effectiveness emerges from the coordination among various subsystems, including structural, technological, cultural, and human resource systems. When these subsystems reinforce one another, they create an environment that supports learning and innovative work practices, thereby enabling Personal Innovation Attributes competency to translate into improved system-level outcomes such as service delivery improvements, development of new work practices, and effective information technology utilization.

Empirical evidence from international studies, such as research conducted in Malaysian universities, supports this theoretical mechanism. These studies found that employees' creative work behaviors—as outcomes of innovation competence—demonstrate positive and statistically significant

relationships with job performance, encompassing goal achievement, organizational unit development participation, and proficient information technology use. Such research reinforces that when Organizational Innovation Support factors are conducive and Personal Innovation Attributes factors are optimal, innovation competence functions as a critical mechanism linking these two levels and systematically influencing the work quality of academic support personal.

Therefore, this study proposes a conceptual framework explaining the relational pathway among competence factors at the organizational and individual levels through innovation competence as a mediating variable, leading to job performance outcomes of academic support staff in higher education institutions. The study employs Structural Equation Modeling (SEM) to validate the model's alignment with empirical data, with the objective of understanding the true mechanisms of impact and developing an innovation competency model grounded in clear theoretical foundations and robust empirical evidence.

## Research Objectives

1. To examine the integrated influence of Organizational Innovation Support and Personal Innovation Attributes competency factors on the work performance of academic support Personal in higher education institutions.
2. To conduct an empirical validation of the structural model that captures the relationships among innovation competency factors affecting the work performance of academic support personal.
3. 3. To analyze the direct, indirect, and comprehensive effects of multiple factors on the job performance of academic support personal in higher education institutions.

## Hypothesis

The researcher established research hypotheses based on the combined influence model of innovation competency factors affecting work performance effectiveness of academic support personal, which was developed by synthesizing relevant concepts, theories, and research. The research hypotheses are as follows:

**Hypothesis 1:** The innovation competency factors affecting work performance effectiveness of academic support personal that were developed demonstrate consistency with empirical data.

**Hypothesis 2:** The combined factors of Organizational Innovation Support competency, Personal Innovation Attributes competency, and innovation competency have both direct and indirect influences on work performance effectiveness.

## Research Framework

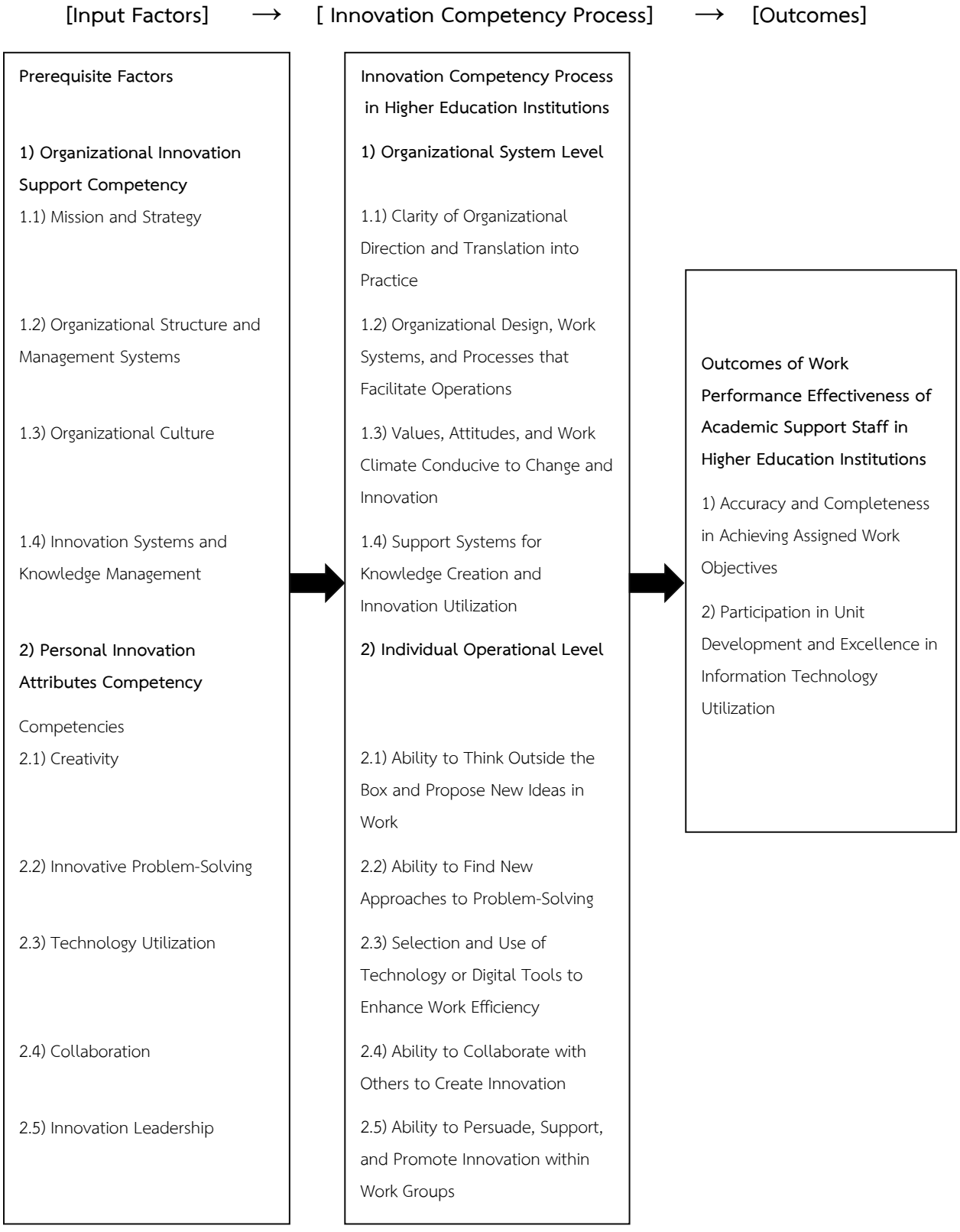


**Figure 1**. Conceptual Framework

Based on the study, the researcher therefore determined a structural model that demonstrates the relationships of innovation competency factors influencing work performance effectiveness, as shown in Figure 2.

