

Optimizing ICT Proficiency Examination Performance Through Influential Factor Analysis

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Abstract. Low passing rates in the ICT Proficiency Diagnostic Examination (IPDE) continue to raise concerns regarding examinees' readiness and the effectiveness of ICT competency development initiatives. This study aimed to determine the demographic profile and ICT proficiency level of first-time examinees, identify the factors significantly influencing examination performance, and propose optimization strategies to improve examinee performance outcomes. The study examined four major performance influence dimensions, namely examinee readiness factors, training support factors, resource accessibility factors, and assessment design factors. A quantitative descriptive–correlational research design was employed involving 179 first-time examinees in Zamboanga City from 2022 to 2024 selected through stratified random sampling. Data were gathered using a validated survey questionnaire and official examination records and were analyzed using descriptive statistics, Spearman's rank correlation coefficient, Mann–Whitney U test, and Kruskal–Wallis test. Results revealed that 84.9% of the respondents did not meet the minimum proficiency level, while only 15.1% achieved passing performance. Among the performance dimensions, Assessment Design Factors obtained the highest mean score ($M = 3.34$) and were perceived as highly influential, followed by Examinee Readiness Factors ($M = 3.12$) and Training Support Factors ($M = 3.05$), which were rated as moderately influential. Resource Accessibility Factors recorded the lowest mean score ($M = 2.85$). Spearman's rank correlation analysis showed that Examinee Readiness Factors ($\rho = 0.356$, $p = .002$) and Assessment Design Factors ($\rho = 0.421$, $p = .001$) had significant positive relationships with IPDE performance, whereas Training Support Factors and Resource Accessibility Factors were not statistically significant. Significant differences in perceptions were likewise observed across selected demographic variables. The findings indicate that both individual readiness and assessment structure substantially influence ICT proficiency performance. Based on the results, the study proposes structured IPDE preparatory programs, readiness-building interventions, diagnostic pre-tests, exam-aligned review materials, mentoring activities, and assessment design review to optimize examinee performance and strengthen ICT competency development initiatives.

Keywords: Assessment Design; Digital Competency; Examination Performance; Examinee Readiness; ICT Proficiency

Introduction

Information and Communication Technology (ICT) competency has become increasingly important in governance, industry, education, and public service as organizations continue to adopt digital and technology-driven operations. The growing demand for digital transformation and Industry 4.0 initiatives has intensified the need for a workforce equipped with strong ICT competencies and digital readiness (De Haes & Van Grembergen, 2009; Yildiz, 2007). Digital competency is now recognized as a critical factor in workforce readiness, operational efficiency, and innovation in modern organizations. Recent studies further emphasize that digital literacy and ICT-related competencies are essential skills for participation and competitiveness in the modern workforce (Asa et al., 2025). In the Philippines, the Department of Information and Communications Technology (DICT) continues to strengthen digital competency development through ICT proficiency programs and competency-based assessments aimed at supporting workforce readiness and national digital transformation initiatives (DICT, 2024).

The ICT Proficiency Diagnostic Examination (IPDE) serves as an important competency assessment mechanism designed to evaluate foundational ICT knowledge and technical readiness among examinees aspiring to perform technology-related functions in government and industry. In the Philippines, the ICT Proficiency Certification Examination (IPCE) was institutionalized through Presidential Decree No. 1408, which granted civil service eligibility to qualified Electronic Data Processing (EDP) specialists in recognition of the growing importance of ICT competencies in public service. The program was later strengthened under Republic Act No. 10844 through the DICT as part of the government's broader digital transformation and ICT workforce development initiatives. As the prerequisite component of the certification process, the IPDE provides an initial measure of examinees' preparedness before proceeding to competency-based practical assessments. Diagnostic assessments likewise play an important role in identifying knowledge gaps, evaluating readiness levels, and supporting competency improvement initiatives (Black & Wiliam, 1998; Brookhart, 2024).

Despite the expanding role of ICT competency certification programs, performance outcomes in the IPDE remain a continuing concern. Low passing rates suggest persistent gaps in examinee readiness, technical competency development, and alignment between assessment expectations and actual preparedness levels. According to the 2024 statistical records of the DICT ICT Literacy and Competency Development Bureau (ILCDB), only 3,798 of 31,146 examinees passed the ICT Proficiency Certification Examination (IPCE) between 2017 and 2023, representing an overall passing rate of 12.19%. Similarly, examination records in Zamboanga City from 2022 to 2024 revealed that only 50 out of 336 first-time examinees passed the IPDE, resulting in a passing rate of 14.88%. These trends highlight the need for evidence-based strategies aimed at strengthening ICT competency readiness and optimizing examination performance outcomes.

