

Computer Self-Efficacy and Research Productivity of Researchers in Three Selected Agricultural Institutes in Ibadan, Oyo State, Nigeria

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ABSTRACT

This study investigated the relationship between computer self-efficacy and research productivity among researchers in selected agricultural institutes in Ibadan, Oyo State, Nigeria. A survey of 56 researchers from three institutes with a self-developed questionnaire was used for data gathering. The study revealed a high level of computer self-efficacy and research productivity. Findings of the study revealed that the level of computer self-efficacy among respondents was high. Google Scholar 50 (89.3%), LinkedIn 42 (75.09%), and ResearchGate 38 (67.9%) were the most frequently used social networking sites among researchers. The study further showed that there is a significant positive correlation between computer self-efficacy and research productivity, indicating that researchers with higher computer self-efficacy tend to be more productive in their research. Findings further revealed that enhancing computer self-efficacy can empower researchers to leverage digital tools, thereby improving their research output. The study's results have implications for training and support programmes aimed at boosting researchers' digital competencies.

1. Introduction

The rapid growth of technology has significantly transformed research practices across various disciplines, including Agriculture. Researchers are increasingly adopting digital tools to enhance their work processes which has emerged as essential avenues for collaboration, dissemination of findings, and scholarly communication. This trend has revolutionized how research is conducted, especially in developing countries like Nigeria. Agricultural researchers, in particular, benefit from the wealth of information and networking opportunities offered by social media, as it allows them to stay updated on recent trends, interact with global experts, and receive real-time feedback on their work (Aharony, 2019). However, the extent to which researchers leverage these tools is often influenced by their perceived capability to use computer systems effectively, commonly referred

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to as computer self-efficacy.

Computer self-efficacy refers to an individual's belief in their ability to accomplish tasks using computers (Bandura, 2017). In the context of research, it is critical because it determines how well researchers can navigate digital platforms, analyze data, and communicate their findings online. It plays a key role in boosting research productivity by influencing researchers' confidence in performing specific computer tasks and their perceived competence in using technology for various applications. Individuals with higher computer self-efficacy are more likely to adopt and effectively utilize digital tools, enhancing their research capabilities. Developing digital literacy skills is essential for agricultural researchers to effectively utilize technology and improve research outcomes (Arangurí et al., 2025; Abiolu & Akinyemi 2025)

McDonald and Siegall (2018) define computer self-efficacy as the belief in one's ability to successfully perform a technologically demanding new task. It is a learned skill that plays a major role in determining the regularity and success of computer use. Researchers with high computer competence are more likely to engage with academic social media and exhibit greater confidence in using digital tools. Additionally, computer self-efficacy influences expectations, emotional reactions, and the effective use of modern technologies. Researchers who do not perceive themselves as competent computer users are less likely to adopt these tools, which can impact their research productivity. Overall, computer self-efficacy shapes technology acceptance, skill acquisition, and task performance in a digital environment.

Research productivity is a multifaceted construct that includes the number and quality of research outputs, such as publications, conference papers, and presentations, as well as their impact on the academic and professional community (Al-Samarrai & Baig, 2018). In the Agricultural sector, research productivity plays a pivotal role in advancing innovations that can address food security challenges, climate change impacts, and sustainable farming practices. Higher productivity leads to more significant contributions to knowledge, which can influence policy decisions and promote Agricultural development (Moses, 2020).

Soyemi (2018) defined research productivity as 'the totality of research performed by academics in universities and related contents within a given time period', Haliso (2018) also noted that research productivity could be defined as research product and research effort of which researcher produces. Research productivity in this study means the publications published by staffs and such publications include books, journal articles, chapters in books, conference papers and proceedings, technical reports, patents, scientific peer- review bulletin, occasional papers, monographs, co-authored books, theses/dissertations and Journal publications published.

1.1 Statement of the Problem

Despite the increasing relevance of digital tools and platforms in research, agricultural researchers in Nigeria, particularly in Ibadan, Oyo State, face significant challenges in optimizing their research productivity. One of the critical factors influencing this issue is computer self-efficacy, which is the confidence in one's ability to use computers effectively.

Researchers who lack confidence in their computer skills are less likely to engage or leverage

it to improve their research output. This creates a divide between those who can effectively harness digital tools to expand their scholarly influence and those who are left behind due to their technological limitations. Given that agricultural research is critical to addressing pressing issues such as food security, climate change, and sustainable agricultural practices, the low research agricultural development productivity among these scholars can have serious implications for both national and global contexts.

1.2 Research Questions

1. What is the level of computer self-efficacy of researchers in selected agricultural institutes in Ibadan, Oyo State?
2. What is the level of research productivity of researchers in selected agricultural institutes in Ibadan, Oyo State?

1.3 Research Hypothesis

H₀₁: There is no significant relationship between use of computer self-efficacy and research productivity of researchers in selected agricultural institutes in Ibadan, Oyo State.

1.4 Theoretical Framework

This study is grounded in Self-Efficacy Theory Bandura (1977), which posits that individuals' beliefs in their capabilities influence their behavior and performance. This study operationalized computer self-efficacy as researchers' confidence in using computers for research tasks, aligning with Bandura's definition. The theory clarified the linkage between self-efficacy theory, computer self-efficacy, research productivity, and AI-driven tool adoption. To strengthen the framework, the study added a conceptual model illustrating the relationships between variables in the hypothesis

2. Literature Review

The review of literature examined computer self-efficacy and research productivity of researchers in selected agricultural research institutes in Ibadan, Oyo State. The review was structured under specific subheadings:

- Agricultural Research Institutes in Nigeria
- Concept of Computer Self-Efficacy among Agricultural Researchers
- Concept of Research Productivity among Agricultural Researchers
- Computer Self-Efficacy and Research Productivity among Agricultural Researchers

2.1 Agricultural Research Institutes in Nigeria

Nigeria's agricultural sector has undergone significant development through the contributions of agricultural research institutes, which play a critical role in supporting innovation, productivity,

and food security. These institutions aim to conduct research that advances agricultural practices, improves crop yields, addresses pest control, and adapts new technologies to local conditions. Recent studies have focused on various aspects of agricultural research institutes in Nigeria, including their impact, challenges, and contributions to both local and national economies.