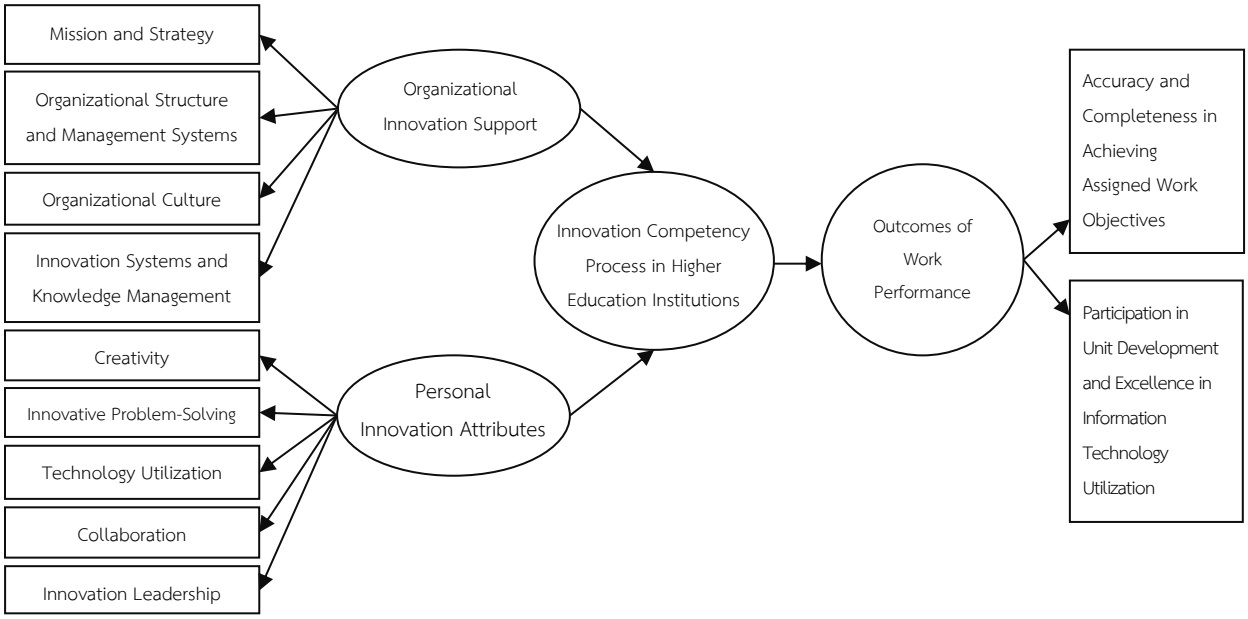


**Figure 2.** The Combined Influence Model of Innovation Competency Factors Affecting Work Performance Effectiveness of Academic

## Research Methodology

This quantitative research study on the combined influence of innovation competency factors affecting work performance effectiveness of Thai academic support personal encompasses the following research scope:

### Population

The population for this study consists of academic support personal at the university level in Thailand (Office of the Permanent Secretary, 2021), totaling 150,290 individuals as retrieved on October 28, 2024.

The target population for this research includes academic support personal in both public and private institutions, totaling 150,290 individuals (Office of the Permanent Secretary, Ministry of Higher Education, Science, Research and Innovation, personal in Higher Education Institutions, 2021). The sample used in this study comprises academic support personal at the university level in Thailand. Convenience sampling was employed to determine the sample size for cases where the exact

population size is unknown, using Cochran's (1977) sample size calculation method. This method is used when the exact population size is unknown but known to be large, and when estimating population proportions at a 95 percent confidence level with an allowable error of 5 percent and a proportion of interest in the population equal to 0.5. The formula used in this study is:

$$n = \frac{p(1-p)z^2}{d^2}$$

when n = sample size

P = desired population proportion (0.5)

Z = confidence level at the specified significance level

Z = statistical significance level of 0.05 equals 1.96 (95% confidence)

d = allowable error of 0.05

$$n = \frac{0.5(1-0.5)(1.96)^2}{(0.05)^2} = 384$$

**Sample Determination**

Regarding the sample, a survey was conducted on the opinions of academic support personal in higher education institutions in both the public and private sectors, totaling 384 individuals, classified into two groups as follows:

**Table 1.** Sample Groups and Key Informants

| Sample Group and Academic Support Staff | | Respondents |
|---|---|---|
| **Group 1: Public/State-Supervised Universities** | | 192 |
| 1.National Institute of Development Administration | 48 individuals | |
| 2.Khon Kaen University | 48 individuals | |
| 3.Chiang Mai University | 48 individuals | |
| 4.Thaksin University | 48 individuals | |
| **Group 2: Private Universities Sample** | | 192 |
| 5. Rangsit University | 48 individuals | |
| 6. University of the Thai Chamber of Commerce | 48 individuals | |
| 7. North-Chiang Mai University | 48 individuals | |
| 8. Hatyai University | 48 individuals | |
| **Total** | | **384** |

This study employed quantitative research design. The sample consisted of 384 academic support personal members in Thailand. The sample size was determined with reference to Hair et al. (2010) and Schumacker & Lomax (2006). Data was collected from academic support personal working in both public and private higher education institutions. A total of 273 valid questionnaires were returned, representing 72.1 percent of the sample distributed.

Although 384 questionnaires were distributed, only 273 valid responses were obtained (72.1 percent response rate) due to two primary factors. First, challenges in contacting respondents and obtaining their cooperation resulted in some non-responses or incomplete questionnaires. Second, temporal and resource constraints limit the researchers' ability to conduct comprehensive follow-up with all participants. Nevertheless, the response rate achieved of 72.1 percent is considered acceptable for quantitative research and provides sufficient sample size for social science investigations.

**Research Instrument**

1) Independent Variables (divided into 2 groups)
    1.1) Organizational Innovation Support factors, comprising vision and strategy; organizational structure and management systems; organizational culture; innovation systems; and knowledge management. (Item numbers 1-20)
    1.2) Personal Innovation Attributes factors, comprising: creativity; innovative problem-solving; technology utilization; teamwork and collaboration; and innovative leadership. (Item numbers 21-45)
2) Mediating Variable: Innovation Competency Process, divided into two groups
    2.1) Organizational Innovation Support competency, comprising: clarity of organizational direction and its translation into practice; organizational design, systems, and processes conducive to operations; values, attitudes, and workplace climate supportive of change and innovation; and systems for supporting the creation and utilization of knowledge and innovation. (Item numbers 46-65)
    2.2) Personal Innovation Attributes competency, comprising: the ability to think outside the box and propose new ideas in work practices; the ability to identify new approaches to problem-solving; the capacity to select and apply technologies or digital tools to enhance work efficiency; the ability to collaborate with others to foster innovation; and the ability to persuade, support, and promote innovation within the workgroup. (Item numbers 66-90)

3) Dependent Variable: Job performance outcomes of academic support Personal in higher education institutions. The dependent variable comprises
   3.1) Achievement of objectives, including the completion of assigned tasks and timeliness of task delivery. (Item numbers 91-95)
   3.2) Contribution to organizational development (Learning and Growth), including excellence in the use of information technology. (Item numbers 95-100)

**Structural Equation Modeling (SEM) Analysis Process**

Model fit testing examines whether the theoretically constructed model is consistent with empirical data (Model Fit). The assessment of model consistency is based on the following indices:

1. Score the measurement instrument according to predetermined scoring criteria
2. Analyze basic statistics to understand the characteristics of the sample and the distribution of each variable, including mean, standard deviation, and coefficient of variation
3. Transform variables into continuous variables and convert them into normal scores
4. Analyze skewness and kurtosis, verify normal distribution, and calculate the correlation coefficient matrix
5. The hypothesized model demonstrates consistency with empirical data (Global fitted indices): Chi-square/df value should be < 3.00 or 5
6. Goodness of Fit Index (GFI) should approach 1.00
7. Root Mean Square Error of Approximation (RMSEA) should be ≤ 0.05
8. Comparative Fit Index (CFI) should approach 1.00 (Bollen, 1989)

**Statistical Methods for Data Analysis**

This research employed the following statistical techniques for data analysis: Descriptive statistics were utilized to summarize and describe the characteristics of the data, including:

Descriptive Statistics

- Percentage: Used to present the proportion and frequency distribution of categorical variables Expressed as a percentage of the total sample
- Mean (Mean or ): The arithmetic average score used to describe the central tendency of continuous variables Calculated by summing all values and dividing by the number of observations