Although ICT competency certification continues to support digital workforce development initiatives, limited studies within the Philippine context have comprehensively examined the factors influencing performance in ICT proficiency diagnostic examinations. Existing studies commonly focus on general ICT literacy, academic achievement, or technology adoption, while fewer studies specifically investigate the combined influence of examinee readiness, training support, resource accessibility, and assessment design dimensions on ICT proficiency examination outcomes. Moreover, there remains limited localized evidence explaining the consistently low passing rates in the IPDE, particularly among first-time examinees. Although examination performance records and assessment data are available, there is still a need for data-driven analysis that identifies key performance influence dimensions and translates findings into evidence-based optimization strategies for improving examinee performance. Addressing these gaps is important in supporting targeted interventions, strengthening ICT competency development initiatives, and enhancing workforce readiness in increasingly digital and technology-driven environments.

This study aimed to examine the demographic profile and ICT proficiency level of first-time examinees in the IPDE, determine the factors significantly influencing examination performance, and propose evidence-based optimization strategies that may improve examinee performance outcomes. Specifically, the study focused on the influence of examinee readiness factors, training support factors, resource accessibility factors, and assessment design factors on ICT proficiency examination performance. Unlike previous studies that primarily examined ICT literacy, academic performance, or technology adoption, this study integrates multiple performance influence dimensions within the context of an actual ICT proficiency certification assessment. It also provides localized evidence from first-time IPDE examinees and translates empirical findings into practical optimization strategies that may support assessment improvement and ICT competency development initiatives. The findings are expected to contribute to ICT competency development initiatives by providing data-driven insights that may support targeted interventions, improved preparatory programs, enhanced assessment practices, and workforce readiness strategies. Furthermore, the study may serve as a reference for policymakers, educational institutions, and ICT training providers in strengthening digital competency development and supporting national digital transformation efforts.

Research Questions

This study sought to examine the factors influencing the performance of first-time examinees in the ICT Proficiency Diagnostic Examination (IPDE) and identify evidence-based optimization strategies to improve examination outcomes.

Specifically, the study sought to answer the following questions;

1. What is the demographic profile and ICT proficiency level of first-time examinees in the IPDE?
2. What factors significantly influence the performance of first-time examinees in the IPDE in terms of:
 - 2.1 Examinee Readiness Factors,
 - 2.2 Training Support Factors,
 - 2.3 Resource Accessibility Factors, and

- 2.4 Assessment Design Factors?
3. Based on the findings, what optimization strategies may be proposed to improve examinee performance in the IPDE?

Scope and Delimitation of the Study

This study focused on first-time examinees who took the IPDE administered by DICT Regional Office IX and BASULTA in Zamboanga City from 2022 to 2024. The study examined the demographic profile and ICT proficiency level of the respondents and determined the influence of examinee readiness factors, training support factors, resource accessibility factors, and assessment design factors on examination performance. The respondents included both passers and non-passers who completed the written diagnostic examination during the specified period. Examinees who took only the hands-on certification examination, repeat takers, and individuals outside the identified examination period and location were excluded from the study. The study was limited to the written diagnostic component of the IPCE and utilized a quantitative descriptive–correlational approach using survey questionnaires and official examination records as primary sources of data.

Literature Review

ICT Competency, Certification, and Diagnostic Assessment

ICT competency remains essential in digital workforce development as organizations increasingly require workers who can adapt to technology-driven operations. Recent research on employer demand for digital skills shows that skills gaps continue to affect graduate employability, particularly in areas such as information and data literacy, problem-solving, communication, collaboration, and digital content creation (Tee et al., 2024). Similarly, studies on digital literacy emphasize that ICT competency has become a fundamental requirement for workforce readiness, productivity, and participation in modern economies (Asa et al., 2025). In competency-based systems, ICT assessments serve as mechanisms for validating technical readiness and identifying areas for improvement. Diagnostic assessments are particularly valuable because they help determine readiness levels, identify learning gaps, and support targeted interventions before practical or certification-based assessments are undertaken (Brookhart, 2024). Collectively, these studies suggest that ICT competency assessment plays a critical role not only in measuring technical skills but also in supporting workforce development and competency improvement initiatives.

