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Influence of Self-efficacy and Motivation on ICT Integration Practice among Teachers in Imo East Senatorial District, Imo State, Nigeria

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Abstract

The persistent underutilization of Information and Communication Technology (ICT) in classroom instruction remains a critical challenge in education, particularly as global standards increasingly demand digital proficiency. This study investigated the extent to which self-efficacy and motivation influence ICT integration practices among secondary school teachers. The objective was to determine the joint and relative contributions of these psychological and motivational factors to teachers' use of ICT in instruction. A descriptive survey research design was adopted. The population comprised 3,786 public secondary school teachers, of which 398 were selected using simple random sampling across 27 schools in nine local government areas. Data were collected using three validated instruments: the General Self-Efficacy Scale ($\alpha = .87$), Motivation Scale ($\alpha = .78$), and ICT Integration Practice Scale ($\alpha = .73$). Multiple regression analysis revealed a significant joint influence of self-efficacy and motivation on ICT integration ($F(2,394) = 21.974$, Adj. $R^2 = .771$, $p < .05$), accounting for 77.1% of the variance. Motivation ($\beta = .481$) had a slightly stronger predictive power than self-efficacy ($\beta = .426$). The study concluded that while teacher confidence is crucial, consistent motivation through training and institutional support plays a more dominant role in facilitating ICT adoption. These findings contribute to educational psychology and technology adoption literature by emphasising the need for capacity-building strategies that address both the psychological readiness and professional development of teachers. Educational stakeholders must prioritise both empowerment and support structures to bridge the gap in ICT integration and improve instructional quality.

Keywords: *ICT Integration, Self-Efficacy, Teacher Motivation, Digital Pedagogy, Technology Adoption in Education*

INTRODUCTION

Integration of Information and Communication Technology (ICT) into teaching is observed to foster lifelong learning and good academic outcomes. However, it is quite worrisome that teachers have not caught up with the fourth industrial revolution, which features ICT, and the resultant effect is poor academic performance (Oke & Fernandes, 2020). Previous researchers had assessed different ICT tools available in schools but neglected psychological and contextual factors influencing the ICT integration practice of teachers (Lawrence & Tar, 2018). Integrating information and communication technology (ICT) into the teaching-learning process is one of the major emerging issues. Effective technology integration practice may ensure that a teacher imparts content in the classroom. Technology integration in the teaching process must be featured to achieve lifelong learning in students, as learning becomes more permanent when learners actively partake in teaching-learning activities. With ICT integration in teaching, students could become more interested in learning, their attention could be more sustained, enriching their engagement time in the classroom. Thus, the classroom could become an effective learning environment, the learning content could be personalised and permanent, leading to good academic performance and favourable future career aspirations.

The teacher is essential as they blend all the educational components to deliver conducive environments for teaching and learning (Oliver & Stallings, 2014; Adera, 2025). A teacher's blending of all educational components aims to foster academic engagement and active learning among students. ICT integration practice among teachers is indeed a mandate in this present time because the world is now a digitalised knowledge-driven entity, with students more adept and showing promise in their awareness of their own cognitive/learning style. ICT integration refers to using technology to promote teaching-learning, thus making teaching itself an intricate and impressive function (Nkula & Krauss, 2014). Unfortunately, despite technology's pervasiveness in teenage students' lives, teachers still struggle with integrating technology into instructional practices (Espinoza & Neal, 2018). According to Pittman and Gaines (2015), although teachers use technology daily for tasks such as attendance and grades, they are not integrating technology into classroom instruction in ways that challenge students and enhance student learning (Pittman & Gaines, 2015; Aldunate & Nussbaum, 2013). These submissions in empirical research are not limited to Western societies; the Nigerian educational system has been observed to have teachers not going toward ICT integration as expected. For instance, it has been submitted that mathematics teachers are not skilled in utilising ICT tools (Ameen et al., 2019). Agbo (2015) confirms that the majority of teachers do not utilise technology as an instructional delivery system or integrate it into their curriculum. Similarly, recent opinions suggest that teachers exhibit a negative attitude towards the application of ICT tools for assessing learning outcomes (Aderonmu & Ejeba, 2020).