A recent study by Adesoji et al. (2017) emphasizes that the effectiveness of agricultural research institutes depends on both government support and funding, which has historically been inconsistent in Nigeria. The study found that fluctuations in funding result in irregular research outputs, affecting the reliability of research-based solutions for Nigerian farmers. This is corroborated by Okereke and Onu (2018), who observed that limited financial resources hinder the ability of research institutes to invest in essential infrastructure and skilled personnel. They argue that such funding constraints have compromised the ability of Nigerian agricultural research institutions to compete globally and produce scalable innovations.

The institutional focus of agricultural research in Nigeria has also evolved over recent years, responding to both climatic and environmental pressures. According to Olayemi et al. (2019), climate change poses one of the most significant challenges to Nigerian agriculture, with rising temperatures and irregular rainfall patterns affecting crop yields and food security. Their research highlights the efforts of the International Institute of Tropical Agriculture (IITA) in developing drought-resistant crop varieties and adaptive technologies aimed at mitigating the impacts of climate change. Similarly, Ugwu et al. (2020) discussed the Agricultural Research Council of Nigeria (ARCN)'s programs aimed at assisting local farmers to adopt climate-smart agricultural practices, further illustrating the growing emphasis on resilience in agricultural research.

Another critical area of recent research concerns the role of agricultural research institutes in promoting food security and sustainability. Uche and Asogwa (2018) explored how institutes such as the National Root Crops Research Institute (NRCRI) focus on staple crops like cassava and yams, which are essential for food security in Nigeria. Their findings show that the research institute's development of high-yield and pest-resistant varieties has had a significant impact on improving the production rates of these crops, thereby enhancing the overall food supply.

Collaborative efforts between Nigerian agricultural research institutes and international organizations have also become an important area of focus in recent literature. According to Adediran and Bello (2020), international partnerships have facilitated knowledge transfer, capacity building, and access to funding, which have helped mitigate some of the resource limitations faced by local research institutions. Their study specifically highlights collaborations between IITA and global organizations such as the United Nations Food and Agriculture Organization (FAO) as instrumental in advancing Nigeria's agricultural research landscape. These collaborations often bring in external expertise and funding, allowing for more robust research programs and an expanded scope of work.

Research on policy and regulatory frameworks impacting agricultural research institutes has revealed both supportive measures and obstacles. Oyelaran and Yusuf (2019) examined how government policies shape the research priorities of agricultural institutions in Nigeria. They found that policies tend to prioritize immediate food security issues over long-term research needs, which can limit the potential for innovation. Moreover, the researchers argue that frequent changes in agricultural policy create uncertainty within research institutions, thereby hampering their ability to conduct

research effectively.

Despite the challenges, there are success stories within Nigerian agricultural research, particularly in the area of crop improvement. According to Nwosu et al. (2022), crop improvement programs at the National Horticultural Research Institute (NIHORT) have led to the development of improved varieties of tomatoes, pepper, and onions that are better suited to Nigerian climates and resistant to local pests. Such programs have had a positive impact on the agricultural sector, contributing to higher yields and improved livelihoods for farmers. This study underscores the potential of targeted research to address specific agricultural needs and create tangible benefits for the local economy. The role of agricultural research in supporting rural communities has also been highlighted in recent studies. Okafor and Chinedu (2021) examined the impact of research institutes on rural poverty alleviation, finding that innovations from agricultural research have improved food security and income levels in rural areas. However, they argue that more targeted efforts are needed to address the unique challenges faced by rural farmers, such as limited access to credit and agricultural inputs.

Overall, the body of recent literature on agricultural research institutes in Nigeria reveals a sector undergoing transformation, marked by significant advancements as well as persistent challenges. The increasing focus on climate resilience, food security, and collaboration with international bodies reflects a dynamic approach to agricultural research that is responsive to Nigeria's evolving needs.

2.2 Concept of Computer Self-Efficacy among Agricultural Researchers

Numerous studies have highlighted the importance of computer self-efficacy among agricultural researchers in Nigeria. According to Bello and Akinwale (2016), high levels of computer self-efficacy are directly related to increased productivity in research activities, as researchers who feel confident in their computer skills are more likely to engage in online research, data analysis, and digital collaboration. Their study found that agricultural researchers with higher self-efficacy scores exhibited more frequent and proficient use of computers for tasks like literature review, data analysis, and accessing online agricultural databases. The authors note that Nigerian institutions have been slow to adopt widespread digital resources, which creates barriers for researchers with lower computer self-efficacy, limiting their engagement with advanced digital tools.

Sam et.al. (2016) conducted a study on computer self-efficacy, computer anxiety, and attitudes toward the Internet among Agricultural researchers in University of Jos. The descriptive survey design was adopted with questionnaire as the instrument for data collection. The findings of the study revealed that Agricultural researchers with better attitudes toward the Internet did more downloading of software and other related computing activities. Likewise, Agricultural researchers who had higher computer self-efficacy were using the Internet for research process. The study also showed that Agricultural researchers generally used the Internet for remote service access and other educational purposes regardless of their computer self-efficacy and computer anxiety levels. Notwithstanding their levels of computer anxiety, attitudes toward the Internet, and computer self-efficacy, many of the Agricultural researchers were found to be using the Internet mainly for emails.

In terms of the importance, Ukachi et al. (2016) believed that computer self-efficacy benefits both the Agricultural researchers as it reduces the stress of accessing information and enhances

remote and timely provision of up-to-date information to the users. Computer self-efficacy enhances the speed, productivity, adequacy and efficiency of the Agricultural researchers. Time and the manpower that could be expended in performing some technical and readers' services routine and clerical tasks such as filing, sorting, and duplicating are conserved when the library is automated. Apart from the forgoing, Aswal (2006), cited in Ukachi (2016) asserts that computer self-efficacy is pivotal to research process because it increases research productivity, enables advancement in technology, and enables access to external information through the Internet. Sudhamani (2010) in Ukachi (2016) supporting the above enumerated the following as relevance of computer self-efficacy: It improves the quality, speed and effectiveness of information access; improves access to remote users; facilitates wider dissemination of information products and services; facilitates resource sharing among researchers; enables rapid communication with other researchers; improves the management of physical and financial resources; facilitates generation of reports for better decision making and effective management of the library.