Performance Influence Dimensions in ICT Proficiency Assessment

Performance in ICT-related assessments is influenced by multiple dimensions rather than by a single factor. Existing studies consistently indicate that psychological readiness influences performance in technology-related learning and assessment environments. Compeau and Higgins (1995) identified computer self-efficacy as a significant determinant of technology use and performance, while Gurer and Tokumaci (2020) found that programming self-efficacy and positive attitudes toward programming contribute to improved learning outcomes among engineering students. In the Philippine context, Olipas et al. (2021) reported that programming anxiety may negatively affect academic performance among BSIT students. Although these studies examine different aspects of learner readiness, they collectively highlight the importance of confidence, motivation, prior ICT exposure, and psychological preparedness in shaping performance outcomes. These findings suggest that examinee readiness remains a critical consideration in understanding ICT proficiency examination performance.

Training Support and Resource Accessibility

Training support and resource accessibility are likewise recognized as important contributors to ICT competency development and examination preparedness. Quality instruction, access to study materials, structured practice opportunities, and supportive learning environments enable learners to strengthen their understanding of ICT concepts and technical competencies. Research on ICT use and digital skills demonstrates that access to ICT resources and digital competence are associated with improved academic performance, while unequal access contributes to persistent digital divide concerns (Ben Youssef et al., 2022). Similarly, studies on digital skills development in Southeast Asia emphasize that disparities in technology access and learning opportunities continue to influence competency development and workforce readiness (Tee et al., 2024). Taken together, these findings indicate that training support and resource accessibility may affect the extent to which examinees can prepare for and perform in ICT-related assessments.

Assessment Design and Examination Performance

Assessment design is another important dimension in understanding ICT proficiency performance. Examination coverage, difficulty level, number of questions, and time allotment influence how examinees process information, manage time, and demonstrate competency during assessment. Cognitive Load Theory explains that task complexity and excessive information-processing demands may negatively affect performance, particularly in assessments involving problem-solving and technical reasoning (Sweller, 1988). More recent assessment literature likewise emphasizes that assessment quality depends on content alignment, meaningful interpretation of results, and the effective use of assessment information for learning improvement (Brookhart, 2024). While Cognitive Load Theory explains how assessment conditions may influence performance, contemporary assessment frameworks emphasize the importance of designing assessments that accurately measure intended competencies. Together, these perspectives suggest that assessment design is a significant factor influencing examination outcomes and should be considered when evaluating ICT proficiency performance.

Theoretical Foundation

The theoretical foundation of this study integrates adult learning, self-efficacy, technology acceptance, and cognitive processing perspectives. Andragogy emphasizes the role of self-directed learning and prior experience among adult learners, while Social Cognitive Theory explains how self-efficacy and motivation influence persistence in challenging tasks (Knowles et al., 2015; Bandura, 1997). The Technology Acceptance Model further explains how perceived usefulness and perceived ease of use influence technology acceptance and engagement in technology-based environments (Davis, 1989). Cognitive Load Theory highlights the influence of task complexity and information-processing demands on performance during assessment situations (Sweller, 1988). Collectively, these theories provide a comprehensive framework for understanding how individual, instructional, environmental, and assessment-related factors may influence ICT proficiency examination performance.

Methodology

Research Design

This study employed a quantitative descriptive-correlational research design to examine the demographic profile and ICT proficiency level of first-time examinees, determine the factors significantly influencing IPDE performance, and propose evidence-based optimization strategies for improving examination outcomes. The descriptive component was used to summarize the respondents' profile, ICT proficiency level, and extent of influence of the identified performance dimensions. The correlational component was used to determine the relationship between the identified factors and examination performance. This design was appropriate because the study examined existing data and respondent perceptions without manipulating any variables.

Sampling Design

The population consisted of 336 first-time examinees who took the IPDE administered by DICT Regional Office IX and BASULTA in Zamboanga City from 2022 to 2024. Using the Raosoft Sample Size Calculator with a 95% confidence level and 5% margin of error, the sample size was determined at 179 respondents. Stratified random sampling was employed to ensure proportional representation of examinees across the three examination years and by examination result classification. Based on the sample allocation, 116 respondents came from 2022, 22 from 2023, and 41 from 2024. The stratified sample also included 27 passers and 152 non-passers to reflect the actual distribution of examination outcomes.

