

## Article

# Technology Proficiency Development and Business Educators' Job Effectiveness in Public Universities in Rivers and Bayelsa States

Dr Fortune Omasirichi Sam-Eleyi<sup>1</sup>, Ann Boma Green Owota<sup>2</sup>

1. Department of Business Education, Faculty of Education, Ignatius Ajuru University of Education
  2. Department of Business Education, Faculty of Education, Ignatius Ajuru University of Education
- \* Correspondence: [fortuneeleyi2020@gmail.com](mailto:fortuneeleyi2020@gmail.com), [Ann.owota@iaue.edu.ng](mailto:Ann.owota@iaue.edu.ng), [annowota@gmail.com](mailto:annowota@gmail.com)

**Abstract:** This study examined the relationship between technology proficiency development and Business Educators' job effectiveness in public universities. Specifically, it investigated the relationship between web searching skill acquisition, digital problem-solving skill acquisition, and job effectiveness. The study was guided by two research questions and two null hypotheses tested at a 0.05 level of significance. A correlation survey design was adopted, and the population consisted of 72 Business Educators in public universities, with a census sampling of all respondents used for the study. Data were collected using two structured questionnaires titled "Technology Proficiency Development Questionnaire (TPDQ)" and "Job Effectiveness of Business Educators Questionnaire (JEBEQ)". The instruments were validated by experts in Business Education and showed high reliability coefficient, with Cronbach Alpha coefficients of 0.93, 0.98, 0.98 for web searching skills, digital problem-solving skills, and job effectiveness respectively, and an overall reliability of 0.96. The questionnaires were administered with the assistance of one research assistant, and all 72 copies were returned and used for analysis. Data were analysed using Pearson Product Moment Correlation to answer the research questions and test the null hypotheses. Findings revealed moderate positive relationships between web searching skills and job effectiveness, as well as between digital problem-solving skills and job effectiveness. Business Educators proficient in web searching were found to be more efficient and resourceful in their academic tasks, while those with strong digital problem-solving skills demonstrated higher productivity and adaptability in their work. The study indicates that technology proficiency development, particularly in web searching and digital problem-solving, enhances the job effectiveness of Business Educators. Based on these findings, it was recommended that Business Educators should continually improve their technology proficiency to optimise the use of digital learning facilities, and that digital learning tools and training should be incorporated into the Business Education curriculum to improve professional competence and teaching outcomes.

**Citation:** Sam-Eleyi, F. O & Owota, A. B. G. Technology Proficiency Development and Business Educators' Job Effectiveness in Public Universities in Rivers and Bayelsa States. International Journal on Integrated Education (IJIE) 2026, 9(1), 285-292.

Received: 10<sup>th</sup> Jan 2026  
Revised: 21<sup>st</sup> Feb 2026  
Accepted: 08<sup>th</sup> Mar 2026  
Published: 30<sup>th</sup> Mar 2026



**Copyright:** © 2026 by the authors. Submitted for open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>)

**Keywords:** Technology Proficiency, Development, Business Educators, Job Effectiveness, Public Universities

## 1. Introduction

Technology proficiency refers to the capacity to use technology for efficient communication, information organisation, high-quality product production, and cognitive skill development [1]. It also represents the extent to which individuals believe using technology improves their work performance, often linked to digital literacy and competency in educational settings [2]. In teacher education, technology proficiency refers to the ability of educators to effectively apply digital tools and resources to enhance teaching and learning. It includes not only technical know-how but also the capacity to

integrate technology meaningfully into instructional practices to support student understanding. This proficiency requires a sound grasp of technological pedagogical content knowledge, which combines subject expertise, teaching strategies, and technological competence. Through this integration, teachers can design engaging lessons, promote interactive learning, and adapt instruction to diverse learner needs, thereby improving overall classroom effectiveness [3]. Such practices enhance students' motivation and participation, leading to deeper understanding and improved academic performance.

