

Information system implementation and educational level as determinants of employee performance

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ABSTRACT

Purpose: to analyze the influence of the civil registration and population administration information system (CRPAIS), payroll accounting information system (PAIS), and education level on employee performance at the population and civil registration service of Bengkalis district.

Method: the research used a quantitative approach with primary data obtained through questionnaires from 36 respondents, then analyzed using multiple linear regressions with the help of SPSS version 25, as well as through validity, reliability, and classical assumption tests.

Findings: CRPAIS, PAIS, and education level have a positive and significant effect, both partially and simultaneously, on employee performance, with a contribution of 69.2% in explaining variations in employee performance.

Implications: improving employee performance, which is greatly influenced by the effectiveness of information systems and the quality of human resources, so organizations need to optimize the use of information technology and improve employee competency through continuous education and training.

Originality: lies in the integration of two types of information systems, namely CRPAIS and PAIS, which are analyzed simultaneously with the variable of education level in influencing employee performance in the context of local government agencies, which is still relatively rarely studied simultaneously in previous research.



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Introduction

In an era of globalization and rapidly advancing technology, organizations are required to improve employee performance to compete effectively and achieve goals efficiently (Alhmoud & Al-Kasasbeh, 2024). Employee performance is a key factor in

determining an organization's success (Teng et al., 2022). High-performing employees can increase productivity, efficiency, and competitiveness in facing business challenges and public services (Al-Jaradi et al., 2023; Elamalki et al., 2024). However, many organizations face issues related to employee performance, such as low productivity, poor task completion, and slow adaptation to technological and work system changes.

One cause of low employee performance is the suboptimal implementation of information systems in the workplace (Shakir et al., 2024). A good information system can help employees manage data, accelerate decision-making, and increase work productivity. However, many organizations still use manual methods or poorly integrated systems, which hinder work efficiency and decision-making. Furthermore, there are still obstacles in implementing information systems, such as a lack of employee training, resistance to change, and inadequate technological infrastructure (Rahman et al., 2025). The effectiveness of information system implementation depends not only on the technology used but also on employees' ability to use the system optimally.

On the other hand, employee education levels also play a significant role in determining their performance (Jin et al., 2025). Employees with higher levels of education tend to have stronger analytical and problem-solving skills, as well as greater adaptability to technological developments and workplace procedures. However, many organizations still face a gap between employee educational qualifications and job demands. A lack of further education and training also hinders employee competency development, ultimately resulting in low productivity and work effectiveness (Tamsah et al., 2023). Adequate education can also help employees become more adaptable to change, including the use of information technology in the workplace (Sony & Mekoth, 2022).

Although numerous previous studies have highlighted the relationship between information systems and employee performance (Abualoush et al., 2018; Caesario, 2022; Heslina & Syahrani, 2021), as well as education level and employee performance (Hazmin et al., 2024; Juliani & Windu, 2017; Milang et al., 2024), there are still limitations in studies that examine the interaction of these two factors simultaneously. Most studies focus more on the impact of information technology on work efficiency without considering how employee education levels influence the success of information system implementation. Furthermore, there is limited prior research on how the gap between educational qualifications and organizational needs can affect the effectiveness of information system implementation in improving employee performance. This can be considered novel, especially since this study implements two information systems: the civil registration and population administration information system and the payroll accounting information system.

This study offers a more comprehensive approach by analyzing how the civil registration and population administration information system, payroll accounting information system, and education level implementation contribute to employee performance. Unlike previous studies that tend to examine these factors separately, this study aims to analyze the influence of the civil registration and population administration information system, payroll accounting information system, and education level on employee performance at the Population and Civil Registration Office of Bengkalis Regency, Riau, Indonesia. Furthermore, this study seeks to provide strategic recommendations for organizations to optimize the use of information systems and improve human resource quality, aligning with technological developments and organizational needs. This study is expected to provide new insights for academics and

practitioners in designing more effective strategies to improve employee performance by understanding the relationships among these factors and the existing problems.

Literature review

Technology acceptance model (TAM)

The TAM is a theory developed by Davis (1989) to explain how individuals accept and use information technology. This model states that two main factors influence the level of user acceptance of technology: perceived usefulness (the extent to which a person believes that using a system will improve their performance) and perceived ease of use (the extent to which a person believes that the system is easy to use). These two factors influence user attitudes toward technology, which then impact behavioral intentions and, ultimately, the system's actual use (Nawaz et al., 2026). In the context of this study, TAM explains that the higher an employee's perception of the usefulness and ease of use of an information system, the more likely they are to utilize it optimally, thereby improving employee performance (Fridkin et al., 2024).