Research Locale

The study was conducted in Zamboanga City, Philippines, where DICT Regional Office IX and BASULTA regularly administers the IPDE. Zamboanga City serves as a regional center for education, government services, business activity, and ICT-related initiatives. It is also home to higher education institutions offering ICT-related programs such as information technology, computer science, and engineering. The city's role as an emerging digital and educational hub made it a relevant setting for examining ICT competency readiness and examination performance among students, graduates, and professionals.

Research Participants

The participants of the study were 179 first-time examinees who took the IPDE from 2022 to 2024. The respondents included both passers and non-passers and represented different academic and professional

backgrounds, including students, graduates, and working professionals from government, private, freelance, and other employment contexts. The inclusion criteria were: first-time IPDE takers, examinees who took the test within the 2022–2024 period, and individuals whose examination participation could be verified through official DICT records. Excluded from the study were repeat takers, individuals who took only the hands-on certification examination, examinees outside the specified period and location, and those whose participation could not be verified.

Research Instrument

The study utilized a structured survey questionnaire and official examination records as primary sources of data. The questionnaire consisted of demographic information and items measuring four performance influence dimensions: examinee readiness factors, training support factors, resource accessibility factors, and assessment design factors. The examinee readiness dimension included self-efficacy, prior ICT experience, and motivation; training support covered quality of ICT training and access to study materials; resource accessibility covered access to technology, internet connectivity, workload, and time management; and assessment design covered examination coverage, number of questions, time allotment, and difficulty level. The instrument underwent content validation using the Content Validity Index method through evaluation by qualified professionals in ICT and education. The validation results showed high content validity, with mean scores of 3.89 for clarity, 4.00 for relevance, and 4.00 for comprehensiveness. A pilot test was also conducted among individuals who had previously taken the IPDE but were not included in the final sample. Reliability testing using Cronbach's alpha produced acceptable to high reliability results: examinee readiness factors, $\alpha = 0.715$; training support factors, $\alpha = 0.843$; resource accessibility factors, $\alpha = 0.808$; and assessment design factors, $\alpha = 0.744$.

Data Gathering Procedure

Data were collected in coordination with the DICT Regional Office IX and BASULTA. Official permission was obtained to access examination records and contact eligible respondents. A verified list of first-time examinees from 2022 to 2024 was secured from DICT records. Respondents were selected using stratified random sampling based on examination year and result classification. The survey questionnaire was distributed primarily through Google Forms to ensure accessibility and convenience. Follow-up communications were conducted to encourage participation. Completed responses were checked for completeness and consistency before inclusion in the dataset. Survey data were then matched and cross-verified with official examination records to ensure accuracy. Data analysis employed both descriptive and inferential statistics. Spearman's rank correlation coefficient was used to examine relationships between performance influence dimensions and examination outcomes due to the ordinal nature of Likert-scale data. The Mann–Whitney U test and Kruskal–Wallis test was applied to determine differences between groups. These nonparametric tests were appropriate as the data were ordinal and did not assume normal distribution.

Results and Discussions

Research Question 1: Demographic Profile and ICT Proficiency Level of First-Time Examinees in the IPDE?

Table 1. Demographic Profile of Respondents

Profile	Frequency	Percentage
Age		
Age 21–30	95	53.1%
Age 31–40	84	46.9%
Gender		
Male	92	51.4%
Female	87	48.6%
Field of Study		
IT-related field	110	61.5%
Non-IT field	69	38.5%
Employment Sector		
Public Sector	80	44.7%
Private Sector	75	41.9%
Unemployed/Self-employed	24	13.4%

As shown in Table 1, most respondents were aged 21–30 years old and came from IT-related fields. The gender distribution was almost balanced, with males slightly outnumbering females. In terms of employment sector, the respondents were primarily from the public and private sectors, while a smaller

proportion were unemployed or self-employed. Overall, the profile indicates that the respondent group was composed largely of young adult examinees with ICT-related academic or professional backgrounds. The demographic profile suggests that the IPDE mainly attracted individuals with academic or professional exposure to ICT. However, ICT-related background alone does not necessarily guarantee examination readiness. Literature on digital skills and employability emphasizes that workforce readiness requires not only exposure to technology but also applied digital competence, problem-solving ability, and alignment with workplace demands (Tee et al., 2024). Similarly, studies on computer and programming self-efficacy indicate that confidence, prior exposure, and programming-related attitudes influence performance in technology-based learning and assessment environments (Compeau & Higgins, 1995; Gurer & Tokumaci, 2020). Thus, while the respondents' profile appears aligned with the technical nature of the IPDE, the findings still justify the need to examine deeper performance influence dimensions such as examinee readiness, training support, resource accessibility, and assessment design.