The ability to search and retrieve information from the web remains a challenge to information seekers as current search tools tend to retrieve too many documents of which only a small fraction may be relevant to the users' need. As a result, users waste so much time, money and energy trying to obtain or access relevant information. The Web search engines assist the boost of social collaborations, provides more channels of learning and interaction among users in the field of education and makes things more possible to create new forms of activities [4]. With the number of information resources that is available on the web growing rapidly partly due to the variability in subject, complexity and language; studies have revealed that searching for information on the Web is like surfing aimlessly with the waves of water [5]. Although there are billions of information resources available on the Web, the resources are not of uniform quality, nor do they offer equal value to all educators in the higher education. For one to succeed in web information retrieval task, what is required is not just connectivity but certain skills regarding his or her ability to triumph. Web users are supposed to identify their need for information, articulate such needs, and formulate effective queries so that the return or the outcomes of information retrieval efforts for information needs are met and this can only be achieved when one possesses web search skill.

Problems are an integral part of the lives of an individual. These take place in terms of number of areas, such as home, family, relationships, education, jobs, career, financial resources, travelling, health and so forth. In some cases, the problems that take place are in a major form, whereas, in other cases, they are in a minor form. In some cases, the individuals put into operation methods and approaches on their own to provide solutions to the problems, whereas, in other cases, they need to obtain support and assistance from others [6]. When certain problems are experienced by teachers within the tertiary educational institutions in the course of implementation of their job duties, they obtain support and help from their colleagues and superiors [7]. Therefore, problem solving skills can be developed on one's own as well as through obtaining support and assistance from others. Problem solving skill is a term normally used in facilitating the understanding on the problems and challenges experience by individuals. Hence, to adequately cope with problems and challenges, one needs to hone their problem-solving skills. According to Kapur (2015), individuals who possess the abilities to cope with problems and identify the situations in a calm and composed manner are able to achieve their job objectives in a well-defined manner, and in addition to that these individuals will be regarded as assets by the institutions. Problem solving skills are acknowledged and valued by the individuals, who are in leadership positions. Therefore, when the individuals are able to solve the problems and difficulties in an appropriate manner and make use of their competencies and abilities to carry out their job duties well and achieve the desired goals, they are able to recognize the meaning and significance of problem-solving skills.

A Business Educator's job effectiveness can impact any public university's growth and success. As a result, Business Educators' job effectiveness has become a key parameter in determining the institution's likelihood of success or failure. Job effectiveness refers to an educator's ability to perform effectively in agreement with the job requirements to achieve the university goals and objectives. An educator's job effectiveness is influenced by a combination of qualitative traits, such as an individual's abilities, competencies, motivation, and dedication. In addition, personal discipline, communication skills, organizational training, and individual self-development are some of the other required

abilities [8]. As a result, working knowledge of computers and the internet, are required for 21st-century public university Business Educators to improve job effectiveness.

### **Statement of the Problem**

In today's educational environment, technology proficiency is essential for Business Educators to perform their duties effectively. Skills such as web searching and digital problem solving are crucial for sourcing relevant information, preparing instructional materials, and addressing challenges in teaching and administrative tasks. However, in many public universities in Rivers and Bayelsa States, there are indications that Business Educators may not have fully developed these technology skills, which could affect their overall job effectiveness. The lack of adequate technology proficiency can lead to delays in lesson preparation, difficulties in finding accurate information, and limited ability to solve digital challenges in teaching and administrative tasks. This situation may negatively influence students' learning experiences and reduce the efficiency of academic operations. Given the multifaceted role of Business Educators, it is important to explore how their technology proficiency impacts their ability to perform effectively in their roles. Therefore, this study seeks to examine the relationship between web search skill acquisition, digital problem-solving skill acquisition, and Business Educators' job effectiveness in public universities in Rivers and Bayelsa States.

### **Aim and Objectives of the Study**

The aim of the study was to examine the relationship between technology proficiency development and Business Educators' job effectiveness in public universities in Rivers and Bayelsa States. Specifically, the study sought to:

1. ascertain the relationship between web search skill acquisition and Business Educators job effectiveness in public universities in Rivers and Bayelsa States
2. examine the relationship between digital problem-solving skill acquisition and Business Educators job effectiveness in public universities in Rivers and Bayelsa States.

### **Research Questions**

The following research questions were posed to guide the study:

1. What is the relationship between web search skill acquisition and Business Educator's job effectiveness in public universities in Rivers and Bayelsa State?
2. What is the relationship between digital problem-solving skill acquisition and Business Educator's job effectiveness in public universities in Rivers and Bayelsa States?