Human capital theory

Human capital theory holds that education, training, experience, and skills are investments in people that can increase individual productivity and performance. This theory was originally developed by Becker (1964), who stated that individuals with higher levels of education tend to have better knowledge and skills in completing work, thereby adding value to the organization. In an organizational context, human resources are viewed as a vital asset that can increase work efficiency and effectiveness. Therefore, higher levels of employee education and competence contribute more significantly to the improvement of overall organizational performance.

Resource-based view (RBV)

The RBV is a theory in strategic management that explains that an organization's strengths and performance are determined by its internal resources and how effectively these resources are managed. This theory was developed by Barney (1991), who stated that valuable, rare, inimitable, and non-substitutable resources, known as the VRIN/VRIO concept, can be a source of sustainable competitive advantage. In the context of this research, resources such as information systems and employee quality (including education level) are important assets that can improve employee work effectiveness and performance when well managed by the organization.

Information system

An information system is a combination of technology, people, procedures, data, and hardware and software components that interact to collect, process, store, and distribute information to support decision-making and control within an organization (Fairuzabadi et al., 2023; Hasan & Akter, 2022). This system is designed to produce relevant, accurate, and timely information to improve work efficiency and effectiveness (Hendarsyah et al., 2023; Sugiyanto et al., 2022). In an organizational context, implementing information systems helps employees complete tasks more quickly, reduces errors, and improves coordination between departments. Therefore, information systems are a crucial element in supporting improved employee performance and the organization's overall competitiveness.

Education level

Education level is a formal measure of the highest level of education a person has completed, such as primary, secondary, or higher education (diplomas, bachelor's degrees, and so on) (Debarliev et al., 2022). Education level reflects the breadth of knowledge, thinking skills, and skills an individual possesses in understanding and carrying out tasks (Rivas et al., 2022). In an organizational context, employees with higher levels of education generally have better analytical skills, are more able to understand complex tasks, and are more adaptable to change and new technologies. Therefore, education level is often used as an important indicator of human resource quality, which influences employee performance.

Employee performance

Employee performance is the work results achieved by an employee in carrying out the tasks and responsibilities assigned by the organization in accordance with established standards (Dehotman, 2023; Mulyono et al., 2024). This performance reflects the level of employee success in completing work, which can be measured through various indicators such as work quality, quantity of results, timeliness, effectiveness, and level of independence in working (Vuong & Nguyen, 2022). Employee performance is influenced not only by individual abilities but also by factors such as work systems, organizational environments, the technology used, and levels of education and competence (Jiang et al., 2023). Therefore, employee performance is a crucial aspect that determines productivity and the achievement of overall organizational goals.

Hypothesis development

The implementation of an information system will improve employee performance if the system is perceived as useful (perceived usefulness) and easy to use (perceived ease of use) from a TAM perspective. In this context, the civil registration and population administration information system helps employees manage population data more quickly, accurately, and in an integrated manner, thereby streamlining work processes (Zebua & Hulu, 2025). This is also supported by information systems theory, which explains that information systems function to increase organizational efficiency and effectiveness. In addition, several previous studies have shown that implementing an effective information system can improve service quality and employee performance by making work more systematic and reducing manual errors (Mohamed et al., 2022; Popescu et al., 2022; Ștefan et al., 2024; Sutam et al., 2024). Therefore, the hypothesis H1 can be formulated as follows: the civil registration and population administration information system has a positive effect on employee performance.

An information system that provides convenience and tangible benefits will increase employee acceptance and use, ultimately impacting performance, based on the TAM perspective. A payroll accounting information system enables the payroll process to be carried out more quickly, transparently, and accurately, thereby reducing administrative burdens and calculation errors (Azizah & Wahyudi, 2026). This aligns with the concept of information systems, which emphasize their role in supporting decision-making and organizational efficiency (Hendarsyah et al., 2025). Previous research has also found that implementing an accounting information system can improve employee work effectiveness by structuring and making work processes more accountable (Napitupulu, 2023; Qatawneh, 2023). Thus, the hypothesis H2 can be

formulated as follows: the payroll accounting information system has a positive effect on employee performance.