- Standard Deviation (S.D.): Measures the degree of variability or dispersion of scores around the mean Indicates how spread out the data points are from the average

Inferential Statistics

Inferential statistics were employed to test relationships between variables and draw conclusions beyond the sample data:

Correlation Analysis: Used to examine the strength and direction of relationships between two or more variables Determines whether variables are positively or negatively related, and the magnitude of these relationships Assists in testing hypotheses regarding variable associations

**Likert Scale Scoring System**

Regarding data collection on the Interaction Effects of Employee Innovativeness Factors on Job Performance of Academic Support Personnel in Thai Higher Education Institutions, a five-point Likert Scale measurement technique was employed with the following scoring criteria:

**Table 2.** Scoring Criteria

| Opinion level | Score |
|---|---|
| Very High | 5 |
| High | 4 |
| Moderate | 3 |
| Low | 2 |
| Very Low | 1 |

Criteria for Interpreting Mean Scores

The data obtained were analyzed to calculate mean scores, and the results were interpreted using the following criteria:

**Table 3.** Criteria for Interpreting Mean Scores

| Mean Score Range | Interpretation |
|---|---|
| 4.21 - 5.00 | Very High |
| 3.41 - 4.20 | High |
| 2.61 - 3.40 | Moderate |
| 1.81 - 2.60 | Low |
| 1.00 - 1.80 | Very Low |

Calculation of Class Interval Width

The interpretation of mean scores for interval scale variables was determined using equal-width intervals, calculated as follows:

$$\text{Class Interval Width} = \frac{\text{(Maximum Score - Minimum Score)}}{\text{Number of Levels}}$$

$$= (5-1)/5$$

$$= 0.8$$

**Research Ethics Approval**

This research project received ethical approval from the Human Research Ethics Committee of the National Institute of Development Administration (NIDA) in accordance with the research approval documentation numbered ECNIDA 2025/0134.

## Results of Data Analysis and Discussion

This study examined the combined influence of innovation competency factors on the job performance of academic support personal in Thai higher education institutions. The findings are presented in four sections, as follows:

**General Characteristics of Respondents**

The demographic data of the respondents were analyzed using frequency, percentage, mean, and standard deviation. The results can be summarized as follows:

Gender: As shown in Table 2, most respondents were female (145 persons, 53.1 percent), followed by male respondents (111 persons, 40.7 percent), while 17 respondents (6.2 percent) did not specify their gender. Type of Institution: Most respondents were employed at public higher education institutions (220 people, 80.6 percent), with 53 people (19.4 percent) working at private institutions. Monthly Expenditure: The largest group reported monthly expenses between 15,001–30,000 THB (130 persons, 47.6 percent), followed by those spending 30,001 THB or above (92 persons, 33.7%), and those with 10,001–15,000 THB (51 persons, 18.7 percent).Educational Level: Most respondents held a bachelor's degree (190 persons, 69.6 percent), followed by master's degree holders (65 persons, 23.8 percent), those with less than a bachelor's degree (12 persons, 4.4 percent), and doctoral degree holders (6 persons, 2.2 percent). Years of Service: The majority had 1–5 years of work experience in higher education (107 persons, 39.2 percent), followed by 6–10 years (59 persons, 21.6 percent), 11–15 years (39 persons, 14.3 percent), more than 20 years (34 persons, 12.5 percent), 16–20 years (24 persons, 8.8 percent), and less than 1 year (10 persons, 3.7 percent).

**Table 4.** Respondents' Sociodemographic profiles (n=273)

| Demographic | Categories | Frequency | Percentage |
|---|---|---|---|
| Gender | 1. Female | 145 | 53.1 |
| | 2. Male | 111 | 40.7 |
| | 3. Not specified | 17 | 6.2 |
| Type of Higher Education Institution | 1. Public higher education institution | 220 | 80.6 |
| | 2. Private higher education institution | 53 | 19.4 |
| Monthly Expenditure | 1. 15,001–30,000 THB | 130 | 47.6 |
| | 2. 30,001 THB or above | 92 | 33.7 |
| | 3. 10,001–15,000 THB | 51 | 18.7 |
| Educational Level | 1. Bachelor's degree | 190 | 69.6 |
| | 2. Master's degree | 65 | 23.8 |
| | 3. Lower than a bachelor's degree | 12 | 4.4 |
| | 4. Doctoral degree | 6 | 2.2 |
| Years of Service | 1. 1–5 years | 107 | 39.2 |
| | 2. 6–10 years | 59 | 21.6 |
| | 3. 11–15 years | 39 | 14.3 |
| | 4. More than 20 years | 34 | 12.5 |
| | 5. 16–20 years | 24 | 8.8 |
| | 6. Less than 1 year | 10 | 3.7 |
| **Training** | | | |
| | 1. Never attended training | 119 | 43.59 |
| | 2. Other | 75 | 27.47 |
| | 3. Digital Technology and Innovation | 31 | 11.36 |
| | 4. Management and Leadership | 30 | 10.99 |
| | 5. Communication | 18 | 6.59 |
| **Current Position** | 1. Academic/Professional Specialist, Finance and Supplies Officer, Human Resources Officer | 78 | 28.57 |
| | 2. Management / Supervisor | 65 | 23.81 |
| | 3. Other | 63 | 23.08 |
| | 4. General Support Personnel | 44 | 16.12 |
| | 5. Support Staff / Technician | 23 | 8.42 |

As shown in Table 4, most respondents had never attended training or did not specify their participation in job competency development programs (119 persons, 43.59 percent). This was followed by Other (75 persons, 27.47 percent), Digital Technology and Innovation (31 persons, 11.36 percent), Management and Leadership (30 persons, 10.99 percent), and Communication and Official Documentation (18 persons, 6.59 percent).

Regarding current positions, most respondents held academic/professional specialist roles, finance and supplies officers, or human resources officers (78 persons, 28.57 percent). This was followed by management/supervisory positions (65 persons, 23.81 percent), Other positions (63 persons, 23.08 percent), general support staff (44 persons, 16.12 percent), and support personal /technicians (23 persons, 8.42 percent).

**Table 5.** Levels of Perception of Academic Support Personnel

| Job Performance Competency Factors<br>1. Organizational Innovation Support Competency | $\bar{x}$ | S.D. | Skewness | Kurtosis | Opinion level |
|---|---|---|---|---|---|
| 1.1 Mission and Strategy | 4.04 | .585 | -.164 | -.378 | High |
| 1.2 Structure and Management Systems | 4.84 | .370 | -2.016 | 2.781 | Very High |
| 1.3 Organizational Culture | 4.09 | .575 | -.258 | -.173 | High |
| 1.4 Innovation Systems and Knowledge Management | 3.20 | .514 | -.518 | .505 | Moderate |
| **Overall Organizational Innovation Support** | 4.09 | .492 | -.354 | -.158 | High |
| **2.Personal Innovation Attributes Competency** | | | | | |
| 2.1 Creativity | 3.96 | .603 | .094 | -.690 | High |
| 2.2 Innovation-Oriented Problem Solving | 3.90 | .552 | .168 | .130 | High |
| 2.3 Technology Utilization | 4.11 | .627 | -.158 | -.139 | High |
| 2.4 Collaboration and Teamwork | 4.15 | .533 | -.103 | -.502 | High |
| 2.5 Innovation-Oriented Leadership | 0.83 | .139 | .010 | -.115 | Very Low |
| **Overall Personal Innovation Attributes Competency** | 3.39 | .385 | -.016 | .259 | Moderate |