Table 2. ICT Proficiency Level of First-Time Examinees in the IPDE (n = 179)

ICT Proficiency Level	Score Range	Frequency	Percentage
Did Not Meet Expectations	0-19	152	84.9%
Fairly Satisfactory or Higher	20-40	27	15.1%
Total		179	100.0%

Table 2 indicates the majority of first-time examinees did not meet the minimum proficiency level, while only a small proportion reached the passing level. This indicates a substantial performance gap among first-time examinees in the IPDE. The low ICT proficiency level suggests that many first-time examinees were not adequately prepared for the competencies measured in the diagnostic examination. This finding is consistent with the role of diagnostic assessment as a tool for identifying readiness levels, learning gaps, and areas requiring targeted intervention (Brookhart, 2024). Rather than treating IPDE results only as pass-or-fail outcomes, the findings may be used as evidence for designing targeted review programs, readiness-building activities, and assessment improvement strategies. The low proportion of passers therefore provides the basis for examining the factors that significantly influence IPDE performance.

Research Question 2: Factors Significantly Influencing the Performance of First-Time Examinees in the IPDE?

Table 3. Extent of Influence of Performance Dimensions on IPDE Performance

Performance Dimension	Mean	Interpretation
Examinee Readiness Factors	3.12	Moderately Influential
Training Support Factors	3.05	Moderately Influential
Resource Accessibility Factors	2.85	Slightly Influential
Assessment Design Factors	3.34	Moderately Influential

The results indicate that Assessment Design Factors obtained the highest mean score ($M = 3.34$), interpreted as moderately influential. Examinee Readiness Factors ($M = 3.12$) and Training Support Factors ($M = 3.05$) were likewise interpreted as moderately influential, while Resource Accessibility Factors recorded the lowest mean score ($M = 2.85$), interpreted as slightly influential. These findings suggest that respondents perceived assessment-related conditions, such as examination coverage, difficulty level, number of questions, and time allotment, as the most influential dimension affecting IPDE performance, despite all dimensions generally falling within the moderate range of influence except resource accessibility. The high rating for Assessment Design Factors suggests that the structure of the IPDE plays an important role in shaping examinee performance. This finding is consistent with Cognitive Load Theory, which explains that task complexity, time pressure, and information-processing demands can affect performance during problem-solving and technical assessments (Sweller, 1988). The moderate influence of Examinee Readiness Factors also supports the view that self-efficacy, motivation, and prior ICT experience contribute to performance in technology-related assessment environments (Bandura, 1997; Compeau & Higgins, 1995). Although Resource Accessibility Factors were rated lower, access to ICT resources remains relevant because unequal access to digital tools and learning resources can influence preparation opportunities and contribute to digital divide concerns (Ben Youssef et al., 2022).

Table 4. Relationship Between Performance Dimensions and IPDE Performance

Performance Dimension	Spearman's ρ	p -value	Interpretation
Examinee Readiness Factors	0.356	0.002	Significant
Training Support Factors	0.182	0.087	Not Significant
Resource Accessibility Factors	0.140	0.112	Not Significant
Assessment Design Factors	0.421	0.001	Significant