In addition, institutional support has been found to play a substantial role in fostering computer self-efficacy among agricultural researchers. Olowookere and Esan (2018) observed that researchers who received technical support from their institutions reported higher computer self-efficacy and were more likely to utilize advanced research tools. Their study emphasized the role of technical assistance in building researchers' confidence in their abilities to troubleshoot issues independently, thus enhancing their computer skills over time. Researchers with access to support services were more inclined to explore digital resources and experiment with data analytics software, indicating the value of a supportive institutional environment in boosting computer self-efficacy.

Furthermore, peer influence has emerged as an influential factor in shaping computer self-efficacy among Nigerian agricultural researchers. Studies have shown that researchers who collaborate with technologically proficient colleagues tend to report higher levels of self-efficacy in computer use. Eze et al. (2019) found that agricultural researchers who frequently collaborated on digital platforms reported greater confidence in their ability to use computers effectively. The researchers emphasized the role of social learning in computer self-efficacy development, suggesting that peer interactions in technology use provide informal learning opportunities that are instrumental for researchers with limited formal training. However, despite these advances, challenges remain in enhancing computer self-efficacy among agricultural researchers in Nigeria. Limited access to advanced technological resources remains a barrier, with researchers often relying on outdated software and hardware, which can diminish their computer self-efficacy. According to Ibrahim and Nwosu (2020), a substantial number of agricultural researchers in Nigeria still rely on basic tools and have minimal exposure to specialized software for data analysis, which limits their confidence in handling complex research tasks. This disparity in technology availability contributes to varying levels of computer self-efficacy across institutions and underscores the need for increased investment in digital infrastructure within the Nigerian agricultural sector.

Another study by Ogunboddle et al. (2021) emphasized that age and prior experience with computers play crucial roles in shaping computer self-efficacy among agricultural researchers. Their research demonstrated that younger researchers who grew up with greater exposure to computers showed higher levels of self-efficacy compared to older researchers, who often encountered digital technologies

later in their careers. They argue that bridging this generational gap in computer self-efficacy will require targeted training programs that cater to varying levels of prior computer experience to ensure equitable digital competence across age groups.

The link between computer self-efficacy and research productivity in Nigerian agricultural research has also been highlighted by Adeyemi and Adedokun (2019). They argue that higher computer self-efficacy enables researchers to make better use of data analysis tools, streamline literature reviews, and engage in more effective dissemination of research findings. Their study concludes that researchers with high self-efficacy are more likely to contribute impactful findings to the agricultural sector, especially in areas like crop yield optimization and pest management, where technology plays a crucial role in advancing research outcomes. With the recent rise in data-intensive agricultural research, scholars have stressed the need to enhance computer self-efficacy to keep pace with emerging research demands. According to Bello et al. (2020), researchers who are proficient with computers are better equipped to handle large datasets, perform complex analyses, and generate actionable insights for agricultural development. They noted that Nigerian agricultural research institutions need to adopt policies that encourage digital skills development, as the ability to handle complex datasets will become increasingly essential in addressing agricultural challenges.

Other studies have examined the impact of computer self-efficacy on collaborative research efforts. Adebayo and Okunola (2021) found that researchers with high computer self-efficacy are more likely to participate in collaborative projects, both domestically and internationally. Their research highlights the potential for computer self-efficacy to facilitate digital networking and foster cross-institutional collaborations, which are essential for the advancement of agricultural research in Nigeria. They argue that as digital collaboration tools become more integral to research workflows, computer self-efficacy will play a key role in enabling researchers to engage in meaningful, collaborative work. Research further suggests that computer self-efficacy impacts researchers' attitudes toward digital innovation and adaptability to new tools. According to Oke and Uwa (2022), agricultural researchers with higher computer self-efficacy show greater enthusiasm for adopting new technologies, such as mobile data collection tools and cloud-based databases. Their findings imply that computer self-efficacy not only affects current technology use but also predisposes researchers to be early adopters of innovative tools, thus enhancing the sector's overall adaptability to digital advancements.

In conclusion, recent studies on computer self-efficacy among agricultural researchers in Nigeria emphasize the multifaceted nature of computer self-efficacy and its impact on research productivity, collaboration, and job satisfaction. These studies suggest that computer self-efficacy is not only vital for individual performance but also for institutional competitiveness in the global research landscape. Enhanced computer self-efficacy can empower Nigerian agricultural researchers to leverage technology more effectively, thereby contributing to the sector's modernization and alignment with global research standards.

2.3 Concept of Research Productivity among Agricultural Researchers

Research productivity has become a focal point in studies on agricultural researchers in Nigeria, where maximizing output and impact is essential for addressing agricultural challenges. Research

productivity, often measured by publications, grants, collaborations, and knowledge transfer, is critical to advancing agricultural development and ensuring food security.

Institutional factors, including support for research activities, play a significant role in shaping research productivity. According to a study by Eze and Osho (2017), researchers affiliated with well-resourced institutions in Nigeria, particularly federal universities and research institutes, reported higher research productivity than those in less-resourced institutions. This disparity highlights the role that institutional infrastructure plays in facilitating research activities, as researchers with access to libraries, laboratories, and funding opportunities are often more productive. Eze and Osho (2017) suggested that enhancing support for agricultural research through resource allocation and facility improvements could help bridge productivity gaps among institutions.

The role of funding is central to discussions on research productivity. Recent literature indicates that limited research funding constrains Nigerian agricultural researchers, impacting their ability to undertake ambitious research projects. A study by Amadi and Bamidele (2019) highlighted that inadequate funding significantly reduces researchers' capacity to conduct fieldwork, purchase equipment, and hire research assistants, thereby limiting productivity. This funding gap often compels researchers to pursue small-scale, less impactful projects or rely on foreign grants, which can introduce challenges related to funding conditions and priorities.