Based on human capital theory, education is an investment in human resources that increases an individual's knowledge, skills, and productivity at work. Employees with higher levels of education generally have better analytical skills, understand their work more quickly, and are more adaptable to the use of technology and organizational change (Sony & Mekoth, 2022). This is also supported by the resource-based view, which states that the quality of human resources is a strategic asset that can improve organizational performance. Previous research also shows that education level positively influences employee performance, as higher education levels are associated with greater ability to complete tasks effectively and efficiently (Abdelwahed & Doghan, 2023; Jin et al., 2025). Therefore, the hypothesis H3 can be formulated as follows: education level has a positive effect on employee performance.

Method

This research was conducted at the Population and Civil Registration Office of Bengkalis Regency, Riau, Indonesia. The subjects of the research were agency employees, while the objects of the research included the civil registration and population administration information system, the payroll accounting information system, education level, and employee performance. The study population consisted of 50 employees, including civil servants at various levels and honorary staff. The sampling technique used was purposive sampling with the criteria of employees who have positions or are directly involved in services and system use, so that a sample of 36 respondents was obtained, consisting of 1 head of the agency, 1 secretary of the agency, 4 heads of divisions, 3 functional positions, 5 treasurers, 11 civil servant staff, and 11 honorary staff.

The data used in this study are quantitative, with primary sources obtained directly from respondents via questionnaires. Data collection techniques included a Likert-scale questionnaire and a literature review. The questionnaire was constructed based on indicators for each research variable, as shown in Table 1. The questionnaire was given to respondents containing statements related to the research variables. Each questionnaire statement provided five alternative answers: strongly agree, agree, somewhat agree, disagree, and strongly disagree. Meanwhile, the literature review was used to strengthen the research data and make them more complete and relevant to the problem being studied.

Table 1 operational variables

Variables	Definition	Indicator	Scale
Civil registration and population administration information system (CRPAIS)	An integrated system that collects, records, processes, and presents data on the identities and important events in residents' lives (Musadad et al., 2023).	1. Accuracy; 2. Completeness; 3. Timeliness; 4. Security; 5. Accessibility; 6. Reliability; 7. Usability; 8. Integration; 9. Service effectiveness; 10. Compliance (Muhammad & Dharmala, 2025; Musadad et al., 2023; Pariyatin et al., 2024; Peters, 2016; Riauwati & Dwiyantri, 2023)	Likert

Variables	Definition	Indicator	Scale
Payroll accounting information system (PAIS)	A continuous series of business activities and related data processing operations to effectively manage an organization's workforce (Romney & Steinbart, 2020).	1. Accuracy; 2. Timeliness. 3. Security; 4. Completeness; 5. Usability; 6. Compliance (Romney & Steinbart, 2020; Ruivo et al., 2014; Soudani, 2012; Svanberg & Öhman, 2013)	Likert
Education level (EL)	The highest level of formal education successfully completed by a person, which is often used as an indicator of human capital in a country (Angrist et al., 2021).	1. Level of education; 2. Length of education; 3. Educational achievement; 4. Educational suitability; 5. Educational quality; 6. Educational outcome competencies (Dierendonck, 2023; Horn & Tandberg, 2018; Indra et al., 2023; Jaya & Nurqamarani, 2023)	Likert
Employee performance (EP)	The work results in terms of quality and quantity achieved by an employee in carrying out his duties in accordance with the responsibilities given to him (Bahasoan & Baharuddin, 2023).	1. Quality of work; 2. Quantity of work; 3. Timeliness; 4. Responsibility; 5. Teamwork; 6. Initiative; 7. Compliance; 8. Effectiveness; 9. Efficiency; 10. Work discipline; 11. Independence (Bahasoan & Baharuddin, 2023; Frese & Fay, 2001; Koopmans et al., 2014; Richard et al., 2009; Schein, 2015)	Likert

The data analysis technique used descriptive statistics and multiple linear regressions in SPSS version 25. Data testing was carried out through data quality tests (validity and reliability), classical assumption tests (normality, linearity, heteroscedasticity, multicollinearity, and autocorrelation), and hypothesis testing, including t-tests, F-tests, and the coefficient of determination (R^2). The regression model was used to determine the effects of independent variables on dependent variables, both partially and simultaneously, thereby providing a statistical picture of the relationships among variables in this study.

