



The Relationship between Information Technology Competence and Information System Implementation on Employee Performance at a University with a Legal Entity in Indonesia

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Abstract. The lack of information technology (IT) competence possessed by employees is one of the causes of constraints in the implementation of information systems. The successful implementation of information technology in employees is determined by the IT competencies that employees have in the field of information technology. This study aims to investigate the influence of IT competencies on the implementation of information systems and their resultant effect on employee performance. This research gathered and examined data from 95 participants at one of the state universities in Indonesia with the status of a legal entity university (PTNBH). The study model's direct links were examined using Smart-PLS for data analysis through a quantitative technique. The research results suggested that IT competence had a great influence on employee performance, both through the implementation of information systems. In order to improve employee performance, organizations/companies must prioritize IT competencies in the information system implementation process so that the information system provided can optimally help employees finish their tasks. This can be achieved by placing employees who have IT competencies in jobs that require employees to work using information systems.

Keywords: competency, Information System Implementation, employee performance

1 Introduction

Employees with inadequate skills and knowledge in information technology may have difficulty understanding and using the new information systems introduced by the organization. This can result in an inability to operate software or hardware well, which in turn hampers workflow and reduces operational efficiency [1]. The absence of IT competency has a major influence on the implementation of information systems. The inability of employees to make optimal use of information systems can result in underutilization or suboptimal use of the technology, so that organizations cannot take the full benefits expected from their IT investments [2]. Additionally, this can also result in increased operational costs as more time and resources are required for additional

training or ongoing technical support [3]. Ultimately, a lack of IT competence can hinder an organization's ability to compete in an increasingly digital and connected market, reducing flexibility and responsiveness to changes in the market and technology [4]. In today's digital era, information technology (IT) has become the backbone for various business and operational activities of organizations. The use of an effective and efficient information system not only supports the work process but also significantly helps to raise staff performance. Employee IT competencies, which include knowledge, skills, and abilities in managing and utilizing information technology, are a key factor that determines the extent to which information systems can be optimally used to achieve organizational goals [5]. The rapid development of technology requires organizations to continue to adapt and develop the IT competencies of their employees. Adequate IT competencies allow employees to use information systems better, thereby increasing productivity, efficiency, and work effectiveness [6]. A well-managed information system can provide accurate and relevant data and information, support faster and more informed decision-making, and reduce errors and duplication of work [7].

This study aims to investigate the relationship between IT proficiency and employee performance through information systems. This study primarily aims to examine the degree to which employees' IT competencies influence their capacity to employ information technologies and their overall performance [8]. In addition, the study also identified other factors that may influence the relationship, such as management support, training, and organizational culture [9]. By understanding the relationship and influence of IT competencies on employee performance through the use of information systems, it is expected that organizations can formulate appropriate strategies to develop employee IT competencies, maximize the use of information systems, and ultimately improve overall organizational performance [10]. This research seeks to offer theoretical and practical advances to the field of information management as well as a reference for practitioners in designing effective information technology development programs.

Competence refers to the combination of skills, knowledge, abilities, and attitudes required to perform a task or job effectively [11]. Competence includes various aspects, such as technical skills, interpersonal skills, and conceptual understanding relevant to a particular role in the organization [12]. IT competence includes not only technical aspects, but also the ability to identify and utilize opportunities offered by information technology to improve organizational efficiency and effectiveness [2]. In a changing business environment and rapidly evolving technology, IT competence is becoming increasingly important for individual and organizational success [13]. Adaptability reflects the speed and effectiveness of individuals in learning and implementing new technologies [4]. In addition, the ability to work together in technology teams and effective communication are also considered important indicators of IT competence [38]. These competencies include cognitive and technical abilities that enable employees to operate and utilize information technology effectively in their tasks [14].

Research shows that high IT competence in employees is correlated with increased individual and organizational performance [12]. Employees with high IT competence

tend to have better performance because the organization can increase the use of information systems to support its tasks [6]. Employees who have good IT competencies are better able to adapt to technological changes and utilize information systems to increase productivity and innovation [3]. It is emphasized that management support and ongoing training are essential in developing employee IT competencies [37]. Organizations should ensure management assistance in implementing information systems and continuously improve their staff's IT competencies through ongoing training and development [14].