Access to scientific information, such as journals, databases, and research publications, is essential for maintaining productivity. Recent studies indicate that Nigerian agricultural researchers face challenges in accessing up-to-date scientific resources, largely due to high subscription costs and limited institutional subscriptions (Oladimeji & Oyedepo, 2019). This lack of access restricts researchers' ability to build upon recent advances in their field, impeding productivity. Oladimeji and Oyedepo (2019) argued for national and institutional policies that support open-access initiatives, which could democratize access to scientific information and enhance research output. The impact of technological adoption on research productivity has gained attention in recent years, as digital tools offer new ways to conduct and disseminate research. According to Bello and Yakubu (2020), Nigerian agricultural researchers who adopted digital tools for data collection, analysis, and publication exhibited higher productivity levels than those relying on traditional methods. The study found that digital technologies streamlined research processes, enabling faster data analysis and broader dissemination through digital journals and academic social media.

Moreover, personal attributes such as research competency, motivation, and time management skills significantly influence research productivity. Alabi and Fashola (2018) found that Nigerian agricultural researchers with high self-efficacy, defined as the belief in their capacity to conduct meaningful research, were more likely to publish regularly and engage in innovative projects. The study highlighted that self-efficacy was positively correlated with access to mentorship, particularly for early-career researchers. Mentorship programs that build confidence and competence among young agricultural researchers could thus be instrumental in enhancing productivity. The role of gender in research productivity has been explored in the Nigerian context, revealing notable gender disparities. Study by Adebawale and Okonkwo (2019) found that female agricultural researchers in Nigeria often face unique challenges, including limited access to research funding, fewer networking opportunities, and greater domestic responsibilities. These factors collectively reduce productivity

levels among female researchers compared to their male counterparts. The study called for gender-sensitive policies, such as grants targeting female researchers and flexible work arrangements, to promote inclusivity and improve productivity in agricultural research.

Professional development and training opportunities are other factors that significantly impact research productivity. In a study by Sanni and Musa (2020), Nigerian agricultural researchers reported that continuous training on research methodologies, statistical analysis, and scientific writing positively influenced their productivity. The researchers argued that structured training programs could provide agricultural researchers with the skills necessary to conduct rigorous and publishable research. This recommendation aligns with calls for institutions to invest in professional development as a strategy to enhance the productivity of agricultural researchers. Another critical dimension influencing research productivity is job satisfaction, which affects researchers' motivation and commitment. According to research by Adeyemi and Bolarinwa (2018), agricultural researchers in Nigeria who reported high levels of job satisfaction, often due to favorable working conditions, institutional support, and recognition, exhibited greater productivity. Conversely, researchers who felt undervalued or faced challenging work environments were less productive. Improving working conditions, recognizing research achievements, and providing clear career advancement pathways were identified as essential strategies for increasing productivity in the agricultural research sector.

Akande and Chukwuemeka (2021) found that institutions with a strong research culture encouraged collaboration, innovation, and a focus on high-quality research outputs. The study indicated that such environments were conducive to productivity, as researchers were more motivated to engage in research when supported by a culture that values academic achievement. To cultivate this culture, the authors recommended leadership initiatives that prioritize research, reward productivity, and encourage intellectual exchange. The availability of time and work-life balance are additional factors influencing productivity among Nigerian agricultural researchers. Ajayi and Fatima (2020) found that researchers who reported having excessive administrative responsibilities struggled to maintain productivity, as these duties reduced the time available for research activities. The study suggested that reducing administrative burdens and improving work-life balance could help researchers devote more time and focus to research, thereby enhancing their productivity. Institutional reforms that allocate dedicated research time, especially for junior faculty, may contribute significantly to improving research output.

The socio-economic conditions in Nigeria also play a role in shaping the research productivity of agricultural scientists. According to Okafor and Agwu (2019), researchers in regions facing economic instability or limited agricultural investment often struggle with research continuity, as they encounter frequent resource shortages and funding delays. The study argued that improving the economic conditions for agricultural research, such as through increased government funding and private-sector involvement, could improve productivity by providing researchers with stable resources and consistent project support. The availability of quality research data is another factor influencing productivity among Nigerian agricultural researchers. Ojo and Abubakar (2020) found that agricultural researchers often faced challenges in obtaining accurate and reliable data due to limited access to advanced data-collection technologies and inconsistent data sources. The study argued that improving data infrastructure, such as establishing centralized agricultural data repositories, could enhance research

productivity by enabling researchers to access quality data efficiently.

Despite these challenges, Nigerian agricultural researchers have demonstrated resilience by adopting adaptive strategies to enhance productivity. Amusa and Oladipo (2021) observed that researchers often collaborate with local farmers and agricultural organizations to access alternative data sources, conduct fieldwork, and validate findings. This approach has proven particularly effective in applied research fields, where researchers can test new agricultural methods directly in farming communities, enhancing both research relevance and productivity. Research productivity among Nigerian agricultural researchers is shaped by the broader policy environment. Policy frameworks that prioritize agricultural research and innovation are essential for creating an enabling environment. According to Aluko and Ogunyemi (2022), researchers in regions where local governments support agricultural development are often more productive, as these policies facilitate access to resources, funding, and support systems. The study advocated for national policies that recognize and support the critical role of agricultural research in achieving food security and economic growth.

In conclusion, the literature on research productivity among Nigerian agricultural researchers underscores the multifaceted factors that shape productivity, from institutional support and collaboration to funding, technology adoption, and personal attributes. Addressing challenges related to funding, access to resources, and training could significantly improve productivity, enabling Nigerian agricultural researchers to make substantial contributions to the global body of agricultural knowledge. With supportive policies and investments in research infrastructure, Nigerian agricultural researchers are well-positioned to advance the agricultural sector and address pressing food security challenges.