Results and discussion

Respondent demographics

This section presents a general overview of the demographic characteristics of the respondents involved in the study, including gender and age range, as a basis for understanding the respondent profile more comprehensively. Table 2 presents a demographic overview of respondents based on gender and age range. In terms of gender, the majority of respondents were male (21, 58.34%), while 15 were female (41.66%). This indicates that male participation in this study was more dominant than female. Based on age range, the majority of respondents were in the 31–40 age group,

amounting to 15 people (41.67%). The 41–50 age group ranked second with 14 people (38.89%). Meanwhile, respondents aged 21–30 years numbered 5 (13.88%), and the ≥51 age group was the smallest, with only 2 (5.56%). Overall, the respondents in this study were predominantly male and in the productive age range, specifically 31 to 50 years. This data indicates that most respondents had a sufficient level of maturity in providing answers to the research.

Table 2 respondent demographics

Characteristics	Description	Amount	Percentage (%)
Gender	Male	21	58.34
	Female	15	41.66
Age Range	21-30 Years	5	13.88
	31-40 Years	15	41.67
	41-50 Years	14	38.89
	≥ 51 Years	2	5.56

Source: primary data, processed

Descriptive statistics

This section presents the results of descriptive statistical analysis of the research variables, which aim to provide a general overview of the minimum, maximum, and average (mean) values, and the level of data distribution (standard deviation) for each variable studied (Table 3).

Table 3 descriptive statistics results

Variables	N	Min	Max	Mean	Std. Dev.
CRPAIS	36	40	50	46.19	3.106
PAIS	36	22	30	26.17	2.131
EL	36	19	30	25.92	2.005
EP	36	14	55	47.92	3.434

Source: primary data, processed

Table 3 presents the results of descriptive statistical analysis of the research variables, including CRPAIS, PAIS, EL, and EP. All variables had the same number of respondents (N), namely 36 people. The CRPAIS variable has a minimum value of 40 and a maximum of 50, with an average value (mean) of 46.19 and a standard deviation of 3.106. This indicates that CRPAIS data tends to be concentrated around the average, with relatively low dispersion. For the PAIS variable, the minimum value was 22, the maximum was 30, the average was 26.17, and the standard deviation was 2.131. This indicates that the variation in PAIS data is not too large, and most values are around the average.

The EL variable ranges from 19 to 30, with an average of 25.92 and a standard deviation of 2.005. The relatively small standard deviation indicates that the respondents' educational levels are quite homogeneous. Meanwhile, the EP variable ranges from 14 to 55, with an average of 47.92 and a standard deviation of 3.434. Despite having a fairly wide range of values, the distribution of employee performance data remains relatively stable because the standard deviation is not too large. The descriptive statistics indicate that all variables have a relatively good distribution and moderate variation, providing a fairly representative picture of the respondents' conditions in this study.

Validity and reliability

This section presents the results of validity and reliability testing of the research instruments used to ensure that each statement item is able to measure the variables accurately and consistently, the results can be seen in Table 4.

Table 4 validity and reliability results

Variables	Items	Lowest r-stat	Highest r-stat	Cronbach's alpha
CRPAIS	10	0.314	0.711	0.801
PAIS	6	0.382	0.463	0.662
EL	6	0.353	0.722	0.672
EP	11	0.309	0.652	0.794
R-Table		0.279		
Reliability		0.600		

Source: primary data, processed

Table 4 presents the results of the validity and reliability tests for all research variables, namely CRPAIS, PAIS, EL, and EP. The validity test was conducted by comparing the r-statistic value with the r-table of 0.279. Meanwhile, the reliability test was assessed based on the Cronbach's Alpha value with a minimum limit of 0.600. In the CRPAIS variable, which consists of 10 statement items, the r-statistic value ranged from 0.314 to 0.711. All of these values were above the r-table (0.279), so it can be said that all items in the CRPAIS variable were declared valid. In addition, the cronbach's alpha value of 0.801 indicates that this variable has a high level of reliability. Meanwhile, the PAIS variable has 6 statement items with r-statistic values between 0.382 and 0.463. These values are also greater than the r-table, so all items are declared valid. The cronbach's alpha value of 0.662 indicates that the PAIS variable is reliable and acceptable.