**Table 6.** Innovation Competency Process

| Innovation Competency Process | $\bar{x}$ | S.D. | Skewness | Kurtosis | Opinion level |
|---|---|---|---|---|---|
| **Organizational System-Level** | | | | | |
| 3.1 Clarity of Organizational Direction | 3.93 | .624 | -.248 | .871 | High |
| 3.2 Organizational Structure and Work Systems | 3.99 | .674 | -.454 | 1.026 | High |
| 3.3 Values, Attitudes, and Work Climate | 3.86 | .631 | -.470 | 1.523 | High |
| 3.4 Innovation Support Systems | 3.96 | .640 | -.714 | 1.366 | High |
| **Overall Organizational System-Level Competency** | 3.94 | .559 | -.424 | 1.207 | High |
| 4.1 Ability to Propose New Ideas | 3.81 | .615 | -.146 | -.240 | High |
| 4.2 Problem-Solving Ability | 3.92 | .566 | .031 | -.601 | High |
| 4.3 Technology Selection and Application | 4.02 | .571 | -.117 | -.122 | High |
| 4.4 Ability to Collaborate with Others | 4.01 | .628 | -.175 | -.243 | High |
| 4.5 Ability to Promote Innovation in Work | 3.85 | .609 | -.495 | .987 | High |
| **Overall Individual Operational-Level Competency** | 3.92 | .514 | -.016 | .259 | High |
| **Overall Innovation Competency Process** | 3.92 | .505 | -.114 | .233 | High |

**Table 7.** Job Performance Outcomes

| 5. Work Performance Outcomes | $\bar{x}$ | S.D. | Skewness | Kurtosis | Opinion level |
|---|---|---|---|---|---|
| 5.1 Accuracy and Completeness in Achieving Assigned Work Objectives | 4.08 | .558 | .001 | -.498 | High |
| 5.2 Participation in Unit Development and Excellence in Information Technology Utilization | 3.99 | .562 | -.020 | .129 | High |
| **Overall Work Performance Outcome** | 4.04 | .512 | .076 | -.211 | High |

As shown in Table 5-7, regarding innovation competency factors affecting work performance, the respondents' perceptions of work performance can be summarized as follows: Organizational Innovation Support Competency: Overall, Organizational Innovation Support competency was rated High (Mean = 4.09, S.D. = 0.492). Among the individual items, the highest-rated aspect was Structure and Management Systems, which was rated Very High (Mean = 4.84, S.D. = 0.370), while the lowest-rated aspect was Innovation Systems and Knowledge Management, rated Moderate (Mean = 3.20, S.D. = 0.514). Personal Innovation Attributes Competency: Overall, Personal Innovation Attributes competency was rated Moderate (Mean = 3.39, S.D. = 0.385). The highest-rated item was Collaboration and Teamwork, rated High (Mean = 4.15, S.D. = 0.533), whereas the lowest-rated item was Innovation-Oriented Leadership, rated Very Low (Mean = 0.83, S.D. = 0.385). Innovation Competency Process: Overall, this process was rated High (Mean = 3.92, S.D. = 0.505). Organizational System-Level: The highest-rated item was Organizational Structure and Work Systems (Mean = 3.99, S.D. = 0.674), and the lowest-rated item was Values, Attitudes, and Work Climate (Mean = 3.86, S.D. = 0.631), both rated High. Individual Operational-Level: The highest-rated item was Technology Selection and Application (Mean = 4.02, S.D. = 0.571), and the lowest-rated item was Ability to Propose New Ideas (Mean = 3.81, S.D. = 0.615), both rated High.

Work Performance Outcomes: Overall, job performance outcomes were rated High (Mean = 4.04, S.D. = 0.512). The highest-rated aspects were Accuracy and Completeness of Assigned Tasks and Timeliness in Task Delivery, both rated High (Mean = 4.08, S.D. = 0.558). The next highest-rated aspect was Participation in Departmental Development, Learning and Growth, and Excellence in IT Utilization, rated High (Mean = 3.99, S.D. = 0.562).

**Correlation Coefficients between Factor Components and the Job Performance of Academic Support Staff in Higher Education Institutions**

The results of the correlation analysis revealed that all factor components exhibited a positive relationship with the components of job performance. Details are presented in Table 8.

**Table 8.** Correlation Coefficients between Factor Components and work Performance

| Variable | Low Level | Moderate Level | High Level |
|---|---|---|---|
| | value r < .50 | value .50 < r < .70 | value .70 < r < .90 |
| 1. Organizational Innovation Support | | **.605 - .817**** | |
| ( $\overline{X}$ =4.09, S.D.= .492) | | | |
| 2. Personal Innovation Attributes | | | **.792 - .800**** |
| ( $\overline{X}$ =3.39, S.D.= .385) | | | |
| 3. Innovation Competency Process in job performance | | | **.723**** |
| ( $\overline{X}$ =3.93, S.D.=.505) | | | |
| 4. work performance outcomes | | | |
| ( $\overline{X}$ =4.04, S.D.= .512) | | | |

**Note:** p < .01. Correlation coefficient interpretation is based on Hinkle et al. (1998)

From Table 8, the findings address **Research Objective 1**, which was to examine the integrated influence of Organizational Innovation Support and Personal Innovation Attributes competency factors on the Work performance of academic support personal institutions in higher education institutions. The analysis revealed that all competency-related factors were positively and significantly correlated with job performance at the 0.01 level. According to the interpretive criteria of Hinkle et al. (1998), the correlation coefficients ranged from moderate (r = .605) to high (r = .817), suggesting that Organizational Innovation Support competency, Personal Innovation Attributes competency, and Innovation Competency Process are strongly associated with work performance outcomes.

**To examine the model fit of the structural framework representing the relationships among innovation competency factors that influence the work performance of academic support personal with empirical data.**

This section addresses **Research Objective 2**, which was to investigate the consistency between the structural model of relationships among innovation competency factors influencing the job performance of academic support personal and empirical evidence. It also responds to **Hypothesis 1**, which posits that the developed structural model of innovation competency factors affecting the job performance of academic support Personal is consistent with the empirical data.