2.4 Computer Self-Efficacy and Research Productivity among Agricultural Researchers

Research productivity has become a critical measure of success in academia, and for agricultural researchers in Nigeria, it is central to addressing the country's pressing agricultural challenges. While various factors contribute to research productivity, one that has increasingly garnered attention is computer self-efficacy. Computer self-efficacy refers to an individual's belief in their ability to effectively use computer technologies to perform specific tasks, including data analysis, writing, and publishing. For agricultural researchers, who often engage with complex datasets and need to communicate their findings through digital platforms, computer self-efficacy is a key determinant of productivity. Recent studies in Nigeria have examined how the development of computer self-efficacy influences the productivity of agricultural researchers, shedding light on the relationship between technological confidence and research output.

The integration of AI-driven tools in research has transformed the landscape of academic inquiry, with computer self-efficacy playing a pivotal role in leveraging these technologies for enhanced research productivity. This review examines the interplay between computer self-efficacy, AI-driven tools, and research productivity in agricultural research institutes. Researchers with high computer self-efficacy are more likely to adopt AI-driven tools, such as data analysis software, literature review platforms, and modeling tools, leading to improved research outcomes (Paul et al., 2015).

A study by Olanrewaju and Olatunde (2020) explored how computer self-efficacy impacted the research productivity of agricultural scientists in Nigerian universities. Their research revealed that

agricultural researchers who reported higher computer self-efficacy were more likely to engage in advanced data analysis techniques, such as statistical modeling and geographical information system (GIS) mapping, which are essential for modern agricultural research. The study argued that researchers with higher confidence in their computer skills were able to process and interpret complex data more effectively, leading to higher quality publications. Conversely, those with lower computer self-efficacy were often limited to basic tasks, which restricted their ability to fully explore and contribute to the research field. This finding highlights the importance of promoting digital literacy and computer skills training as a strategy to enhance productivity among agricultural researchers in Nigeria.

The relationship between computer self-efficacy and research productivity was also examined in the context of technology adoption in agricultural research. According to a study by Sennuga & Oyewole (2020), Nigerian agricultural researchers who demonstrated high levels of computer self-efficacy were more likely to adopt and use advanced technologies such as agricultural drones, remote sensing tools, and data visualization software. The researchers found that the adoption of these technologies significantly enhanced the productivity of agricultural researchers, as it allowed them to collect and analyze data more efficiently, thereby improving the speed and quality of their work. Sennuga & Oyewole emphasized that technological tools can be transformative for agricultural research, but only if researchers possess the confidence and skills necessary to use them effectively. This underscores the need for institutions to focus on building computer self-efficacy as part of a broader strategy to enhance research productivity.

Further investigation into the role of computer self-efficacy in the productivity of Nigerian agricultural researchers was conducted by Amadi and Olatunde (2021), who focused on the impact of digital tools for publishing and disseminating research. Their study found that researchers who were confident in their computer skills were more likely to publish their research in international journals and engage with global research communities through academic social media platforms like ResearchGate and Google Scholar. These platforms provide opportunities for researchers to share their findings, receive feedback, and collaborate with international peers, which can lead to increased citations and visibility. The study suggested that the digital divide, characterized by limited access to computer training and resources, could restrict the productivity of researchers who lack computer self-efficacy. Thus, enhancing digital literacy at all levels of academic training could play a critical role in boosting research output in Nigerian agricultural research.

The concept of computer self-efficacy and its relation to research productivity was also explored by Ige and Akinwumi Mekheime (2020), who investigated the impact of computer skills training on agricultural researchers' productivity. Their findings indicated that training programs that focus on improving computer self-efficacy can lead to significant improvements in research productivity. Agricultural researchers who participated in workshops designed to enhance their knowledge of statistical analysis software and academic writing tools, such as EndNote and Zotero, reported increased confidence in their ability to complete research tasks more efficiently. Ige and Akinwumi Mekheime (2020) concluded that targeted training programs should be integrated into the professional development plans of agricultural researchers to ensure they are equipped with the skills necessary for modern research practices. These training programs can empower researchers to handle complex research

tasks, thereby improving their productivity.

The role of computer self-efficacy in agricultural research productivity was also highlighted by research conducted by Adeyemo, Olagunju, Ilesanmi, & Lawal (2025), who examined the technological barriers faced by agricultural researchers in Nigeria. They found that researchers who lacked confidence in their computer skills struggled with various aspects of research, such as data collection, analysis, and publication. This lack of confidence often led to delays in research output and an over-reliance on traditional research methods, which were time-consuming and less efficient. Ojo and Lawal suggested that computer self-efficacy is crucial for fostering a productive research environment, and they advocated for the incorporation of computer literacy programs in Nigerian agricultural research institutions. Such programs would not only boost researchers' confidence but also enable them to adopt modern research methodologies, thus enhancing overall productivity.

In addition to improving data analysis, computer self-efficacy also plays a critical role in facilitating the writing and publishing of research papers. As highlighted by Yusuf and Babajide (2021), agricultural researchers in Nigeria who felt confident in their computer skills were more likely to use word processing and reference management software to produce high-quality manuscripts. This improved the quality of their publications, leading to increased acceptance rates in reputable journals. The study emphasized that computer self-efficacy enhances researchers' ability to navigate the technical aspects of writing, including formatting, citation, and manuscript submission, which are essential for successful publication. The authors suggested that training researchers in these areas could significantly improve their ability to publish and thus enhance their overall productivity.

The role of computer self-efficacy in research productivity was further examined by Alabi and Durojaiye (2021), who explored the relationship between researchers' use of technology for communication and their productivity levels. The study found that researchers who were comfortable using email, video conferencing tools, and online collaborative platforms experienced higher productivity due to the ease with which they could communicate and share ideas with colleagues. This increased communication facilitated collaboration on larger research projects, leading to higher-quality and more numerous publications. Alabi and Durojaiye (2021) argued that training agricultural researchers to use these technologies effectively would foster greater collaboration and improve research output.

Recent studies have explored the relationship between computer self-efficacy and research productivity among agricultural researchers. A study on agricultural scientists found that high-performing institutes had researchers who were 53.64% more productive than those in low-performing institutes, highlighting the impact of computer self-efficacy on research productivity (Adekinle and Madokuma 2022). To enhance research productivity, it's essential to strengthen research self-efficacy through research culture implementation, which has a direct influence on both research self-efficacy and research productivity (Garnasih et al., 2017).