Table 4 shows that Examinee Readiness Factors had a significant positive relationship with IPDE performance, $\rho = 0.356$, $p = .002$. Assessment Design Factors also showed a significant positive relationship with IPDE performance, $\rho = 0.421$, $p = .001$. Meanwhile, Training Support Factors, $\rho = 0.182$, $p = .087$, and Resource Accessibility Factors, $\rho = 0.140$, $p = .112$, did not show statistically significant relationships with IPDE performance. The significant relationship between Examinee Readiness Factors and IPDE performance indicates that examinees with stronger confidence, motivation, and prior ICT exposure were more likely to demonstrate better examination outcomes. This supports prior literature showing that self-efficacy influences motivation, persistence, and performance in challenging learning and assessment contexts (Bandura, 1997). It is also consistent with studies on computer self-efficacy, which emphasize that individuals who believe in their ability to perform computer-related tasks are more likely to engage effectively with technology-based activities (Compeau & Higgins, 1995). The significant relationship between Assessment Design Factors and performance further confirms that examination structure should be considered an important intervention point. Assessment quality should consider content alignment, task demands, and the use of assessment results for improvement (Brookhart, 2024). Although Training Support Factors and Resource Accessibility Factors did not demonstrate statistically significant relationships with IPDE performance, this does not necessarily indicate that these dimensions are unimportant. One possible explanation is that respondents may have experienced relatively similar levels of training support and resource access, resulting in limited variability across responses and reducing their observable statistical influence. It is also possible that these factors exert indirect effects through examinee readiness, confidence, motivation, and prior ICT exposure rather than directly influencing examination outcomes. Furthermore, the increasing availability of online learning resources, digital training materials, and self-directed learning opportunities may have reduced the dependence of examinees on formal training support and resource availability alone. Nevertheless, these dimensions remain important enabling conditions for ICT competency development and may contribute to long-term examination preparedness even when their direct statistical relationship with performance is not significant. Overall, the findings for Problem 2 indicate that Examinee Readiness Factors and Assessment Design Factors significantly influenced the performance of first-time examinees in the IPDE. Therefore, improvement efforts should prioritize readiness-building interventions and assessment design review, while still strengthening training support and resource accessibility as enabling mechanisms for long-term ICT competency development.

Research Question 3: Proposed Optimization Strategies to Improve Examinee Performance in the IPDE?

Based on the descriptive and inferential findings, optimization strategies were proposed to improve examinee performance in the IPDE. The low passing rate among first-time examinees, together with the significant influence of Examinee Readiness Factors and Assessment Design Factors, indicates the need for interventions that strengthen examinee preparation, confidence-building, programming readiness, and assessment alignment. Training Support Factors and Resource Accessibility Factors, although not statistically significant, were also considered as supporting areas for improving long-term ICT competency development, certification readiness, and workforce development outcomes.

Table 5. Proposed Optimization Strategies Based on Study Findings

Key Finding	Optimization Focus	Proposed Strategy
Majority of first-time examinees did not meet the minimum proficiency level	Foundational ICT competency readiness	Develop a structured IPDE preparatory program focused on programming logic, systems analysis, data structures, problem-solving, and core ICT concepts.
Examinee Readiness Factors significantly influenced IPDE performance	Confidence, motivation, prior ICT exposure, and programming readiness	Provide diagnostic pre-tests, self-paced review modules, mentoring, peer study groups, and guided practice activities to build confidence and technical readiness.

Assessment Design Factors significantly influenced IPDE performance	Examination coverage, difficulty level, number of questions, and time allotment	Review the alignment of exam coverage, item difficulty, number of items, and time allotment with expected entry-level ICT competencies and current industry standards.
Training support was identified as an area needing improvement.	Quality of ICT training and access to study materials	Develop standardized review modules, accessible training programs, exam-aligned instruction, and guided review sessions for students and professionals.
Resource accessibility and preparation conditions may affect readiness.	Access to technology, internet connectivity, workload, and time management	Provide flexible online and offline review resources, practice exercises, and structured study guides for examinees with varying access conditions.
Academic preparation may not fully align with ICT certification competencies.	Curriculum and competency alignment	Encourage educational institutions offering BSIT, BSCS, and BSCoE programs to strengthen hands-on technical instruction, lab-based activities, and certification-readiness support.
ICT competency requirements and workforce needs continue to evolve.	Policy and competency framework alignment	Periodically review and update the IPCE/IPDE competency framework and assessment specifications to ensure alignment with the National ICT Competency Standards (NICTS), industry requirements, and national digital transformation priorities.

The proposed strategies suggest that optimizing IPDE performance requires both examinee-centered and system-level interventions. Since Examinee Readiness Factors and Assessment Design Factors showed significant relationships with IPDE performance, priority should be given to strengthening technical preparation and reviewing assessment-related elements such as examination coverage, difficulty level, number of questions, and time allotment. These strategies are consistent with the view that diagnostic assessment should guide targeted interventions and improvement planning, rather than merely classify examinees as passers or non-passers (Brookhart, 2024). They also align with self-efficacy and cognitive load perspectives, which emphasize the importance of confidence-building, preparation, task complexity, and assessment structure in performance outcomes (Bandura, 1997; Sweller, 1988). At a broader level, these strategies may support ICT workforce development initiatives by strengthening competency readiness, improving certification preparedness, and promoting alignment between assessment practices and evolving national and industry competency requirements.