*1. Examination of the model fit for the structural relationships of innovation competency factors*

**Table 9.** Confirmatory composite analysis

| variables | Estimate | t-statistic | Cronbach Alpha | CR | AVE |
|---|---|---|---|---|---|
| **Organizational Innovation Support** | | | | 0.871 | 0.629 |
| 1. Mission and Strategy | 0.773 | 27.597 | .968 | | |
| 2. Organizational Structure and Management Systems | 0.827 | 35.725 | .969 | | |
| 3. Organizational Culture | 0.821 | 34.564 | .968 | | |
| 4. Innovation Systems and Knowledge Management | 0.820 | 34.463 | .968 | | |
| **Personal Innovation Attributes** | | | | 0.857 | 0.545 |
| 5. Creativity | 0.684 | 19.026 | .968 | | |
| 6. Innovative Problem-Solving | 0.764 | 26.044 | .968 | | |
| 7. Technology Utilization | 0.660 | 17.517 | .968 | | |
| 8. Collaboration | 0.702 | 20.393 | .968 | | |
| 9. Innovative Leadership | 0.820 | 33.676 | .969 | | |
| **Innovation Competency Process** | | | | 0.884 | 0.603 |
| 10. Clarity of Organizational Direction | 0.708 | 22.322 | .968 | | |
| 11. Organizational Structure and Work Systems | 0.799 | 33.579 | .967 | | |
| 12. Values, Attitudes, and Work Climate | 0.818 | 37.658 | .967 | | |
| 13. Innovation Support Systems | 0.797 | 33.492 | .967 | | |
| 14. Ability to Generate New Ideas | 0.776 | 30.140 | .967 | | |
| 15. Problem-Solving Ability | 0.765 | 28.494 | .967 | | |
| 16. Technology Selection and Utilization | 0.818 | 37.564 | .967 | | |
| 17. Ability to Collaborate with Others | 0.785 | 31.597 | .967 | | |
| 18. Ability to Promote Innovation in Work | 0.823 | 38.620 | .967 | | |
| **Work Performance Outcomes** | | | | 0.813 | 0.686 |
| 19. Accuracy and Completeness in Achieving Assigned Work Objectives | 0.718 | 21.234 | .968 | | |
| 20. Participation in Unit Development and Excellence in Information Technology Utilization | 0.943 | 40.891 | .967 | | |

**Note:** ***p < 0.001, t-test or Est./S.E.> 3.29

Results of Analysis for **Research Objective 2**: Examination of the Model Fit for the Structural Framework Representing the Relationships among Innovation Competency Factors Influencing the work Performance of Academic Support personal The overall structural model, analyzed using the Structural Equation Modeling (SEM) diagram, revealed that the framework represents stable relationships among four latent variables: Organizational Innovation Support competency, Personal Innovation Attribute competency Innovation Competency Process in job performance, and work performance outcomes. These latent variables were measured through various observed indicators, highlighting the complexity of their interrelationships within the working context of academic support personal.

The structural model fit analysis confirmed the appropriateness of variable identification (Model Identification). The proposed structural model demonstrated suitable identification of latent variables as follows: Organizational Innovation Support was indicated by four observed variables: Mission and Strategy (a) Organizational Structure and Management Systems (b) Organizational Culture (c)Innovation Systems and Knowledge Management (d) Personal Innovation Attributes was indicated by five observed variables: Creativity (e) Innovative Problem-Solving (f) Technology Utilization (g) Collaboration (h) Innovative Leadership (i) Innovation Competency Development Processes in Job Performance was indicated by nine observed variables: Clarity of Organizational Direction (j) Innovation Support Systems (k) Values, Attitudes, and Work Climate (l) Innovation Support Systems (duplicate/m) (m) Ability to Generate New Ideas (n) Problem-Solving Ability (o) Technology Selection and Utilization (p) Ability to Collaborate with Others (q) Ability to Promote Innovation in Work (r) Work Performance Outcomes was indicated by two observed variables: Accuracy and Completeness in Achieving Assigned Work Objectives (s) Participation in Unit Development and Excellence in Information Techn ology Utilization (t)

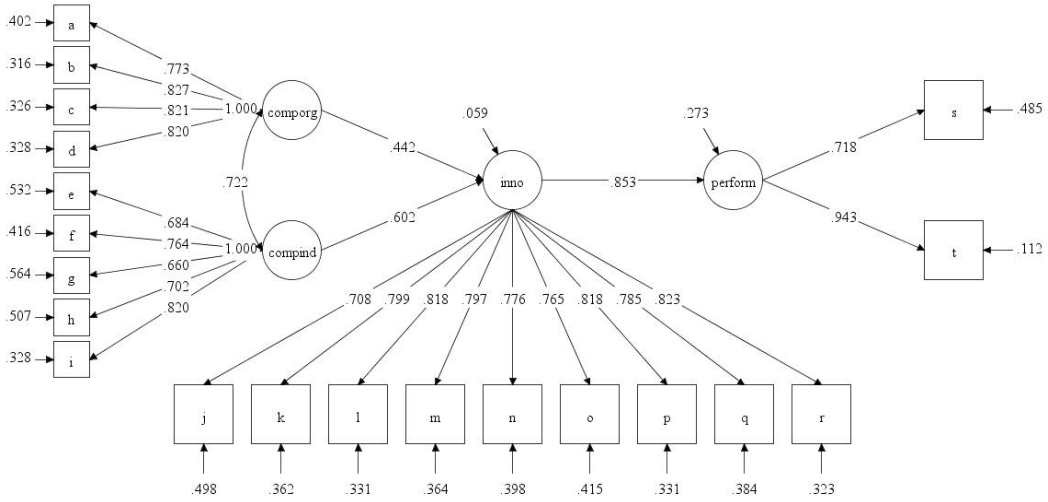


**Figure 2.** Structural Model of the Joint Effects of Innovation Competency on Academic Support Personal Performance

**Table 10.** Model Fit Indices for the Hypothesized Model Against Empirical Data

| Fit Index | Criteria | Before Model Modification | | After Model Modification | |
|---|---|---|---|---|---|
| | | Statistic | Evaluation | Statistic | Evaluation |
| $\chi^2$ / df | ≤3 | 8.91 (1480.190/166) | Failed | 2.72 (269.451/99) | Passed |
| CFI | ≥0.90 | 0.741 | Failed | 0.966 | Passed |
| TLI | ≥0.90 | 0.703 | Failed | 0.935 | Passed |
| RMSEM | ≤0.09 | 0.170 | Failed | 0.079 | Passed |
| SRMR | ≤0.05 | 0.076 | Failed | 0.043 | Passed |

Rationale for Structural Model Modification

Table 10 demonstrates that the initial model failed to meet the goodness-of-fit assessment criteria. All values prior to modification failed evaluation, indicating that the hypothesized model did not adequately reflect the relationships present in the empirical data.

Model Modification Procedures

Model modification was conducted through Modification Indices analysis, a standard procedure in confirmatory factor analysis. The modifications encompassed adding new relationship pathways between variables, removing non-significant pathways, and consolidating latent variables that exhibited unexpected correlations.

Results Following Modification

Following modification, all goodness-of-fit indices improved and met the established criteria. Specifically, $\chi^2$/df decreased from 8.91 to 2.72 (meeting the criterion of ≤ 3), the CFI index increased from 0.741 to 0.966 (meeting the criterion of ≥ 0.90), and RMSEA improved from 0.170 to 0.079 (meeting the criterion of ≤ 0.09).

Justification for Modification

Modification was necessary because the empirical data revealed that the original hypothesized model did not adequately represent the actual relationships among the four latent variables: Organizational Innovation Support, Personal Innovation Attributes, innovation competency development processes in job performance, and job performance outcomes. The modification enhanced model fit to the data and increased confidence in the confirmed relationships among these variables for academic support Personal.

Based on the data above, the overall structural model indicates confirmatory relationships among four main latent variables: Organizational Innovation Support, Personal Innovation Attributes, Innovation Competency Process in Work performance outcomes. These latent variables were measured using a total of 20 observed indicators, reflecting the complexity of their interrelationships within the working context of academic support Personal.