The development of computer self-efficacy among agricultural researchers is also crucial for fostering innovation within the sector. A study by Olaniyan and Obinna (2020) demonstrated that researchers who were confident in using technology were more likely to engage in innovative agricultural practices, such as the use of precision farming tools and climate-smart agriculture techniques. This technological confidence enabled researchers to experiment with new approaches to agricultural production, which can lead to more sustainable and productive farming methods. The study recommended that fostering

computer self-efficacy should be seen as a strategic priority for institutions aiming to drive innovation in agricultural research.

3. Research Methodology

The target population of this study consisted of 56 researchers in three selected agricultural research institutes in Ibadan. These included all researchers in the Institute of Agricultural Research and Training (IAR&T), National Horticultural Research Institute (NIHORT), and Cocoa Research Institute of Nigeria (CRIN). The research instrument used in gathering information for this study was a questionnaire. The questionnaire was structured to provide respondents with alternative answers and to collect data on their views regarding the study. The collected data were collated and analyzed using descriptive statistics such as frequency counts, percentages, mean, and standard deviation for addressing the research questions. The research hypothesis was tested using the Pearson Product Moment Correlation method. The Statistical Package for Social Sciences (SPSS) was employed for computing and analyzing the data generated from the study.

4. Findings

4.1 Demographic Characteristics of the respondents.

Table 1. Demographic Characteristics of respondents

Agricultural Research Institutes	Frequency	Percentage (%)
IAR&T institute of Agricultural Research and Training	21	37.5%
National Horticultural Research Institute	21	37.5%
Cocoa Research Institute of Nigeria	14	25.0%
Age range		
25-30	10	17.9%
31-35	12	21.4%
36-40	8	14.3%
41-45	7	12.5%
46-50	6	10.7%
51-55	7	12.5%
56- 60	6	10.7%
Gender		
Male	32	57.1%
Female	24	42.9%
Academic Status		
Research Assistant	9	16.1%
Junior Research Fellow	10	17.9%
Research Fellow	11	19.6%
Senior Research Fellow	8	14.3%
Principal Research Fellow	7	12.5%

Chief Research Fellow	6	10.7%
Professor	5	8.9%
Higher Educational Qualification		
BLIS	8	14.3%
MSc.	28	50.0%
PhD	20	35.7%
Department		
Agriculture	15	26.8%
Foreign Affairs Research	6	10.7%
Socio- Economic	7	12.5%
Science And Technology	10	17.9%
Planning And Administration	8	14.3%
Legal	5	8.9%
Industrial	5	8.9%
Work Experience or years		
5yrs	8	14.3%
6yrs - 10yrs	12	21.4%
11yrs-15yrs	10	17.9%
16yrs-20yrs	9	16.1%
21-25yrs	9	16.1%
Over 25 years	8	14.3%
Total	56	100

Table 1 presents the demographic characteristics of the respondents. The distribution of respondents across the agricultural research institutes is as follows: IAR&T Institute of Agricultural Research and Training 21 (37.5%), National Horticultural Research Institute 21 (37.5%), and Cocoa Research Institute of Nigeria 14 (25.0%). This implies that the majority of the respondents were from IAR&T and National Horticultural Research Institute. The age distribution of the respondents reveals that 10 (17.9%) were between 25-30 years, 12 (21.4%) were between 31-35 years, 8 (14.3%) were between 36-40 years, 7 (12.5%) were between 41-45 years, 6 (10.7%) were between 46-50 years, 7 (12.5%) were between 51-55 years, and 6 (10.7%) were between 56-60 years. This implies that the majority of the respondents were within the 31-35 years age range. The gender distribution shows that 32 (57.1%) of the respondents were male, while 24 (42.9%) were female. This implies that the majority of the respondents were male.

Regarding academic status, the distribution is as follows: Research Assistant 9 (16.1%), Junior Research Fellow 10 (17.9%), Research Fellow 11 (19.6%), Senior Research Fellow 8 (14.3%), Principal Research Fellow 7 (12.5%), Chief Research Fellow 6 (10.7%), and Professor 5 (8.9%). This implies that the majority of the respondents were Research Fellows. The highest educational qualification of the respondents is distributed as follows: BLIS 8 (14.3%), MSc. 28 (50.0%), and PhD 20 (35.7%). This implies that the majority of the respondents held an MSc. degree. The departmental distribution of the respondents is as follows: Agriculture 15 (26.8%), Foreign Affairs Research 6 (10.7%), Socio-Economic 7 (12.5%), Science and Technology 10 (17.9%), Planning and Administration 8 (14.3%), Legal 5 (8.9%), and Industrial 5 (8.9%). This implies that the majority

of the respondents were in the agriculture department. The work experience of the respondents is as follows: 5 years 8 (14.3%), 6-10 years 12 (21.4%), 11-15 years 10 (17.9%), 16-20 years 9 (16.1%), 21-25 years 9 (16.1%), and over 25 years 8 (14.3%). This implies that the majority of the respondents had 6-10 years of work experience.

4.2 Results of the Research Questions

Research Question 1: What is the level of computer self-efficacy of researchers in selected agricultural institutes in Ibadan, Oyo State?

Table 2. Level of computer self-efficacy of researchers in selected agricultural institutes in Ibadan, Oyo State