Ethical Considerations

Ethical standards were observed throughout the study. Prior to data collection, the original master's thesis from which this study was derived obtained ethical clearance from the Western Mindanao State University Research Ethics Oversight Committee (WMSU REOC) under Ethics Clearance No. 2025-GS-0348, issued on April 24, 2025. Informed consent was obtained from the respondents before their participation, and they were informed of the purpose of the study, voluntary nature of participation, confidentiality measures, and their right to withdraw at any point. Personal information and examination records were handled with confidentiality and used only for academic and research purposes. The results were reported in aggregate form to prevent the identification of individual respondents. Permission to access examination records was secured through proper coordination with the Department of Information and Communications Technology (DICT). The study also observed data privacy principles consistent with the Data Privacy Act of 2012 and institutional research ethics requirements. This journal article was derived and restructured from the researcher's unpublished master's thesis. The data utilized in the present study were collected under the approved ethical protocols of the original research. The present manuscript represents a reframed analysis and presentation of the same dataset and did not involve additional participant recruitment, data collection, or modification of the original ethical procedures.

Conclusion

The study concludes that first-time examinees in the IPDE demonstrated low ICT proficiency, indicating a substantial gap between existing preparation and the competencies required in the diagnostic examination. Although many examinees came from ICT-related academic or professional backgrounds, the findings suggest that exposure to ICT alone does not ensure examination readiness. Among the performance influence dimensions, Examinee Readiness Factors and Assessment Design Factors significantly influenced

IPDE performance, highlighting the importance of self-efficacy, motivation, prior ICT experience, examination coverage, difficulty level, number of questions, and time allotment in shaping examination outcomes. While Training Support Factors and Resource Accessibility Factors were not statistically significant, they remain relevant support mechanisms for strengthening long-term ICT competency development and certification readiness. Overall, the findings underscore the need for integrated interventions that strengthen examinee preparation, improve assessment alignment, and support evidence-based ICT competency development initiatives. The results may provide useful inputs for the Department of Information and Communications Technology (DICT), educational institutions, and ICT training providers in designing targeted competency-building programs, enhancing certification readiness initiatives, and supporting broader workforce development and national digital transformation efforts. However, the findings should be interpreted within the context of the study's limitations, including its focus on first-time examinees in Zamboanga City and its cross-sectional research design. Future studies may expand the scope to other regions and examine longitudinal trends to further validate and strengthen the generalizability of the findings.

Recommendations

Based on the findings, the study recommends the development of targeted and exam-aligned interventions to improve the performance of first-time examinees in the IPDE. Since Examinee Readiness Factors and Assessment Design Factors significantly influenced examination performance, priority should be given to strengthening examinees' self-efficacy, motivation, prior ICT preparation, programming logic, systems analysis, and problem-solving skills through structured review programs, diagnostic pre-tests, guided practice activities, and mentoring. DICT may also consider reviewing the IPDE structure, particularly its coverage, difficulty level, number of questions, and time allotment, to ensure that the assessment remains aligned with expected entry-level ICT competencies, emerging industry requirements, and workforce demands. Educational institutions and ICT training providers are encouraged to integrate certification-readiness activities, hands-on programming exercises, and competency-based review materials into ICT-related programs. Although Training Support Factors and Resource Accessibility Factors were not statistically significant, improving access to review materials, online and offline learning resources, and flexible preparation support may still contribute to long-term ICT competency development. At the policy level, the DICT and relevant stakeholders may consider periodically reviewing and updating the ICT Proficiency Certification Examination (IPCE) competency framework and assessment specifications to ensure alignment with the National ICT Competency Standards (NICTS), emerging industry competency requirements, and national digital transformation priorities. Strengthening collaboration among DICT, higher education institutions, training providers, and industry partners may further support the development of competency standards, certification pathways, and preparatory programs that are responsive to evolving workforce needs and the country's digital development agenda. Future studies may validate the proposed optimization strategies through intervention-based, longitudinal, or experimental research designs to determine their actual effect on IPDE performance outcomes. Researchers may also examine the alignment between IPDE competency requirements, academic ICT curricula, and the National ICT Competency Standards (NICS) to identify potential competency gaps and opportunities for strengthening ICT workforce development initiatives.

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