The EL variable, consisting of 6 items, has an r-statistic value ranging from 0.353 to 0.722, all of which are above the r-table. This indicates that all statement items are valid. A cronbach's alpha value of 0.672 also indicates that this variable has quite good reliability. Meanwhile, the EP variable has 11 statement items with r-statistic values between 0.309 and 0.652. All of these values are greater than the r-table, so all items are declared valid. A cronbach's alpha value of 0.794 indicates that the employee performance variable has a high level of reliability. The results of the validity and reliability tests indicate that all statement items in this study are valid and all variables have a good level of reliability, making them suitable for further analysis.

Normality

The normality test was conducted to determine whether the residual data in the research model were normally distributed or not, thus ensuring the fulfillment of one of the assumptions in the regression analysis. The results of the normality test using the One-Sample Kolmogorov-Smirnov Test showed that the number of samples (N) was 36, with an average residual value of 0.000 and a standard deviation of 2.879. The test statistic value obtained was 0.121 with a significance value (Asymp. Sig. (2-tailed)) of 0.200. Based on these results, the significance value is greater than 0.05 ($0.200 > 0.05$), so it can be said that the residual data is normally distributed. Thus, the normality assumption in the regression model has been met.

Based on Figure 1, the normal p-p plot of the regression standardized residuals, it can be seen that the data points are spread around the diagonal line and follow the

direction of the line. Although there are slight deviations at some points, the overall distribution pattern does not show significant deviations from the diagonal line. This indicates that the residuals in the regression model are normally distributed. Thus, it can be said that the assumption of normality has been met and the regression model is suitable for further analysis.

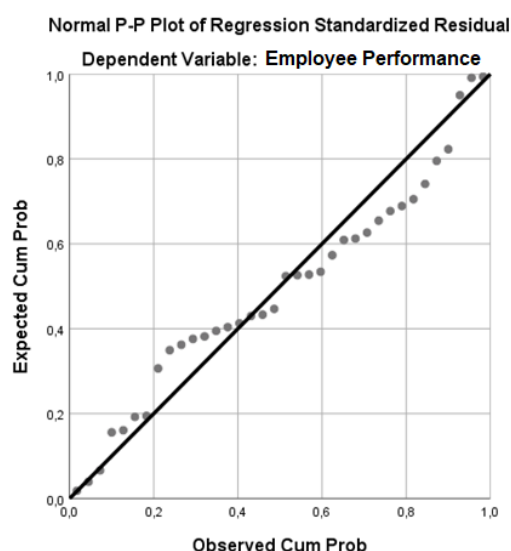


Figure 1 normal p-p plot
Source: primary data, processed

Multicollinearity

The multicollinearity test was conducted to determine whether there was a strong relationship between the independent variables in the regression model, so that it could ensure that each independent variable had an independent influence on the dependent variable, as shown in Table 5.

Table 5 multicollinearity results

Variables	Tolerance	VIF
CRPAIS	0.927	1.209
PAIS	0.631	1.586
EL	0.559	1.670

Source: primary data, processed

Based on the results of the multicollinearity test in Table 5, it is known that the CRPAIS variable has a tolerance value of 0.927 and a VIF of 1.209. The PAIS variable has a tolerance value of 0.631 and a VIF of 1.586, while the EL variable has a tolerance value of 0.559 and a VIF of 1.670. All independent variables show a tolerance value greater than 0.10 and a VIF value less than 10. This indicates that there are no symptoms of multicollinearity among the independent variables in the regression model. Thus, it can be said that the regression model used meets the assumptions of multicollinearity and is suitable for use in further analysis.