Adeoye et al. (2013) assert that information and communication technology (ICT) functions as a change agent within the formal education system, facilitating the attainment of fundamental educational goals. The objectives include acquiring knowledge and skills, understanding them, retaining them, and ultimately applying this knowledge and these skills (Eyitayo, 2013). Mikre (2011) noted that ICT is increasingly recognised as a fundamental component of education, extending beyond the use of computers and the internet to encompass various tools and products that facilitate effective classroom interaction. The youth of the 21st century actively pursue learning opportunities through smartphones, laptops, and tablets, as the

use of these devices has become a prevalent aspect of modern life. The integration of information and communication technologies (ICTs) in the teaching-learning process is crucial, as it enhances opportunities for both educators and students to engage effectively in an information-driven era (Nkula & Krauss, 2014). Information and Communication Technologies (ICTs) possess the capacity to innovate, enhance, and deepen skills, while also motivating and engaging students. They facilitate the connection between school experiences and workplace practices, contribute to the economic viability of future workers, and reinforce teaching methodologies, thereby enabling schools to transform (Budiarto et al., 2024). The integration of technology by educators is linked to enhanced student engagement and academic performance in school subjects (Ghavifekr & Rosdy, 2015). Slutsky (2016) argued that technology has gained significance for educators in engaging contemporary students; therefore, teachers must attain proficiency in technology to effectively cultivate 21st-century skills. The integration of technology is justified, as contemporary students are digital natives and generally proficient in its use, which is positively correlated with academic self-efficacy and performance (Honicke & Broadbent, 2016). The effective application of technology has the potential to enhance student motivation, increase class dynamism and engagement, and rejuvenate teacher enthusiasm through the acquisition of new skills and techniques (Radovan & Radovan, 2024). Information and Communication Technology (ICT) transforms education by improving learning outcomes, empowering students, enriching curricula, improving pedagogical approaches, and fostering more effective school organisational frameworks, strengthening educational institutions and society (Tam et al., 2018). The rapid growth of ICT is a significant topic among education scholars, attributed to its ability to create a dynamic and proactive teaching-learning environment (Ghavifekr & Rosdy, 2015). The use of technology in the teaching-learning process has a long history, and it continues to attract research interest. According to Gilkes (2020), various types of technology are utilised in classrooms, including calculators, laptops, interactive whiteboards, educational software, smartphones, response systems, social media, virtual reality devices, and audio-visual technology. Integrating technology in teaching enhances problem-based learning, fostering higher-order thinking skills (Kim et al., 2018; Havard et al., 2018). The integration of ICT by teachers in the classroom benefits both mainstream and special students, including those with intellectual disabilities and visual impairments (Snyder & Huber, 2019; Beal & Rosenblum, 2018). The integration of ICTs in curriculum delivery promotes constructive learning, enhancing learners' thinking more effectively than traditional teaching methods (Bester & Brand, 2013).

Research shows that ICT aids in preparing learners by developing cognitive skills, critical thinking skills and information accessing, evaluation and synthesising skills (Bester & Brand, 2013). Hence, every classroom teacher should optimise learning technologies, attaining techno-pedagogic efficiency and efficacy to enhance student learning in every subject (Kundu et al., 2020). The problem of inadequate technology integration practice among teachers can be addressed if stakeholders take time to understand their reasons (Gilkes, 2020). There could be dispositional, environmental, personal and systemic reasons teachers are reluctant to integrate technology in the classroom. Educators analyse the curriculum and engage directly with students within the educational framework. They possess the knowledge, skills, and competencies necessary to facilitate effective learning among students in the classroom. Currently, there is a shift in perspective regarding teachers, moving from viewing them solely as information providers to recognising them as exemplars who instruct on effective learning

methods (Yorulmaz et al., 2015). Consequently, ICT-supported instructional methods have replaced traditional methods in the transmission of information (Türel et al., 2017).