Information systems play an important role in supporting organizational operations and decision-making. According to [5], information systems assist in collecting, storing, and analyzing relevant data, which can be used to improve the efficiency and effectiveness of business processes. Effective use of information systems requires adequate IT skills and knowledge from employees [8].

One study emphasizes the importance of information systems in providing accurate and relevant data for decision-making [2]. The data provided by information systems allows managers to make faster and more informed decisions, which can lead to enhancements and consequently have the potential to enhance organizational performance [7]. The effectiveness of information systems is influenced by the quality of systems, information, and services, along with their impact on both individual and organizational performance [10].

Employee performance is a measure of how well an individual performs the tasks and responsibilities given in an organization [15]. This performance includes a variety of aspects, including effectiveness, efficiency, quality of work, and contribution to organizational goals. In the modern context, employee performance is also influenced by their ability to utilize information technology and information systems in the workplace [16]. The efficient utilization of information technology enables personnel to execute tasks with greater speed and precision, consequently enhancing their productivity and work quality [17].

Employee performance indicators related to the use of information systems include several key aspects. The compatibility between technology and the tasks faced by employees is an important indicator [18]. When an information system aligns with task requirements, employees can perform their work more efficiently and effectively. In addition, the level of information system use is also a significant indicator, where employees who frequently use information systems in their work tend to have better performance [2]. User satisfaction with information systems is also considered an indicator of performance, as this satisfaction reflects the extent to which the system supports their tasks [19].

A conceptual model has been devised to investigate the relationship between employee performance and IT competence, as evidenced by the previous review literature. Furthermore, it investigates whether the implementation of information systems serves as a mediating variable between employee performance and competence. Figure 1

depicts the conceptual model, outlining the connection between the study hypotheses and the conceptual framework.

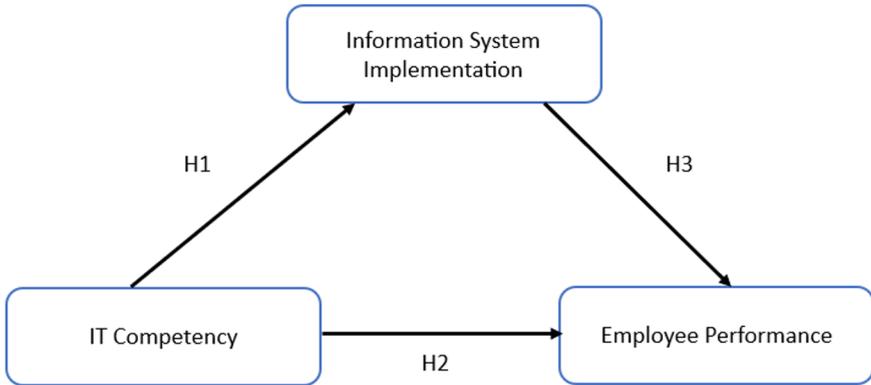


Fig. 1. Conceptual research model

The hypotheses of this study are:

H1: Competence is positively related to the implementation of information systems.

H2: Competence is positively related to employee performance.

H3: The implementation of the information system is positively related to employee performance.

2 Methods

This study aims to examine the impact of competence on employee performance, both directly and indirectly, through the application of information systems. This study was conducted in a legally recognized university in Indonesia. In Indonesia, PTNBH has autonomy in its management, as stipulated by Law Number 12 of 2012 about Higher Education, and is classified as a university with legal entity status. This study utilized a convenience sample strategy to administer the survey to employees at a PTNBH in Indonesia. As its name suggests, convenience sampling involves collecting data from participants who were willing and available to be involved in the study [20]. The sample characteristics target respondents with expertise in information technology, particularly in using information systems. The SMART-PLS program was chosen for data analysis because of its ability to conduct structural equation modelling (SEM) analysis [21].