Heteroscedasticity

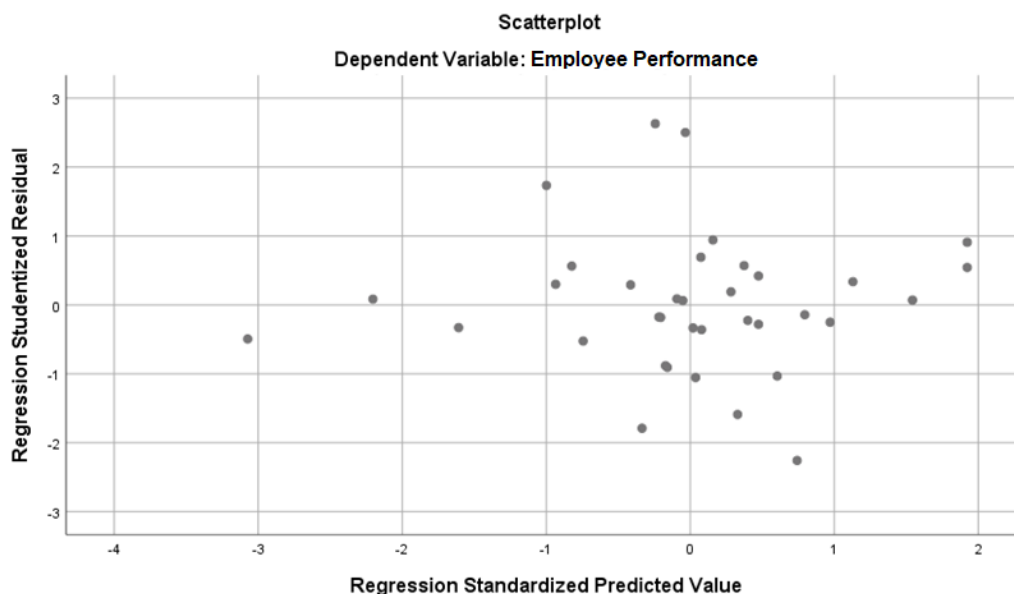
The heteroscedasticity test was conducted to determine whether there was inequality in the residual variance in the regression model, so that it could ensure that the model met the homoscedasticity assumption, as shown in Table 6.

Table 6 heteroscedasticity results

Variables	Sig.
CRPAIS	0.246
PAIS	0.220
EL	0.274

Source: primary data, processed

Based on the heteroscedasticity test results in Table 6, it is known that the CRPAIS variable has a significance value of 0.246, the PAIS variable 0.220, and the EL variable 0.274. All independent variables show significance values greater than 0.05. This indicates that there are no symptoms of heteroscedasticity in the regression model, so the residual variance is constant (homoscedasticity). Thus, it can be said that the regression model has met the assumption of heteroscedasticity and is suitable for further analysis.

**Figure 2 scatterplot**

Source: primary data, processed

Based on the Figure 2 scatterplot, it can be seen that the residual points are randomly distributed around the horizontal line (value 0) and do not form a specific pattern, such as a tapered or widened pattern. The points also appear to be relatively evenly distributed above and below the zero line. This condition indicates that there are no symptoms of heteroscedasticity in the regression model. Thus, the residual variance can be considered constant (homoscedasticity), so the regression model meets the heteroscedasticity assumption and is suitable for further analysis.

Hypothesis

Hypothesis testing was conducted to determine the influence of each independent variable on the dependent variable, both partially and simultaneously, and to see the level of contribution of the variables in explaining the research model, as shown in Table 7.

Table 7 hypothesis results

Hypothesis	Coefficient	T-Stat	Sig.	R-Square
H ₁ : CRPAIS → EP	0.148	4.822	0.042	0.702
H ₂ : PAIS → EP	0.234	4.779	0.034	0.690
H ₃ : EL → EP	0.836	2.547	0.016	0.672
F-Stat		14.507	0.010	0.692
T-Table		2.037		
F-Table		10,130		

Source: primary data, processed

Based on the results of the hypothesis test in Table 7, it is known that all independent variables affect employee performance. The first hypothesis (H1) shows that CRPAIS has a coefficient of 0.148 with a t-statistic value of 4.822, which is greater than the t-table (2.037) and a significance value of 0.042, which is smaller than 0.05. This means that CRPAIS has a positive and significant effect on employee performance, so H1 is accepted. The second hypothesis (H2) shows that PAIS has a coefficient of 0.234 with a t-statistic value of 4.779, which is greater than the t-table (2.037) and a significance value of 0.034, which is smaller than 0.05. Thus, PAIS has a positive and significant effect on employee performance, so H2 is accepted.

The third hypothesis (H3) shows that the level of education has a coefficient of 0.836 with a t-statistic value of 2.547, which is greater than the t-table (2.037) and a significance value of 0.016, which is smaller than 0.05. This indicates that the level of education has a positive and significant effect on employee performance, so H3 is accepted. In addition, the results of the simultaneous test (F test) show an F-statistic value of 14.507, which is greater than the F-table (10.130) with a significance level of 0.010, which is smaller than 0.05. This means that CRPAIS, PAIS, and the level of education together have a significant effect on employee performance. Then the R-square value of 0.692 indicates that 69.2% of the variation in employee performance can be explained by the variables CRPAIS, PAIS, and level of education, while the remaining 30.8% is influenced by other variables outside the research model.