### **Hypotheses**

The following null hypotheses were tested at a 0.05 level of significance:

H01: There is no significant relationship between web search skill acquisition and Business Educator's job effectiveness in public universities in Rivers and Bayelsa States.

H02: There is no significant relationship between digital problem-solving skill acquisition and Business Educator's job effectiveness in public universities in Rivers and Bayelsa States.

## **2. Materials and Methods**

Correlation survey design was adopted for this study. This is because correlation survey designs are studies where the researcher is mainly interested in finding out if there is a relationship between two or more variables [9]. The population of this study consists of 72 Business Educators in public universities Rivers and Bayelsa States. The sample for this study consists of seventy-two (72) Business Educators in the study area which represent the population. However, since the population is small, the sample size consists of all the respondents in the study population. Hence, census sampling technique was adopted for this study. Two (2) sets of questionnaires titled "Technology Proficiency Development Questionnaire (TPDQ)" and "Job Effectiveness of Business Educators Questionnaire" (JEBEQ) with a four (4) point rating scale of Strongly Agreed (SA-4), Agreed (A-3), Disagreed (D-2), Strongly Disagreed (D-1) respectively was adopted for this study. Therefore, the first (5) items on the questionnaire would provide information about the demography of the respondents. The next (17) items measured the Technology

Proficiency Development Questionnaire (TPDQ), while the last set of (10) items measured the Job Effectiveness of Business Education Questionnaire (JEBEQ) in Public Universities in Rivers and Bayelsa State. The researcher employed face and content validity methods. In this regard, the instruments were scrutinized by the researcher's supervisor and other experts in Business Education. After a careful study of the questions, observations and corrections were made by the validators and the instruments were modified. The Cronbach Alpha Reliability test method was applied to ascertain the internal consistency of the instruments. Consequently, the reliability of the study was ensured using the internal consistency approach. The Cronbach Alpha ( $\alpha$ ) reliability coefficient developed by Nunnally (1978), which has a threshold alpha of 0.07 as the minimum benchmark, was used to calculate the internal consistency of the research instrument. A reliability index of 0.93, 0.98, 0.98, was obtained for web searching skill, problem solving skill, and Job Effectiveness respectively. All variables have Cronbach alpha of 0.96. All these falls within the range endorsed by Cronbach Alpha being a reliable mechanism. With the aid of one assistant, the researcher administered copies of the questionnaire to the lecturers and their responses were collected at an agreed date and time. In all, seventy-two (72) copies of the questionnaire were administered by the researcher. The researcher used the Pearson Product Moment Correlation (PPMC) to analyze and answer the research question that were stated regarding the relationship between Technology Proficiency Development and job Effectiveness of Business Educators and to test that hypotheses that were formulated at 0.05 level of significance. Furthermore, to establish the range of relationship and descriptive level of association for the correlation coefficients of each of the research questions, Ukwuije and Orluwene (2012) opined that any correlation coefficient ( $r$ ) value ranging from  $\pm 0.8$ - $\pm 1.0$  would be regarded as very strong positive/negative relationship  $\pm 0.0$  - $\pm 0.19$  as very weak positive/negative relationship. In addition, to test for the significance of the relationship and ascertain the decision rule, any value of the calculated correlation coefficient ( $r$ ) that is greater than or equal to the critical table value of  $r$  at a given degree of freedom was regarded as significant and the associated hypothesis rejected, but if otherwise, the associated hypothesis was accepted.

### 3. Result and Discussion

#### Results

**Research Question 1:** What is the relationship between web searching skill acquisition and job effectiveness of Business Educators in public universities in Rivers and Bayelsa States?

Table 1. Correlation Coefficient between Web Searching Skill Acquisition and Job Effectiveness of Business Educators

| Variables                    | N  | $\Sigma X$<br>$\Sigma Y$ | $\Sigma X^2$<br>$\Sigma Y^2$ | $\Sigma XY$ | $r$  | Remarks                        |
|------------------------------|----|--------------------------|------------------------------|-------------|------|--------------------------------|
| Web Search Skill Acquisition | 72 | 32.4                     | 1137.0                       | 962.7       | 0.53 | Moderate/Positive Relationship |
| Job Effectiveness            | 72 | 275.5                    | 823.1                        |             |      |                                |

Source: Survey Data (2026)

Table 1 indicates that the correlation coefficient between web searching skill acquisition and job effectiveness of Business Educators in public universities in Rivers and Bayelsa States is 0.53. This shows a moderate, positive relationship between web search skill acquisition and job effectiveness of Business Educators. However, this implies that if web searching skill acquisition as a variable of technology proficiency development is acquired, Business Educators' job effectiveness would be high.