However, ICT integration in teaching-learning has not yet taken shape in a developing country like Nigeria. Teachers have varied experiences and grapple with several factors that influence their development of ICT skills and integration of ICT in teaching their students. Within the framework of the Imo East Senatorial District, several external factors have been recognised as influencing the successful integration of ICT in educational institutions. These factors encompass the availability of technology, accessibility of ICT equipment, time allocated for instructional planning, technical and administrative support, the school curriculum, the prevailing school climate and culture, faculty teaching loads, management routines, and the pressure to prepare students for national entrance examinations. Internal factors include teachers' beliefs, understanding of ICT use, attitudes toward technology integration, perceptions including intention or motivation to use ICT, self-confidence and knowledge, readiness to use ICT and self-efficacy, including technology efficacy, pedagogical efficacy and integration efficacy.

Teachers' beliefs, attitudes, and efficacy are fundamental to successfully implementing and using ICT in schools (Oye et al., 2014). EL-Daou (2016) opined that self-efficacy beliefs do not automatically translate into the actual use of technology among teachers; they are necessary conditions for technology integration. Self-efficacy perception originates from four sources. The factors include: 1) personal experience gained from work undertaken for self-improvement or skill acquisition, 2) vicarious experiences derived from observing and modelling the behaviours of others, 3) verbal persuasion, which encompasses suggestions received regarding a specific issue, and 4) emotional state, referring to an individual's ability to manage fear, anxiety, and stress while assessing their self-efficacy. Self-efficacy refers to an individual's assessment of their ability to organise and execute the requisite activities to achieve a specified level of performance (Bandura, 2023). Self-efficacy serves as a significant predictor of the effectiveness of technology integration initiatives (Birisci & Kul, 2019). Research should transition from broad assessments of technology usage patterns in education to an examination of the formation of teachers' self-efficacy beliefs and the factors that can influence these beliefs (Joo et al., 2018).

Motivation is a significant factor that may affect ICT integration practices among educators. This study defines motivation as the training and capacity-building programs that teachers participate in to enhance their skills and competencies for integrating ICT into their teaching practices (Agyei, 2021). The regular participation of educators in programs designed to improve their ICT skills or to clarify factors that may inhibit the use of ICT or contribute to ICT-related anxiety. Teachers who are supported by effective structures that enhance their technological experiences may form more favourable assessments of their technological teaching capabilities (Bennett et al., 2017). Professional development has proven insufficient in equipping teachers to adapt to the rapid advancements in educational technology (Tondeur et al., 2016). Factors including insufficient ICT skills, inadequate technical support, and limited professional development hinder the effective use of ICT tools for assessing learning outcomes (Aderonmu & Ejeba, 2020). Teachers' comprehensive training in ICT resources and facilities is a crucial factor in technology-based teaching and learning (Richard, 2021). Educators who have completed ICT courses demonstrate greater efficacy in utilising technological resources

for instruction compared to their counterparts who have not participated in such training (Buabeng-Andoh, 2012).

Mirzajani et al. (2016) affirmed that teachers' motivation and the training they have received play an important role in applying ICT in education. Professional development activities can improve teacher-level factors (professional competency in educational use of ICT, collaboration for ICT integration and skills and practices in educational ICT use) that affect ICT integration (Li et al., 2019; Alemdag et al., 2020). Given the submission, effective professional development programmes can be ensured to promote ICT integration in education, especially in the developing country's context (Li et al, 2019). According to Agyei (2021), the emergence of new ICT tools to promote quality education, it is vital to focus on capacity building for teachers in integrating ICT in education. There is a problem of gaps in the literature as it applies to the role professional development and learning opportunities play in teachers' technology self-efficacy and actual technology integration.