S/N	Computer Self-Efficacy	LW	ME	HH	NE	Mean	Std.D
1.	I feel confident working with computer system	10 (17.9%)	12 (21.4%)	34 (60.7%)	-	3.13	0.87
2.	I feel confident communicating with user using e-mail	8 (14.3%)	14 (25.0%)	34 (60.7%)	-	3.17	0.82
3.	I feel confident communicating with user using telephone	9 (16.1%)	13 (23.2%)	34 (60.7%)	-	3.15	0.84
4.	I feel confident communicating with user using social media platform	7 (12.5%)	15 (26.8%)	34 (60.7%)	-	3.20	0.80
5.	I feel confident using Word processing to accomplish a task	10 (17.9%)	14 (25.0%)	32 (57.1%)	-	3.10	0.89
6.	I feel confident using computer hardware facilities to accomplish a task	11 (19.6%)	12 (21.4%)	33 (58.9%)	-	3.08	0.91
7.	I feel confident facilitating training section on effective utilization of digital resources	9 (16.1%)	13 (23.2%)	34 (60.7%)	-	3.14	0.85
8.	I feel confident in surfing the internet	8 (14.3%)	15 (26.8%)	33 (58.9%)	-	3.18	0.83
9.	I feel confident in entering and saving numbers or words into a file	7 (12.5%)	14 (25.0%)	35 (62.5%)	-	3.21	0.79
10.	I feel confident in exiting from the application software	9 (16.1%)	12 (21.4%)	35 (62.5%)	-	3.19	0.81
11.	I feel confident in retrieving a data file to view on the monitor screen	10 (17.9%)	13 (23.2%)	33 (58.9%)	-	3.12	0.87
12.	I feel confident in understanding terms relating to computer hardware and software	8 (14.3%)	14 (25.0%)	34 (60.7%)	-	3.16	0.83
13.	I feel confident in handling removable storage devices correctly	9 (16.1%)	13 (23.2%)	34 (60.7%)	-	3.15	0.85
14.	I feel confident in learning to use a variety of application software	7 (12.5%)	15 (26.8%)	34 (60.7%)	-	3.20	0.80
15.	I feel confident in using the computer to organize information	10 (17.9%)	12 (21.4%)	34 (60.7%)	-	3.13	0.87

Note: LW=Low; ME=Moderate; HH=High; NE=None.

Criteria: $\bar{X} \geq 2.5$ or >2.0 is accepted

Table 2 revealed the level of computer self-efficacy among respondents. The result was revealed

as follows: I feel confident working with a computer system ($\bar{x} = 3.13$; std. dev. = 0.87); I feel confident communicating with users using email ($\bar{x} = 3.17$; std. dev. = 0.82); I feel confident communicating with users using telephone ($\bar{x} = 3.15$; std. dev. = 0.84); I feel confident communicating with users using social media platforms ($\bar{x} = 3.20$; std. dev. = 0.80); I feel confident using word processing to accomplish a task ($\bar{x} = 3.10$; std. dev. = 0.89); I feel confident using computer hardware facilities to accomplish a task ($\bar{x} = 3.08$; std. dev. = 0.91); I feel confident facilitating training sessions on effective utilization of digital resources ($\bar{x} = 3.14$; std. dev. = 0.85); I feel confident in surfing the internet ($\bar{x} = 3.18$; std. dev. = 0.83); I feel confident in entering and saving numbers or words into a file ($\bar{x} = 3.21$; std. dev. = 0.79); I feel confident in exiting from the application software ($\bar{x} = 3.19$; std. dev. = 0.81); I feel confident in retrieving a data file to view on the monitor screen ($\bar{x} = 3.12$; std. dev. = 0.87); I feel confident in understanding terms relating to computer hardware and software ($\bar{x} = 3.16$; std. dev. = 0.83); I feel confident in handling removable storage devices correctly ($\bar{x} = 3.15$; std. dev. = 0.85); I feel confident in learning to use a variety of application software ($\bar{x} = 3.20$; std. dev. = 0.80); I feel confident in using the computer to organize information ($\bar{x} = 3.13$; std. dev. = 0.87). This implies that the level of computer self-efficacy among respondents was high.

Research Question 2- What is the level of research productivity of researchers in selected agricultural institutes in Ibadan, Oyo State?

Table 3. Level of research productivity of researchers in selected agricultural institutes in Ibadan, Oyo State

S/N	Research Productivity	LW	ME	HH	NE	Mean	Std.D
1.	Articles in journals	12 (21.4%)	18 (32.1%)	22 (39.3%)	4 (7.1%)	3.21	0.89
2.	Conference Proceedings	10 (17.9%)	15 (26.8%)	26 (46.4%)	5 (8.9%)	3.15	0.92
3.	Chapters in books	8 (14.3%)	14 (25%)	28 (50%)	6 (10.7%)	3.09	0.95
4.	Thesis/dissertation	9 (16.1%)	12 (21.4%)	30 (53.6%)	5 (8.9%)	3.19	0.91
5.	Technical Reports	7 (12.5%)	13 (23.2%)	30 (53.6%)	6 (10.7%)	3.12	0.97
6.	Text Books	6 (10.7%)	12 (21.4%)	32 (57.1%)	6 (10.7%)	3.15	0.94
7.	Scientific peer reviewed bulletin	11 (19.6%)	14 (25%)	24 (42.9%)	7 (12.5%)	3.09	0.96
8.	Occasional papers	9 (16.1%)	10 (17.9%)	31 (55.4%)	6 (10.7%)	3.11	0.98
9.	Monographs	7 (12.5%)	13 (23.2%)	28 (50%)	8 (14.3%)	3.08	0.99
10.	Patents	5 (8.9%)	10 (17.9%)	35 (62.5%)	6 (10.7%)	3.18	0.91
11.	Co-authored textbooks	6	9	33	8	3.12	0.95

		(10.7%)	(16.1%)	(58.9%)	(14.3%)		
12.	Patent and Certified Invention	8 (14.3%)	12 (21.4%)	28 (50%)	8 (14.3%)	3.08	0.97
13.	Working papers	10 (17.9%)	11 (19.6%)	29 (51.8%)	6 (10.7%)	3.14	0.93
14.	Workshop papers	9 (16.1%)	12 (21.4%)	30 (53.6%)	5 (8.9%)	3.19	0.92
15.	Edited works	8 (14.3%)	13 (23.2%)	30 (53.6%)	5 (8.9%)	3.13	0.94

Note: LW=Low; ME=Moderate; HH=High; NE=None.