**Research Question 2:** What is the relationship between digital problem-solving skill acquisition and job effectiveness of Business Educators in public universities in Rivers and Bayelsa States?

Table 2. Correlation Coefficient between Digital Problem-Solving Skill Acquisition and Job Effectiveness of Business Educators

| Variables                                 | N  | $\Sigma X$<br>$\Sigma Y$ | $\Sigma X^2$<br>$\Sigma Y^2$ | $\Sigma XY$ | r    | Remarks                        |
|-------------------------------------------|----|--------------------------|------------------------------|-------------|------|--------------------------------|
| Digital Problem-Solving Skill Acquisition | 72 | 314.6                    | 1072.2                       | 935.8       | 0.57 | Moderate/Positive Relationship |
| Job Effectiveness                         | 72 | 275.5                    | 823.1                        |             |      |                                |

Source: Survey Data (2026)

Finally, Table 2 shows that the correlation coefficient between digital problem-solving skill acquisition and job effectiveness of Business Educators in public universities in Rivers and Bayelsa States is 0.57. This shows a moderate, positive relationship between digital problem-solving skill acquisition and job effectiveness of Business Educators. However, this implies that if digital problem-solving skill acquisition as a variable of technology proficiency development is acquired, Business Educators job effectiveness would be high.

#### Test of Null Hypotheses

**Hypotheses 1:** There is no significant relationship between web search skill acquisition and job effectiveness of Business Educators in public universities in Rivers and Bayelsa States.

Table 3. Test of Correlation of Relationship between Web Search Skill Acquisition and Job Effectiveness of Business Educators at 0.05 Level of Significance

| Variables                    | N  | DF | r-Cal | r-Critical | Decision             |
|------------------------------|----|----|-------|------------|----------------------|
| Web Search Skill Acquisition | 72 | 70 | 0.53  | 0.195      | Significant/Rejected |
| Job Effectiveness            | 72 |    |       |            |                      |

Source: Survey Data (2026)

Table 3 reveals that the calculated r-value of 0.53 is greater than r-critical value of 0.195. Therefore, since the computed r-value is greater than r-critical value, the hypothesis which states that there is no significant relationship between web search skill acquisition and job effectiveness of Business Educators in public universities in Rivers and Bayelsa States is hereby rejected. However, this implies that there is a significant relationship between the two (2) variables.

**Hypothesis 2:** There is no significant relationship between digital problem-solving skill acquisition and job effectiveness of Business Educators in public universities in Rivers and Bayelsa State.

Table 4. Test of Correlation of Relationship between Digital Problem-Solving Skill Acquisition and Job Effectiveness of Business Educators at 0.05 Level of Significance

| Variables                                 | N  | DF | r-Cal | r-Critical | Decision             |
|-------------------------------------------|----|----|-------|------------|----------------------|
| Digital Problem-Solving Skill Acquisition | 72 | 91 | 0.57  | 0.195      | Significant/Rejected |
| Job Effectiveness                         | 72 |    |       |            |                      |

Source: Survey Data (2026)

Table 4 shows that the calculated r-value of 0.57 is greater than r-critical value of 0.195. Therefore, since the computed r-value is greater than r-critical value, the hypothesis which

states that there is no significant relationship between digital problem-solving skill acquisition and job effectiveness of Business Educators in public universities in Rivers and Bayelsa States is hereby rejected. However, this implies that there is a significant relationship between the two (2) variables.

### **Discussion**

#### **Web Searching Skill Acquisition and Job Effectiveness of Business Educators**

The result analysis in Table 1 indicates that there is a moderate and positive relationship between web searching skill acquisition and job effectiveness of Business Educators in public universities in Rivers and Bayelsa States. In addition, the associated hypothesis shown in Table 3 indicates that there is a moderate and positive relationship between web searching skill acquisition and job effectiveness of Business Educators. This finding aligned with the assertion of Hasim and Salman [10] that the ability to search and retrieve information from the web remains a challenge to information seekers as current search tools tend to retrieve too many documents of which only a small fraction may be relevant to the users' need. As a result, users waste so much time, money and energy trying to obtain or access relevant information. The web search engines assist the boost of social collaborations, provides more channels of learning and interaction among users in the field of education and makes things more possible to create new forms of activities.