**Assessment of Measurement Reliability and Validity**

The reliability analysis demonstrated that the measurement instruments were appropriate across all dimensions. Cronbach's Alpha values for all variables ranged from 0.967 to 0.969, exceeding the commonly accepted threshold ($\alpha \geq 0.70$), indicating strong internal consistency within each measurement dimension. The Composite Reliability (CR) values for the latent variables were also satisfactory: Organizational Innovation Support (CR = 0.871), Personal Innovation Attributes (CR = 0.857), Innovation Competency Process (CR = 0.884), and job performance outcomes (CR = 0.813). All CR values were above the minimum acceptable threshold (CR ≥ 0.70), demonstrating high reliability of the measurements.

Convergent Validity was confirmed as all observed variables had **factor loadings** ranging from 0.660 to 0.943, surpassing the acceptable threshold (≥ 0.50) and achieving statistical significance (t-statistic > 3.29).The **Average Variance Extracted (AVE)** values for each latent variable were: Organizational Innovation Support competency (AVE = 0.629), Innovation Competency Process (AVE = 0.603), and job performance outcomes (AVE = 0.686), further confirming the convergent validity of the constructs.

**Summary of Model Fit Analysis**

The evaluation of the model fit with empirical data indicated a significant improvement in fit indices, showing that the structural model of innovation competency factors was consistent with the empirical evidence at an acceptable level. This suggests that the proposed model can reliably explain the confirmatory relationships among the four latent variables: Organizational Innovation Support competency, Personal Innovation Attributes competency, Innovation Competency Process, and job performance outcomes. The findings reflect the comprehensiveness of the innovation competency concept in the context of academic support Personal work.

The confirmatory relationships in the structural model demonstrate a logical sequence from organizational and Personal Innovation Attributes competency, through Innovation Competency Process, to job performance outcomes. These results align with established Human Resource Management theories and Organizational Innovation theories, supporting the theoretical validity of the model.

*2. Analysis of Direct, Indirect, and Total Effects of Factors*

The analysis for **Research Objective 3** aimed to examine the direct, indirect, and total effects of various factors on the job performance of academic support Personal Innovation Attributes Competency in higher education institutions. This analysis also addresses **Hypothesis 2**, which posits that The combined factors of Organizational Innovation Support competency, Personal Innovation Attributes competency, and innovation competency have both direct and indirect influences on work performance effectiveness on job performance.

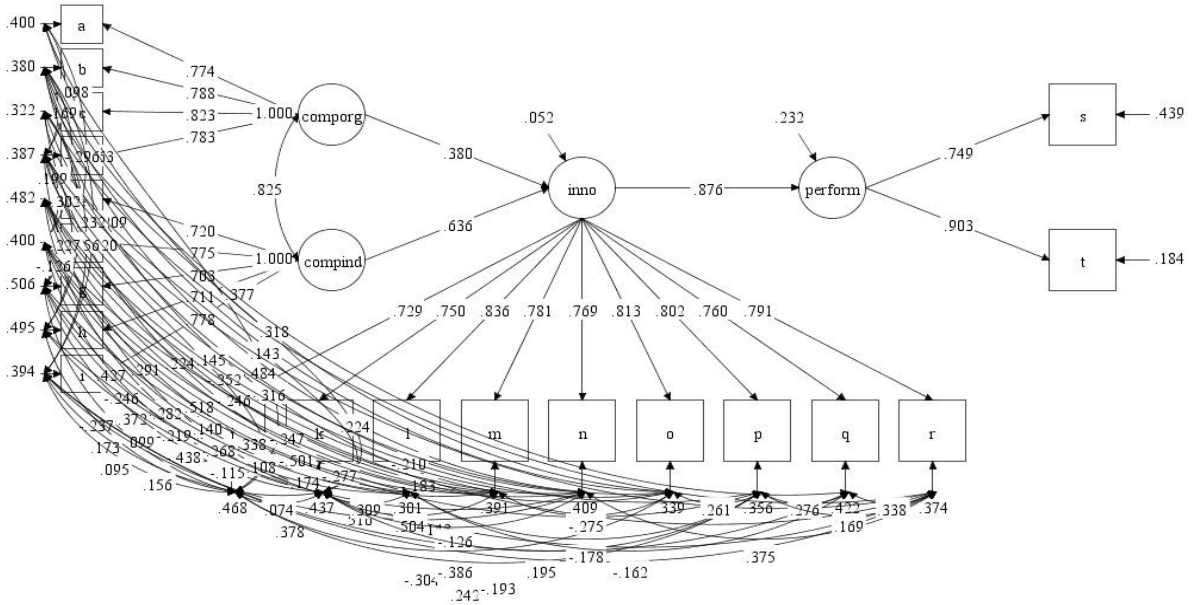


**Figure 3.** Direct, Indirect, and Total Effects of Innovation Competency Factors on the Job Performance of Academic Support Personal.

**Note :** ** $p < 0.001$, t-test >3.29

The researcher defined the model used in this study as follows: **Comprog** = Organizational Innovation Support, **Compind** = Personal Innovation Attributes competency, **inno**=Innovation Competency Process, and **Perform** = Work performance outcomes.

Based on the analysis of the Confirmatory Factor Analysis (CFA) diagram of innovative competency factors influencing the work performance of academic support Personal in higher education institutions, the direct, indirect, and total effects were identified as follows:

1. Direct Effects (DE): Organizational Innovation Support competency directly influenced the process of developing innovative competency in work performance (**β** = 0.380, $p < 0.001$, t = 23.355). Personal Innovation Attributes competency also directly influenced this process (**β** = 0.636, $p < 0.001$,

t = 21.377). Furthermore, the process of developing innovative competency directly affected work performance (β = 0.876, p < 0.001, t = 17.240).

These findings indicate that Organizational Innovation Support components include a clear mission and strategy, an appropriate organizational structure and management system, a supportive organizational culture, and effective innovation and knowledge management systems constitute essential foundations for encouraging and enabling staff to engage in innovative thinking and practices. Higher education institutions with a clear innovation vision, flexible organizational structures, a culture of knowledge sharing, and strong research and development support can create an environment that enables academic support Personal to devise and implement novel approaches effectively in their work. Notably, the results show that individual competency has a 1.67 times greater influence on innovation in work (0.636/0.380) than Organizational Innovation Support factors. This implies that personal attributes such as creativity, innovative problem-solving skills, technological proficiency, collaboration skills, and innovative leadership are the primary drivers of workplace innovation.

The study further highlights that, although supportive organizational systems are important, innovation is limited when staff lack individual competency. Conversely, highly competent Personal can generate innovations even in constrained environments. Once staff engage in innovative work processes, it leads to nearly optimal improvements in work performance, both in terms of accuracy and completeness relative to job objectives and in contributing to the development of the unit.