Statement of the Problem

Despite the widespread recognition of Information and Communication Technology (ICT) as a powerful enabler of quality education, its integration into Nigerian classrooms—particularly in public secondary schools—remains inconsistent and underutilised (Kemi, 2023; Oshowole, 2024). In the context of Imo East Senatorial District, teachers continue to rely heavily on traditional instructional methods, such as the chalk-and-talk approach, with limited adoption of ICT tools that could otherwise enrich the teaching-learning process and foster active student engagement (Fakokunde, 2020). This situation is particularly troubling given the pressing global demand for 21st-century skills closely tied to digital literacy and technological fluency (Chika & Ijeoma, 2016). While previous studies have examined infrastructural and policy-level challenges related to ICT in Nigerian schools (Aderonmu & Ejeba, 2020; Agbo, 2015), less attention has been paid to the psychological and motivational factors affecting teachers' ICT adoption. The successful integration of ICT is increasingly recognised as a function of the belief in one's capacity to perform specific tasks and motivation, particularly through professional development and training (Tondeur et al., 2016). Educators who feel uncertain about their technological abilities or lack motivation due to insufficient institutional backing and training options tend to be less involved with ICT, even when resources are accessible (Roman & Plopeanu, 2021). In Imo East, anecdotal and empirical evidence suggest that many teachers are either untrained or insufficiently supported in leveraging ICT for instructional purposes. Without deliberate efforts to strengthen teachers' self-efficacy and motivation, the digital divide in classroom practices will persist, compromising students' readiness for a technology-driven world. This study, therefore, addresses a critical gap in understanding how self-efficacy and motivation influence ICT integration practices among teachers in this region, aiming to inform future interventions that foster sustainable and effective technology use in education

Hypotheses

The following null hypotheses were tested in this study at a 0.05 alpha level:

$H_0$1: There is no significant difference between joint influence of self-efficacy and motivation on the ICT integration practice of teachers in Imo East Senatorial District, Imo State

$H_0$2: There is no significant difference between the relative influence of self-efficacy and motivation on the ICT integration practice of teachers in Imo East Senatorial District, Imo State.

RESEARCH METHOD

This study adopted a descriptive survey research design to examine the influence of self-efficacy and motivation on ICT integration practices among secondary school teachers. The choice of this design was appropriate, as it enabled the researchers to systematically collect and analyse data from a large population in a natural educational setting without manipulating variables. The target population consisted of 3,786 classroom and subject teachers across 95 public secondary schools within the nine local government areas of Imo East Senatorial District. From this population, a sample of 398 teachers was selected using a multistage simple random sampling technique. First, three schools were randomly selected from each of the nine local government areas, totalling 27 schools. Then, within each school, 15 teachers were randomly chosen, resulting in 405 teachers, out of which 398 returned valid and usable responses. The Teacher ICT skills scale is a 16-item scale on a 5-point Likert-type response format, ranging from completely disagree to agree (Türel et al, 2017). The scale was developed to measure teachers' skills in information and communication technologies (ICT) (Türel et al., 2017). Teachers' ICT integration practice was measured using the scale. The scale yielded an internal consistency (α =.73). The General Self-Efficacy Scale is a 10-item psychometric scale designed to assess optimistic self-beliefs to cope with various challenging demands in life (Sadler, 2025). In this study, the scale yielded an internal consistency (α =.87). The Motivation Scale is a 12-item scale on a 4-point response format developed and used to assess and measure teachers' motivation regarding training and capacity building in ICT (Omeh et al., 2024). The scale yielded an internal consistency (α =.78). For data analysis, Multiple Regression Analysis was employed using the Statistical Package for Social Sciences (SPSS) version 25. This method enabled the researchers to examine both the joint and relative contributions of self-efficacy and motivation to ICT integration practices. Specifically, the analysis provided values for R, R^2, adjusted R^2, beta coefficients (β), t-values, and significance levels (p-values), which were used to test the two null hypotheses at the 0.05 significance level.

RESULTS AND DISCUSSION

Hypothesis 1: There is no significant difference in joint influence of self-efficacy and motivation on ICT integration practice among teachers in Imo East Senatorial District

Table 1.
Multiple Regression Analysis on Self-Efficacy and Motivation on ICT Integration Practice Among Imo East Senatorial District Teachers.