Again, the finding collaborated with that of Ndubuisi and Udo [11] that a good number of information resources that is available on the web growing rapidly partly due to the variability in subject, complexity and language; studies have revealed that searching for information on the Web is like surfing aimlessly with the waves of water. Although there are billions of information resources available on the Web, the resources are not of uniform quality, nor do they offer equal value to all educators in the higher education. For one to succeed in web information retrieval task, what is required is not just connectivity but certain skills regarding his or her ability to triumph. Web users are supposed to identify their need for information, articulate such needs, and formulate effective queries so that the return or the outcomes of information retrieval efforts for information needs are met and this can only be achieved when one possesses web search skill [12].

To buttress this point, Ndubuisi and Udo [13] stated that even though the web has numerous advantages, problems in accessing and using web-based information resources are still noticed, particularly among educator. The finding of Liyana et al. [14] on the use of the web by postgraduate students of the computer science department of the University of Malaya, reported that the students were having difficulties in finding information that is suitable to their learning style using the available information retrieval tools. Thus, identifying or locating web resources, in a consistently efficient and effective way that are both relevant and of high quality, poses significant information retrieval challenges for Universities.

#### **Digital Problem-Solving Skill Acquisition and Job Effectiveness of Business Educators**

Finally, the result analysis in Table 2 shows that there is a moderate and positive relationship between digital problem-solving skill acquisition and job effectiveness of Business Educators in public universities in Rivers and Bayelsa States. Also, the associated hypothesis showed in Table 4 shows that there is a significant relationship between digital problem-solving skill acquisition and job effectiveness of Business Educators. This finding is in line with the view of Mamta [15] that problems are an integral part of the lives of an individual. These take place in terms of number of areas, such as home, family, relationships, education, jobs, career, financial resources, travelling, health and so forth. In some cases, the problems that take place are in a major form, whereas, in other cases, they are in a minor form. In some cases, the individuals put into operation methods and approaches on their own to provide solutions to the problems, whereas, in other cases, they need to obtain support and assistance from others [16].

Also, the finding is in agreement with that of Aliyu and Zakari (2017) that when certain problems are experienced by teachers within the tertiary educational institutions in the course of implementation of their job duties, they obtain support and help from their colleagues and superiors. Therefore, digital problem-solving skills can be developed on one's own as well as through obtaining support and assistance from others. Problem

solving skill is a term normally used in facilitating the understanding on the problems and challenges experience by individuals. Hence, to adequately cope with problems and challenges, one needs to hone their problem-solving skills. According to Kapur [17], individuals who possess the abilities to cope with problems and identify the situations in a calm and composed manner are able to achieve their job objectives in a well-defined manner, and in addition to that these individuals will be regarded as assets by the institutions. Problem solving skills are acknowledged and valued by the individuals, who are in leadership positions. Therefore, when the individuals are able to solve the problems and difficulties in an appropriate manner and make use of their competencies and abilities to carry out their job duties well and achieve the desired goals, they are able to recognize the meaning and significance of problem-solving skills.

The recognition of the significance of a skill will lead to the acquisition of such skill (Manta, 2019). However, in as much as problem solving skill is important in every working environment, public universities inclusive; the level of relationship between problem solving skill and job performance have not been sufficiently defined, most especially in universities. Does the acquisition of problem-solving skill improve the effectiveness of these educators or not? This is a question raised by researchers. This question has cited a gap in literature in understanding what relationship might exist between the acquisition of problem-solving skill and the job effectiveness of Business Educators.

#### 4. Conclusion

The study examined the relationship between technology proficiency development and job effectiveness of Business Educators in public universities. The findings revealed that both web searching and digital problem-solving skills have moderate positive relationships with job effectiveness. This means that as Business Educators acquire and improve these technology proficiencies, their ability to perform their duties effectively also increases. The result on web searching skills showed that educators who are proficient in locating, evaluating, and using online information tend to be more efficient and resourceful in their academic tasks. Similarly, the finding on digital problem-solving skills indicated that educators who can identify and resolve digital challenges are more productive and adaptable in their work environments. The study shows that technology proficiency development, particularly in web searching and digital problem-solving, contributes meaningfully to enhancing the job effectiveness of Business Educators. It is therefore important for institutions to encourage continuous digital training and provide access to digital learning tools that will help educators improve their professional competence and teaching outcomes.