2. Indirect Effects (IE): Indirect effects refer to the influence that an independent variable exerts on a dependent variable through a mediating variable. In this study, Organizational Innovation Support competency exerted an indirect effect on work performance through the process of developing innovative competence in work performance (β = 0.333, p < 0.001, t = 5.225). Similarly, Personal Innovation Attributes competency had an indirect effect on work performance through the same innovative competence development process (β = 0.557, p < 0.001, t = 6.888). These findings underscore the critical role of organizational systems in creating an environment conducive to innovation, which ultimately enhances work performance. Higher education institutions with a clear mission and strategy emphasizing innovation, flexible organizational structures, a culture of knowledge sharing, and effective research and development support systems can stimulate Personal to engage in innovative thinking and practices. A practical example from Thai higher education institutions illustrates this process: when an institution implements a policy promoting the use of new technologies (Organizational Innovation Support competency), it motivates staff to learn and apply these technologies in their work (the process of developing innovative competence), which subsequently

leads to higher work performance, such as producing faster and more accurate data analysis reports to support clear decision-making by management (work performance outcomes). Importantly, improvements in organizational-level competence do not immediately translate into enhanced work performance; staff must first absorb and apply new policies or systems in their actual work, and results become evident over the long term. Thai higher education institutions should also prioritize the development of individual-level competence. Staff who possess creativity, innovative problem-solving skills, technological proficiency, collaboration skills, and strong innovative leadership can effectively apply these attributes in their work processes, thereby enhancing performance outcomes.

*Summary of the Mediating Role (Mediator)*

The study highlights the significance of the process of developing innovative competence as a mediator. Both organizational and individual level competency do not directly impact work performance; rather, their effects are mediated through the development of innovative competence in work performance. In practical terms, institutions with strong support systems will not achieve improved work performance if staff do not actively apply these systems to generate innovations. Likewise, highly competent staff who do not engage in innovative work processes will not achieve improved performance outcomes.

3. Total Effects (TE): Total effects refer to the overall influence of organizational and individual level competence on work performance. The total effect of Organizational Innovation Support competency on work performance corresponds to its indirect effect ($\beta = 0.333$, $p < 0.001$, $t = 5.775$), while the total effect of Personal Innovation Attributes competency equals its indirect effect ($\beta = 0.557$, $p < 0.001$, $t = 9.291$). In contrast, the total effect of the process of developing innovative competency on work performance corresponds to its direct effect ($\beta = 0.876$, $p < 0.001$, $t = 17.240$). Consistent with the study hypotheses, the analysis supports all predictions. Personal Innovation Attributes competency exerts the greatest influence on work performance (IE = 0.557), followed by Organizational Innovation Support competency (IE = 0.333), with the process of developing innovative competency serving as a key mediating variable (DE = 0.876). These findings indicate that the development of both organizational and Personal Innovation Attributes competency significantly affects the work performance of academic support personnel in higher education institutions, primarily through the process of developing innovative competency. Given that Personal Innovation Attributes competency has the strongest influence, Personal should focus on self-development and actively participate in innovative work processes, as this represents a critical pathway for enhancing work performance.

## Discussion of Research Findings

This study emphasizes the critical need to enhance the innovation competency of academic support personal in Thai higher education institutions. Such competency serves as essential mechanisms for enabling the education system to respond effectively to rapid changes in digital technologies and the knowledge-based economy of the 21st century.

### Theoretical Framework and Fundamental Concepts

The research is grounded in competency theory proposed by Boyatzis (1982), which defines competencies as sets of personal attributes that influence work performance success. This framework is extended through the concept of innovation competency, encompassing creativity, adaptability, technological proficiency, and leadership. The study's findings indicate statistically significant high correlations between individual, organizational, and process factors and work performance ($r = .605–.817$). These relationships can be interpreted using Katz & Kahn's (1978) systems perspective, which views organizations as open systems comprising interrelated components. The study aligns with an integrative perspective, considering employee performance as the outcome of interactions between individual and organizational levels. It reflects the Thai public sector competency framework, which classifies competency into three levels: core, generic, and position specific. Moreover, the findings correspond with Peter Drucker's concept of innovation as a structured process consisting of three stages: upstream innovation (identifying new opportunities), midstream innovation (prototype experimentation), and downstream innovation (implementation).

### Roles of Individual and Organizational Competencies

Analysis of direct effects shows that individual competency have a stronger impact on the development of innovative competency in practice ($\beta = 0.636$) than organizational competency ($\beta = 0.380$), approximately 1.67 times greater. This can be explained through the Competency-Based Human Resource Management (CBHRM) framework, which emphasizes the development of competency-based advantages, particularly in bureaucratic systems or higher education institutions with rigid organizational structures. Individuals with high personal competency can drive organizational change even without explicit top-down policies.

Nonetheless, organizational competencies remain vital as foundational enablers of the innovation process, including mission and strategy, organizational structure, management systems, culture, and knowledge and innovation management systems. This aligns with Nonaka & Takeuchi's (1995) knowledge management theory, emphasizing the transformation of individual knowledge into shared organizational knowledge.

**Role of the Mediating Variable**

The study reveals that the process of developing innovative competency in practice serves as a key mediating variable linking both individual and organizational competency to work performance. The model exhibits complete mediation, underscoring the critical importance of translating competency into actionable workplace innovations. The mediating process consists of nine core components: clarity of organizational direction, organizational and workflow structuring, work values and climate, innovation-support systems, ability to propose new ideas, problem-solving skills, technology utilization, collaboration, and promotion of innovation in work. The significance of this mediating variable is reflected in a high coefficient ($\beta$ = 0.876) on work performance, indicating that competency development alone is insufficient; mechanisms are required to enable employees to apply their competency to create tangible innovations. The indirect effects of individual ($\beta$ = 0.557) and organizational competencies ($\beta$ = 0.333) reflect a sequential process mechanism that necessitates systematic linkage.

**Total Effects and Strategic Implications**

Analysis of total effects demonstrates that the innovation competency development process exerts the strongest influence on work performance (TE = 0.876), followed by individual competency (TE = 0.557) and organizational competency (TE = 0.333). These findings underscore that innovation processes are the principal drivers of employee performance. This framework aligns with Deming's Total Quality Management and knowledge management approaches, emphasizing that processes are central to quality and that knowledge attains value only when applied effectively in practice.

Based on these findings, four strategic recommendations for human resource management are proposed: 1. Directed development of individual competency through practical training programs, individual coaching, and mentoring systems. 2.Establishment of organizational systems that support competency application by adopting flexible structures and fostering an environment conducive to experimentation and innovation. 3.Implementation of innovation processes via idea submission platforms, knowledge-sharing forums, and innovation-based incentives. 4.Continuous evaluation and learning through performance indicators focused on process improvement and system development, aligned with the PMQA framework.

## Policy and Practical Implications

The analysis of the structural relationships among innovation competency factors—confirmed to be empirically consistent with the data—yields significant implications for policy formulation and practical implementation in human resource development within higher education institutions. This is especially relevant for academic support personal, who play a critical role in advancing institutional missions and enhancing overall organizational performance.

### Implications for Policy and Strategy

At the organizational level, the analysis revealed that the highest factor loading was associated with organizational structure and management systems (Factor Loading= 0.827), followed by organizational culture (0.821) and innovation and knowledge management systems (0.820). These findings suggest that university leaders should prioritize enhancing organizational flexibility, establishing transparent and efficient management systems, and formulating policies that cultivate a learning-oriented culture. Such a culture should encourage continuous learning, active knowledge sharing, and acceptance of mistakes as an essential part of the innovation process.