Multiple R = .880 Multiple R^2 = .774 Standard error estimate = 13.71250 Adjusted R^2 = .771					
ANOVA[a]					
Source of variation	Df	Sum of squares	Mean square	F – ratio	Sig
Regression	2	1095.833	547.916	21.970[b]	.000
Residual	394	9824.112	24.934		
Total	396	10919.944			

a. Dependent variable: ICT Integration practice
b. Predictors (Constant), Self-efficacy, Motivation

Table 1 shows that the joint influence of the two independent variables (self-efficacy and motivation) on Information and Communication Technology integration practice is significant at the 0.05 level. According to the table, the value of R = .880 and R^2 = .774 and a multiple adjusted R^2 = .771 means that the two predictor variables accounted for 77.1% of the variance in the teachers' ICT integration practice when taken together. The combination of the independent variables, which yielded an F-ratio of 21.974 ($p<0.05$), showed a significant joint contribution of self-efficacy and motivation on Information and Communication Technology integration practice.

Hypothesis 2: There will be no significant relative influence of self-efficacy and motivation on the ICT integration practice of teachers in Imo East Senatorial District

Table 2.
The Relative Influence of Self-Efficacy and Motivation on the ICT Integration Practice of Teachers in Imo East Senatorial District

Model	Unstandardised Coefficients		Standardised coefficients	t	Sig
	B	Std. Error	Beta (β)		
(Constant)	15.154	4.461		4.106	.000
Self-efficacy	2.463	.277	.426	1.750	.000
Motivation	2.297	.271	.481	1.965	.000

Table 2 shows the relative contribution of each independent variable to the dependent variable. As shown in the table, self-efficacy (β=.426; t=1.750; p<0.05) and motivation (β=.481; t=1.965; p<0.05) made significant contributions to the prediction of Information and Communication Technology integration practice. However, motivation influenced the practice of Information and Communication Technology integration more than self-efficacy.

Discussion of Findings

The present study investigated the extent to which self-efficacy and motivation predict teachers' ICT integration practices in classroom instruction across public secondary schools in Imo East Senatorial District. The results from multiple regression analysis revealed a strong joint predictive power of self-efficacy and motivation on ICT integration practice, with an adjusted R^2 value of 0.771. This indicates that approximately 77.1% of the variance in teachers' ICT integration behaviour is accounted for by these two variables. This substantial joint influence underscores the foundational role of both psychological disposition and external motivational factors in shaping teachers' technology-use behaviours. The implication is that teachers who possess a strong belief in their capability (self-efficacy) and who are regularly exposed to training or capacity-building opportunities (motivation) are significantly more inclined to incorporate ICT into their instructional processes. This finding aligns with Bandura's (2023) social cognitive theory, which posits that self-efficacy beliefs influence behaviour, effort, persistence, and resilience in facing new challenges such as technology integration. The relative influence analysis further elucidates this relationship. Motivation was found to be the stronger predictor (β = .481) compared to self-efficacy (β = .426), although both were statistically significant. This suggests that while belief in one's ability is important, external structures—particularly those that offer professional development and institutional encouragement—play a slightly greater role in propelling teachers toward effective ICT use. This corroborates findings by Mirzajani et al. (2016) and Agyei (2021), who emphasised that teacher motivation, especially in the form of training and systemic support, is critical to technology adoption in instructional contexts. The dominance of motivation as a predictor may