The effect of CRPAIS on employee performance

The findings show that the civil registration and population administration information system (CRPAIS) has a positive and significant impact on employee performance. This finding indicates that the better the implementation of CRPAIS in the population and civil registration service, the better the employee performance in carrying out their duties, particularly in managing population administration more quickly, accurately, and integrally. This means that CRPAIS not only functions as an administrative tool but also as an important instrument in increasing employee effectiveness and efficiency. The integrated system allows employees to reduce manual errors, speed up the service process, and improve the quality of the resulting data. This condition directly impacts increased productivity and quality of service to the public, thus optimizing employee performance.

These findings align with the TAM, which explains that the acceptance and use of information systems are influenced by perceived usefulness and perceived ease of use. In this context, CRPAIS that is perceived as useful and easy to use by employees will increase the intensity of system use, which ultimately impacts performance improvement. Furthermore, these findings are also supported by the RBV, which states that information systems are valuable organizational resources and can create competitive advantage when utilized optimally. These results also strengthen

information systems theory, which emphasizes that information technology plays a role in improving efficiency, effectiveness, and work quality within an organization.

Empirically, the results of this study align with various previous studies showing that the implementation of a population administration information system can improve employee performance by accelerating work processes, increasing data accuracy, and facilitating decision-making (Alagbariya et al., 2022; Biswas et al., 2024; Hamdat et al., 2024). These findings reinforce the notion that information technology is not only a supporting tool but also a strategic factor in improving organizational performance, particularly in the public service sector (Madaki et al., 2024). The implementation of CRPAIS has helped employees accelerate the population administration service process, reduce the backlog of manual work, and improve the accuracy of population data. However, challenges remain, such as the limited ability of some employees to operate the system optimally and the need for ongoing training to maximize system utilization.

The implications of these findings suggest that the Population and Civil Registration Agency needs to continuously improve the quality of CRPAIS implementation by strengthening its technological infrastructure, enhancing employee competency, and providing adequate technical support. Furthermore, the Population and Civil Registration Agency must ensure that the system it uses is truly user-friendly and meets operational needs in the field. Moving forward, the Population and Civil Registration Agency is encouraged to continuously develop and improve its existing information systems while providing regular training programs to enhance employees' proficiency in using the systems effectively. This way, the benefits of CRPAIS can be optimized sustainably, allowing employee performance to improve in line with developments in information technology continuously.

The effect of PAIS on employee performance

The findings show that the payroll accounting information system (PAIS) has a positive and significant impact on employee performance. This finding indicates that the more effective the PAIS implementation in the Population and Civil Registration Service, the higher the employee performance in carrying out their duties, especially those related to faster, more accurate, and more transparent payroll administration processes. This means that PAIS plays a crucial role in supporting employee work efficiency, particularly in the payroll data management process, which previously tended to be manual and prone to errors. With this system, the administrative workload is lighter, work completion times are faster, and the level of calculation errors can be minimized. This condition has a positive impact on increasing employee productivity and work effectiveness within the organization.

These findings align with the TAM, which explains that technology acceptance is influenced by perceived usefulness and perceived ease of use. In the context of PAIS, a system perceived as simplifying work and providing tangible benefits in the payroll process will increase employee acceptance and usage intensity, ultimately impacting performance. Furthermore, these findings are supported by the RBV, which states that information systems are strategic organizational resources that can enhance competitive advantage when utilized optimally. PAIS, as part of an accounting information system, also supports information systems theory, which emphasizes the importance of data integration and work process efficiency within an organization.

Empirically, these results are consistent with various previous studies showing that implementing a payroll accounting information system can improve employee performance by increasing work process efficiency, data transparency, and reducing

administrative errors (Ekasari et al., 2024; Napitupulu, 2023; Qatawneh, 2023). This reinforces the view that digitizing financial and administrative processes within an organization contributes significantly to improving human resource performance (Zavyalova et al., 2022). The implementation of PAIS has helped accelerate the payroll process, improve calculation accuracy, and simplify monitoring and reporting. However, challenges remain, such as system dependency, the need for regular data updates, and the need to improve employee competency in operating the system more optimally to maximize benefits.