At the individual level, innovative leadership showed the highest factor loading (0.820), followed by innovative problem-solving (0.764), collaboration (0.702), and creativity (0.684). Therefore, human resource development strategies should focus on cultivating leadership across all levels that inspires and stimulates creative thinking. Training programs and curricula should integrate system-based problem-solving, design thinking, and creative technology utilization. Within the process dimension of innovation competency, the most influential factors were the ability to promote innovation in the workplace (0.823), technology utilization (0.818), and values, attitudes, and work climate (0.818). These results highlight the need for performance management systems that foster environments conducive to experimentation and learning from failure. Evaluation frameworks should shift from focusing solely on quantitative outcomes toward assessing innovation processes, adaptability, and organizational value creation.

### Practical Recommendations and Significant Implications

The findings of this research yield four critical recommendations for higher education institutions seeking to enhance innovation competency among academic support personal.

1. Institutions must adopt an integrated development approach rather than focusing exclusively on either Personal Innovation Attributes or Organizational Innovation Support competency. Development efforts should proceed simultaneously to generate

cumulative positive outcomes. Crucially, competency must be integrated into actual work processes, not merely developed as isolated knowledge and skills.

2. Higher education institutions should prioritize Personal Innovation Attributes competency development as a primary focus area. This dimension demonstrates stronger indirect influence when coupled with the creation of an organizational environment that supports and facilitates the application of these competencies.

3. Institutions must implement sustained long-term monitoring and evaluation systems. Because indirect effects require extended timeframes to manifest visibly, comprehensive assessment should track changes across individual competency levels, work processes, and job performance outcomes simultaneously.

4. institutions should design integrated development programs that explicitly link competency advancement with practical workplace applications. This requires establishing support mechanisms enabling personal to continuously apply newly developed competency within their work processes.

These research findings provide essential guidance for formulating personal and organizational development strategies within higher education institutions. They emphasize that competency development alone proves insufficient; institutions must create systematic processes enabling personal to apply developed competency in generating workplace innovations. Only through this integrated approach—combining individual competency enhancement with organizational support systems and practical application mechanisms—can institutions achieve elevated job performance and sustainable organizational effectiveness. This understanding represents a fundamental shift in how higher education conceptualizes professional development for academic support personal.

**Applications for Research Findings**

The analytical findings can be applied to human resource management development in several ways. First, they provide the basis for designing a comprehensive human resource development policy framework anchored in the factor loadings identified through the analysis. Second, they support the creation of performance indicators organized into four major dimensions: four Organizational Innovation Support, five Personal Innovation Attributes, nine process-level variables, and two outcome-level variables. Third, they inform the development of individual competency development plans that are multidimensional and prioritized according to analytical weighting. Fourth, they emphasize the importance of knowledge and innovation management systems, including investments in infrastructures

that facilitate knowledge exchange—such as innovation databases and incentive systems for knowledge sharing.

Moreover, administrators should revisit organizational structures to ensure flexibility, streamline complex approval processes, and establish communication channels that encourage the exchange of new ideas. Developing an innovative-oriented organizational culture in a systematic and continuous manner is crucial. Evaluation and monitoring systems should be grounded in the validated model, while training programs should align with the targeted innovation competencies.

**Development of Assessment and Monitoring Systems**

The validated model can serve as a framework for establishing an assessment and monitoring system for innovation competency development. Through measurement across each dimension and analysis of causal relationships, this system enables administrators to improve operational performance in a timely manner.

**Development of Innovation Training Curricula**

The analytical findings can guide the design of training curricula aligned with targeted competency development, such as innovative leadership development programs, creative problem-solving curricula, technology-for-innovation programs, and innovative team collaboration courses. Applying research findings in this manner enables higher education institutions to develop academic support personnel efficiently, with empirical evidence to support initiatives and measurable, concrete outcomes.

In conclusion, the researcher summarizes that the structural model analysis demonstrates acceptable alignment between the developed model and empirical data. After model refinement, all goodness-of-fit indices met standard criteria across all dimensions. The model systematically explains causal relationships between variables and aligns with relevant theoretical frameworks. Individual-level innovation competency serves as a primary driver for modern organizational development, particularly for supporting personal in higher education institutions. Systemic organizational components provide the essential foundation for enabling personnel to fully utilize their potential. Innovation creation processes in work constitute the mechanism that transforms competency into performance and must be designed to respond to personnel's organizational structures, thinking patterns, and behaviors.

This research extends beyond merely supporting past theoretical concepts; it broadens understanding of the role of academic support personnel as "innovation creators" who directly influence the quality of Thailand's higher education system in the future.

## Limitations of the Study

### Limitations of a Specific Sample within the Thai Context

This study focused on academic support personal in Thai higher education institutions, whose characteristics are shaped by distinctive cultural values, organizational structures, and bureaucratic systems unique to Thailand. Given these contextual specificities, the findings may not be directly generalizable to broader or international contexts.

### Limitations of Self-Reported Data

The research relied on self-administered questionnaires, which are inherently susceptible to response biases such as social desirability or overestimation in self-assessment. These biases may compromise the validity of certain measures, particularly those associated with behavioral and leadership dimensions.

### Limitations of the Quantitative Research Design

Although Structural Equation Modeling (SEM) provides statistical evidence of causal relationships, this study lacks complementary qualitative data that could offer deeper insights into contextual influences, internal mechanisms, or the nuanced processes underlying innovative work behavior among personal.

### Need for Longitudinal Research Designs

Future research should employ longitudinal study designs to track innovation competency development and job performance outcomes over extended periods. Such investigations would enable researchers to observe temporal patterns in competency acquisition, examine how organizational interventions produce sustained effects, and identify critical junctures where individual competency translate into measurable performance improvements. Longitudinal approaches would also facilitate understanding of how innovative competency evolve across different career stages and how external environmental changes influence the competency-performance relationship. Additionally, mixed-methods longitudinal studies combining quantitative measurements with qualitative interviews would provide comprehensive understanding of the mechanisms through which innovative competency generate organizational benefits and enable investigators to capture the dynamic interplay between individual capabilities, organizational support systems, and workplace innovation processes over time.

## Recommendations for Future Research

### Expanding the Scope to Diverse Contexts

Future research should extend the application of the proposed model to higher education institutions in various regions or conduct cross-national comparisons. Such studies would help assess the comprehensiveness, robustness, and contextual adaptability of the model across diverse cultural and organizational environments.

### Integrating Qualitative and Quantitative Approaches

Researchers are encouraged to employ a mixed-methods design—particularly incorporating in-depth interviews or focus group discussions—to gain a more holistic understanding of individual innovative behavior and the organizational culture that fosters it.

### Testing Strategic and Practical Models

Subsequent studies could adopt experimental or quasi-experimental designs to evaluate the effectiveness of innovation competency development programs on work performance over time. For example, comparing outcomes before and after participation in training or coaching interventions would yield valuable evidence of practical impact.

### Mitigating Self-Report Bias through Multi-Source Data Collection

Future research should implement 360-degree feedback mechanisms incorporating supervisor, peer, and subordinate evaluations to triangulate self-assessed competencies and reduce social desirability bias. Objective performance data from institutional records—including work outputs, project completion rates, and quality metrics—should complement subjective assessments. Behavioral observation techniques and structured interviews by trained assessors could capture nuanced innovative behaviors overlooked by questionnaires. Integrating these diverse data sources would strengthen validity, provide robust evidence for the model, and yield credible recommendations for academic staff development in higher education institutions.

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