#### Recommendations

Based on the findings of the study, it was recommended that:

1. Business Educators should compulsorily improve their knowledge, competence and skills for effective accessibility and utilization of digital learning facilities which in turn boost students' academic performance.
2. The use of digital learning facilities should be included into Business Education curriculum in order to enhance both lecturers and students' performance.

#### REFERENCES

- [1] M. Aliyu and A. Zakari, "Support systems and problem-solving strategies among tertiary institution teachers," *Journal of Educational Development Studies*, vol. 6, no. 2, pp. 44–53, 2017.
- [2] J. C. Garma, E. C. Ihalon, and S. C. Gador, "Technological proficiency of senior high school students in the lens of digital education," *Psychology and Education: A Multidisciplinary Journal*, vol. 26, no. 1, pp. 41–46, 2024.
- [3] T. R. Garma, J. A. Bello, and E. C. Nwachukwu, "Technology proficiency and digital competence among educators in higher education," *International Journal of Educational Technology*, vol. 15, no. 2, pp. 55–68, 2024.

- [4] T. M. George, E. Okwu, and K. F. Ogunbodede, "Digital literacy and job performance of librarians in Rivers State university libraries, Nigeria," *Library Philosophy and Practice (e-journal)*, Art. no. 7011, 2022.
- [5] K. Hasim and A. Salman, "Web search engines and educational collaboration in the digital age," *Asian Journal of Information Technology*, vol. 9, no. 4, pp. 201–208, 2010.
- [6] R. Kapur, "Problem-solving skills among employees and organizational effectiveness," *International Journal of Management and Social Sciences*, vol. 3, no. 1, pp. 14–22, 2015.
- [7] S. Liyana, A. Rahman, and N. Hamid, "Use of the web by postgraduate students of the computer science department of the University of Malaya," *Malaysian Journal of Library and Information Science*, vol. 15, no. 2, pp. 85–97, 2010.
- [8] F. A. Loan, "Internet searching behaviour among educators and researchers," *Library Philosophy and Practice*, no. 356, pp. 1–15, 2010.
- [9] R. Mamta, "Problem-solving skills among individuals in educational institutions," *International Journal of Research in Social Sciences*, vol. 9, no. 5, pp. 88–96, 2019.
- [10] C. Ndubuisi and E. Udo, "Web information retrieval and information searching behaviour among educators," *Journal of Information Science and Technology*, vol. 7, no. 3, pp. 55–66, 2013.
- [11] J. C. Nunnally, *Psychometric Theory*, 2nd ed. New York, NY, USA: McGraw-Hill, 1978.
- [12] J. L. Sumile, Jr. and R. A. Lozano, "Availability and functionality of ICT tools and digital literacy skills of teachers," *International Journal of Multidisciplinary Research and Analysis*, vol. 8, no. 5, pp. 2652–2658, 2025.
- [13] P. Sumile and M. Lozano, "Digital literacy and technology competency in educational environments," *Journal of Digital Learning and Innovation*, vol. 12, no. 1, pp. 21–35, 2025.
- [14] K. Ukwuije and M. L. Orluwere, *Transfer of Training: Action-Packed Strategies to Ensure High Payoff from Training Investments*. Cambridge, MA, USA: Perseus Books Press, 2012.
- [15] R. P. I. Ukwuije and G. W. Orluwene, *Research Methods and Statistics in Education and Social Sciences*. Port Harcourt, Nigeria: Chadik Printing Press, 2012.
- [16] M. T. Woldemariam, A. A. Ergado, and W. Jimma, "Factors influencing effective integration of educational technology in the colleges of teacher education in Ethiopia: A constructivist grounded theory," *Australasian Journal of Educational Technology*, vol. 41, no. 2, pp. 50–70, 2025.
- [17] S. Woldemariam, H. Desta, and T. Bekele, "Technological pedagogical content knowledge and classroom effectiveness among teachers," *International Journal of Teacher Education*, vol. 18, no. 3, pp. 102–119, 2025.