The implications of these findings suggest that the Population and Civil Registration Agency (DPI) needs to continue optimizing the use of PAIS by ensuring the system operates stably, is integrated, and is easily accessible to all users. Furthermore, increasing employee capacity through technical training and strengthening system understanding is also crucial to maintaining effective system use. Furthermore, the Population and Civil Registration Agency is advised to continue developing the PAIS system to make it more adaptable to dynamic work requirements, including integration with other relevant systems. Furthermore, improving employee digital literacy is also a priority so that system utilization is not merely administrative but also supports faster and more accurate decision-making within the organization.

The effect of education level on employee performance

The findings show that educational level (EL) has a positive and significant impact on employee performance. This finding indicates that the higher an employee's educational level, the better their performance in carrying out their duties and responsibilities at the Population and Civil Registration Service. This means that an employee's formal education plays a significant role in developing their thinking, analytical, and problem-solving skills at work. Employees with a higher level of education tend to understand work procedures more quickly, are more adaptive to change, and are better able to utilize available technology and information systems. This ultimately impacts the quality, quantity, and effectiveness of employee work at the Population and Civil Registration Service.

These findings align with human capital theory, which states that education is a form of investment in human resources that can increase individual productivity and performance. The higher an individual's level of education, the greater their knowledge, skills, and competencies, thereby enabling them to contribute more effectively and optimally to the organization. Furthermore, these findings are supported by the RBV, which emphasizes that the quality of human resources, including education level, is a strategic asset that can create organizational excellence when managed properly. In this context, education is one of the internal resources that determine an organization's competitiveness and effectiveness.

Empirically, the results of this study are consistent with various previous studies showing that education level has a positive influence on employee performance (Abdelwahed & Doghan, 2023; Jin et al., 2025; Syahla & Hermana, 2026). Employees with higher education generally have better analytical skills, are more skilled at completing complex tasks, and are more professional in carrying out their duties. This reinforces the view that improving the quality of employee education is a crucial factor in improving organizational performance, particularly in the public service sector (Dhaafri & Alosani, 2023). Employees with higher education tend to adapt more easily to the use of information systems such as CRPAIS and PAIS, and are quicker to understand changes in work policies and procedures. However, there remains a gap between formal

education levels and the practical skills needed in the field, so not all employees can immediately apply their knowledge optimally without additional training.

The implications of these findings suggest that organizations need to prioritize human resource development through continuous improvement in education, training, and competency development. Formal education should be complemented by technical training to ensure employee skills are more relevant to job requirements, particularly in the era of digital public administration. Furthermore, the Population and Civil Registration Office is advised to promote programs to enhance formal and non-formal employee education, such as training, competency certification, and continuing education. Furthermore, employee placement should be tailored to educational backgrounds to maximize employee potential. Therefore, increasing educational attainment is not merely a formality but truly contributes to the continuous improvement of employee performance.

Conclusions

The results of the study indicate that all independent variables studied, namely the civil registration and population administration information system (CRPAIS), payroll accounting information system (PAIS), and education level, have a positive and significant influence on employee performance at the Bengkalis Regency Population and Civil Registration Office. These results indicate that the better the implementation of the information system and the higher the employee's education level, the better the employee's performance in carrying out their duties and responsibilities. In addition, these three variables simultaneously also proved to have a significant influence on employee performance with an explanatory contribution of 69.2%.

This research implies that individual factors do not solely determine employee performance improvement. However, it is also significantly influenced by effective information system support and the quality of human resources, particularly educational attainment. Theoretically, these results reinforce TAM, human capital theory, and RBV, which emphasize the importance of technology and human quality as strategic factors in improving organizational performance. Practically, these findings can serve as a basis for organizations to improve the effectiveness of information systems use and encourage employee competency development through ongoing education and training.

However, this study still has limitations, including the relatively small sample size and the scope of the study, which was limited to a single agency, so the results cannot be generalized widely. Furthermore, this study only used three independent variables, so there is still the possibility that other factors that influence employee performance have not been examined. Therefore, further research is recommended to expand the research object, increase the number of samples, and include other variables such as work motivation, leadership, and organizational culture to provide a more comprehensive picture of the factors that influence employee performance.

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