3 Results and Discussions

The survey targeted employees who actively engaged with information systems. The questionnaire was distributed by Google Forms, which was disseminated to 129 respondents. The respondents involved in this study were education staff. In this study, most of the respondents fell between 35 and 50 years old (85%). Fifty-one percent of respondents possess a bachelor's degree as their highest level of education. Of the respondents, most have worked for more than ten years (85%). The following table shows the respondents' demographic data:

Table 1. Participant Demographics

Education Background	Employee Experience					Grand Total	%
	0-5 years	6-10 years	11-15 years	16-20 years	>20 years		
D3		4	7	3		14	15%
D4		1	1			2	2%
Undergraduate	2	14	14	12	9	51	54%
Post graduate		2	4	2	5	13	14%
Senior High School		3	5	2	5	15	16%
Grand Total	2	24	31	19	19	95	

This study adhered to Hair's recommendations by assessing two distinct components: the model itself and the methods utilized for estimating and testing hypotheses based on structural models [17]. With the help of the SmartPLS application used to perform Confirmatory Factor Analysis and SEM, the results of the analysis are displayed in Table 2. Convergent validity is assessed by calculating Average (AVE) and Composite Reliability (CR), and Item Factor Loadings. The factor loading in the study should exceed 0.70 [17]. CR values above 0.50 indicate a high level of internal consistency in reflective constructs. All values above 0.50 are reported in the measurement results, with AVE serving as a reference for assessing convergent validity. This indicates that the model meets the convergent validity criteria for all constructs.

Table 2. Outcome of the Measurement Model

Construct	Code	Item Loading	CR	AVE
Information System Implementation	ISI1	0.931	0.919	0.790
	ISI2	0.906		

	ISI3	0.826		
Employee Performance	KK1	0.947	0.964	0.901
	KK2	0.922		
	KK3	0.977		
IT Competence	KPI1	0.809	0.906	0.617
	KPI2	0.784		
	KPI3	0.804		
	KPI4	0.807		
	KPI5	0.710		
	KPI6	0.792		

Following this, a discriminant validity assessment is conducted in order to ascertain whether the constructs exhibit an adequate level of differentiation from each other to explain phenomena that are not fully addressed by current constructs [21]. The cross-loading values are presented in Table 3, with the test combining Fornell and Larcker's criteria as follows:

Table 3. Fornell-Larcker Criterion

	Information System Implementation	Employee Performance	IT Competence
Information System Implementation	0.889		
Employee Performance	0.475	0.949	
IT Competence	0.652	0.500	0.785

Table 4. : Heterotrait-Monotrait Ratio (HTMT)

	Information System Implementation	Employee Performance	IT Competence
Information System Implementation			
Employee Performance	0.522		
IT Competence	0.743	0.543	

Each construct is most strongly correlated with itself and less so with other constructs, demonstrating the validity of the data for discrimination. As shown in Table 4, each construct has a number less than 0.85. The study results show that the constructs passed both the Fornell-Larcker criterion test (FLCT) and the heterotrait-monotrait ratio (HTMT) test, which means they are discriminant valid. There is strong evidence for both convergent and discriminant validity in this work. The next step in the

structural model evaluation method is to use the path coefficient to test the research hypotheses. Based on the calculation findings of the three proposed hypotheses, all were accepted. This conclusion is derived from the data analysis, where the significance value at the 5% level required a p-value less than 0.05, as seen in the following.

Table 5. Outcomes of Hypothesis Evaluation

Hy- pote- sis	Relation	T Sta- tistics	P Val- ues	Deci- sion
H1	IT Competencies -> Information System Imple- mentation	12.168	0.000	Sup- ported
H2	IT Competencies -> Employee Performance	2.873	0.004	Sup- ported
H3	Implementation of Information Systems -> Em- ployee Performance	2.368	0.018	Sup- ported

Each construct has a number that is less than 0.85. The study results show that the constructs passed both FLCT and HTMT tests, which means they are discriminant valid. There is strong evidence for both convergent and discriminant validity in this work. The next step in the structural model evaluation method is to use the path coefficient to test the research hypotheses. Figure 2 shows the next calculation results performed by SmartPLS using bootstrapping. The model test findings demonstrate that the model accounts for 42.5% of the variance in the deployment of the information system and 28.8% of the variance in employee performance. All path coefficients exhibit statistical significance, as evidenced by the data and picture presented above.