reflect the specific challenges within the Nigerian educational context, particularly in public schools. Many teachers face infrastructural deficits, time constraints, and limited administrative support. As such, external motivators—like training opportunities, workshops, or recognition—become vital tools in encouraging technology use. Similar findings were reported by Tondeur et al. (2016) and Richard (2021), who noted that without structured and continuous professional development, teachers often lack both the practical skills and confidence to integrate ICT meaningfully. Moreover, the finding validates the assertion by Buabeng-Andoh (2012) that teachers with formal ICT training display higher levels of integration competence. Motivation, as conceptualised, extends beyond intrinsic interest; it encompasses structural and environmental supports, reinforcing that ICT adoption is not solely a matter of personal will but is shaped by organisational culture and leadership initiatives. On the other hand, the significant influence of self-efficacy confirms past research (Moore-Hayes, 2011; Heath, 2017), which established that teachers with strong self-efficacy beliefs are more likely to innovate, adapt new technologies, and persist in overcoming implementation challenges. Teachers who believe in their ability to manage and utilise ICT effectively demonstrate higher engagement and are more willing to experiment with new pedagogical approaches. This internal drive enables them to transfer learned skills into classroom applications, thereby fostering more dynamic learning environments. The synergy between motivation and self-efficacy, as demonstrated in the joint model, suggests a reciprocal reinforcement. Training and capacity-building not only provide technical skills but also boost confidence, while high self-efficacy increases teachers' likelihood of seeking out and benefiting from developmental opportunities. This dual influence supports findings from Joo et al. (2018) and Adeoye et al. (2024), who called for a blended strategy in educational reform—combining skill development with psychological empowerment. The findings of this study extend existing literature by quantifying the relative and joint contributions of self-efficacy and motivation to ICT integration practices among Nigerian teachers. They confirm that both individual agency (through self-beliefs) and environmental support (through motivation and training) are essential levers in promoting digital pedagogy. Interventions that target one without the other are likely to be less effective. These findings offer compelling evidence for policymakers and educational leaders to design multifaceted interventions that simultaneously build teachers' confidence and provide structural motivation for ICT use.

CONCLUSION

This study examined the influence of self-efficacy and motivation on ICT integration practices among secondary school teachers in Imo East Senatorial District, Nigeria. The study found that self-efficacy and motivation jointly accounted for a significant portion of the variance in teachers' ICT integration behaviours. Both variables individually had significant predictive power, with motivation exerting a slightly stronger influence than self-efficacy. The findings highlight the dual importance of psychological and environmental factors in shaping teachers' readiness and ability to implement ICT in their classrooms. Self-efficacy enables teachers to feel confident in their technical abilities and instructional innovation, while motivation—particularly through professional development and institutional support—catalyses actual ICT adoption and use. These results are consistent with existing literature that identifies teacher capacity-building and belief systems as key enablers of effective technology integration. In light of these outcomes, it becomes evident that improving ICT use in education

requires more than just access to devices and infrastructure. Rather, it demands a deliberate investment in teacher empowerment through continuous training, supportive leadership, and programs that strengthen both confidence and competence in digital pedagogy. In today's digital age, technology is not a luxury but a pedagogical necessity. For educational transformation to be truly impactful, teachers must be at the centre—not only equipped with tools but also empowered with belief and motivation. The path to effective ICT integration in Nigeria's schools lies in closing both the technical and psychological gaps among educators, ensuring they are prepared, confident, and inspired to teach in the 21st-century classroom. The following recommendations are made based on the findings of the study:

1. Educational stakeholders, including state education ministries and school administrators, should institutionalise periodic ICT-focused professional development programs. These trainings should not only improve technical skills but also reinforce the importance of technology integration in pedagogy, thereby boosting motivation and classroom implementation.
2. School leaders and policymakers should implement initiatives aimed at strengthening teachers' confidence in their ICT capabilities. This may include mentorship programs, peer-led ICT demonstration classes, and self-directed learning modules that gradually build technological competence and reduce anxiety related to ICT use.
3. Governments and school authorities must ensure schools are equipped with reliable internet access, computers, smart boards, and other digital tools. Equally important is the provision of maintenance support and access to ICT resource personnel in schools.
4. ICT integration efforts can be sustained by recognising and rewarding teachers who demonstrate effective use of technology in their classrooms. Performance appraisals should include ICT usage as a key indicator, and outstanding efforts should be incentivised through awards, recognition, or career advancement opportunities.
5. Principals and school heads should promote a school-wide culture of technology adoption by modelling ICT use in leadership practices, encouraging experimentation with digital tools, and creating platforms for teachers to share best practices and collaborate on technology-integrated lesson planning.
6. Teacher education programs in colleges and universities should integrate modules that build both the technical skills and psychological readiness (e.g., self-efficacy) of pre-service teachers for ICT use. This ensures that new teachers enter the profession already equipped to use digital tools confidently and effectively.
7. At the policy level, government education agencies should design and implement frameworks that specifically address teacher empowerment for ICT integration, including policies on training frequency, minimum ICT competency requirements, and funding for digital teaching resources.

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