After the hypothesis test, the Determination Coefficient (R²) analysis was carried out. The coefficient of determination (R²) for the internal concept IT competence and information system implementation was 28.8% and 42.5%, respectively. The suggested thresholds for assessing the R² value of endogenous latent variables in the social and behavioral sciences are 26% for relatively significant effects, 13% for moderate effects, and 2% for weak effects [7]. Based on this, R² from the results of data analysis is included in a fairly large criterion. This shows that the construction of IT competencies have a great impact on the implementation of information systems.

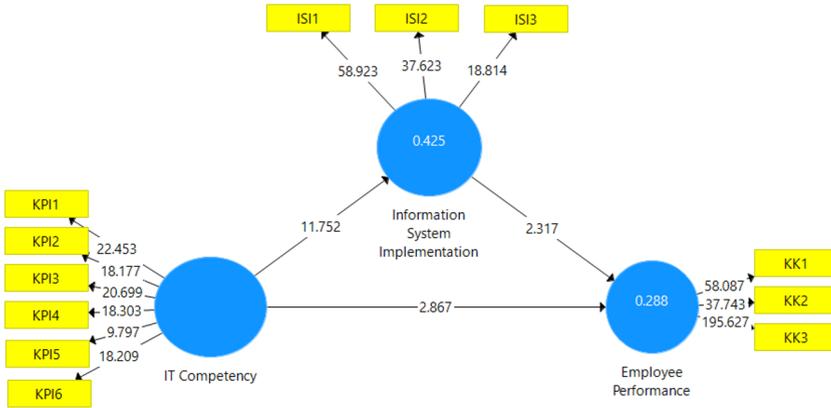


Fig. 2. Measurement model

This research aims to improve understanding of the IT competency elements affecting the application of information systems in the workplace. The conclusive analysis indicates that IT competencies directly influence the implementation of information systems. The analysis yielded the following findings: First, the findings showed that IT competencies had a beneficial impact on the implementation of information systems and employee performance. This verified that employees who had strong skills and knowledge tended to be more productive and efficient in their tasks [22]. High competence improved employees' ability to adapt to changes and new challenges, which is essential in a dynamic work environment [23]. One of the new challenges is to use information systems to complete work. Competent employees show higher levels of creativity and innovation, contributing to process and product improvements [24]. Strong competencies aid in better and faster decision-making, which improves the overall performance of teams and organizations [25].

Skilled and knowledgeable employees can effectively manage and navigate complex systems, leading to smoother integration and fewer errors [26]. These skills are needed in the process of implementing information systems. Advanced users are better prepared to provide valuable feedback and suggestions, improving the design and functionality of the system [27]. Strong competencies foster a culture of continuous improvement, ensuring that systems evolve to meet the changing needs of organizations [28]. This is beneficial for the development of the next information system.

Second, the implementation of information systems affected employee performance positively. The implementation of a good information system improved operational efficiency by automating business processes and reducing human error [29]. Effective information systems allow for faster and more accurate data access, which supports better decision-making [30]. Successful implementation of information systems improved coordination and communication between departments, reducing information

silos [5]. Integrated information systems support innovation by providing a platform for deep data analysis and the development of new solutions [25]. The proper implementation of information systems can increase customer satisfaction by providing more responsive and personalized services [31].

This research examined a theoretical framework constructed to illustrate the significance of IT proficiency in the implementation of information systems at PTNBH in Indonesia. The outcomes reveal that all conjectures were validated. The investigation was conducted at a single university in Indonesia. Notwithstanding its constraints, the outcomes can be extrapolated to other academic institutions with similar attributes.

4 Conclusion

The conceptual framework outlined in this study offers a comprehensive model supported by a robust theoretical foundation, enhancing the understanding of how IT competencies influence employee performance, both directly and through the implementation of information systems. The findings demonstrated that IT competence, facilitated by the implementation of information systems, significantly positively impacted employee performance.

To support the successful implementation of information systems and improve employee performance, organizations must consider the IT resources employees need to complete tasks effectively. The impact of IT competencies on the deployment of information systems is crucial for organizations to strategically evaluate and plan the essential resources associated with information technology. During the phase of IT resource development and information system implementation, organizations must prioritize incorporating employee feedback that is rooted in their IT proficiency. Depending solely on organizational procedures for IT resource deployment, which includes information systems, is insufficient. Thus, organizations should also take into account the practices and proficiencies of employees, particularly those with expertise in information technology.

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