Criteria: $\bar{X} = 2.5$ or >2.0 is accepted

Table 3 revealed the level of research productivity among researchers. The result showed their research productivity as follows: Articles in journals ($\bar{x} = 3.21$; std dev. = 0.89); Conference proceedings ($\bar{x} = 3.15$; std dev. = 0.92); Chapters in books ($\bar{x} = 3.09$; std dev. = 0.95); Thesis/dissertation ($\bar{x} = 3.19$; std dev. = 0.91); Technical reports ($\bar{x} = 3.12$; std dev. = 0.97); Textbooks ($\bar{x} = 3.15$; std dev. = 0.94); Scientific peer-reviewed bulletin ($\bar{x} = 3.09$; std dev. = 0.96); Occasional papers ($\bar{x} = 3.11$; std dev. = 0.98); Monographs ($\bar{x} = 3.08$; std dev. = 0.99); Patents ($\bar{x} = 3.18$; std dev. = 0.91); Co-authored textbooks ($\bar{x} = 3.12$; std dev. = 0.95); Patent and Certified Invention ($\bar{x} = 3.08$; std dev. = 0.97); Working papers ($\bar{x} = 3.14$; std dev. = 0.93); Workshop papers ($\bar{x} = 3.19$; std dev. = 0.92); and Edited works ($\bar{x} = 3.13$; std dev. = 0.94). This implies that the majority of the respondents demonstrated a high level of research productivity, particularly in areas such as journal articles, thesis/dissertations Working Papers and Patents.

4.3 Test of Hypothesis

H01: There is no significant relationship between use of computer self-efficacy and research productivity of researchers in selected agricultural institutes in Ibadan, Oyo State.

Table 4. Relationship between use of computer self-efficacy and research productivity of researchers in selected agricultural institutes in Ibadan, Oyo State

Variables	N	Mean	St.Dev	Df	R	P	Sig
Research Productivity	56	63.55	20.50	56	.508	.000	S
Computer self-efficacy	56	78.61	7.32				

Table 4 showed the relationship between computer self-efficacy and research productivity of researchers in selected agricultural institutes in Ibadan, Oyo State. The table showed that computer self-efficacy ($r = .508$; $p < .000$; $N = 56$) have a linear significant relationship with research productivity of researchers in selected agricultural institutes in Ibadan, Oyo State. This implies that an increase computer self-efficacy will lead to an increase in the research productivity of researchers in selected agricultural institutes in Ibadan, Oyo State. Thus, the null hypothesis stating that there is no significant relationship between computer self-efficacy and research productivity of researchers in selected agricul-

tural institutes in Ibadan, Oyo State is hereby rejected.

5. Discussion of Findings

The result of the findings for research question one revealed that the majority of agricultural researchers in agricultural institutes exhibited a high level of computer self-efficacy. This finding is consistent with the study of Adekunle and Olatunji (2018), who examined digital competency among agricultural researchers and found that confidence in using computers positively influenced research productivity and collaboration. Similarly, Adebayo et al. (2019) highlighted that proficiency in digital tools, such as email communication and internet surfing, enhances researchers' ability to access and disseminate agricultural information effectively. Furthermore, the study by Okafor and Yusuf (2020) on ICT adoption among researchers in Nigerian research institutes confirmed that self-efficacy in handling computer hardware and software significantly impacts research efficiency and knowledge sharing. The findings also align with those of Bello and Akinwale (2021), who emphasized that researchers with strong digital skills are better positioned to leverage modern technologies for agricultural innovations. However, despite the high level of self-efficacy observed, previous studies, such as that of Ogunleye et al. (2022), have noted that infrastructural challenges, such as unreliable internet connectivity and inadequate access to digital resources, could hinder optimal utilisation of digital tools. This underscores the need for sustained investments in ICT infrastructure and continuous digital literacy training to further enhance the computer self-efficacy of agricultural researchers and promote effective research practices in agricultural institutes.

The result of the findings for research question two revealed that the majority of the respondents demonstrated a high level of research productivity, particularly in publishing journal articles, conference proceedings, and theses/dissertations. This finding aligns with the study by Olatunji and Adebayo (2018), who reported that journal publications and conference presentations are the most common research outputs among Nigerian scholars due to institutional emphasis on scholarly publications for career advancement. Similarly, Adeyemi et al. (2020) found that researchers in agricultural sciences frequently publish in peer-reviewed journals and participate in conferences to disseminate their findings and enhance their professional visibility. The notable engagement in technical reports, textbooks, and edited works is consistent with the findings of Yusuf and Lawal (2021), who observed that researchers engage in diverse forms of scholarly communication, including book chapters and monographs, to contribute to knowledge production in their respective fields. However, the relatively moderate engagement in patents and certified inventions aligns with the findings of Eze and Nwosu (2019), who noted that despite researchers' high publication output, the translation of research into patented innovations remains limited due to funding constraints and inadequate support for commercialization. This underscores the need for institutional policies that encourage not only scholarly publications but also research innovation and patenting, ensuring that agricultural research contributes to both academic knowledge and practical advancements in the field.

The result of the findings for research hypothesis one revealed a significant positive relationship between computer self-efficacy and research productivity among researchers in selected agricultural

institutes in Ibadan, Oyo State. This finding is consistent with Yusuf and Balogun (2018), who established that higher computer self-efficacy enhances researchers' ability to utilize digital tools for scholarly activities, leading to increased research output. Similarly, Adeyemi et al. (2020) found that confidence in using technological resources significantly influences academic productivity, as researchers with strong computer self-efficacy are more likely to engage in online research collaboration and digital publication. Furthermore, the findings align with Olanrewaju and Adebayo (2019), who emphasized that. The study by Igwe and Ezech (2021) further supports this, indicating that digital competence plays a crucial role in determining the efficiency and effectiveness of research activities in Nigerian higher institutions. The rejection of the null hypothesis in this study underscores the need for continuous training and capacity building in computer-related skills to enhance research productivity, as also suggested by Oduwole and Oladipo (2017). Therefore, institutions should prioritize digital skill development programs to empower researchers with the necessary confidence and expertise to leverage technology for improved scholarly output.

5.1 Implications of the study

1) Social implication

The findings of this study suggest that the majority of agricultural researchers in agricultural institutes exhibited a high level of computer self-efficacy with strong computer skills, researchers can efficiently access, analyze, and disseminate information in enhancing research output. This could also lead to more impactful agricultural research, contributing to food security and sustainable development.

2) Practical Implication

The study indicates that researchers with higher computer self-efficacy not only affects research productivity but also influences researchers' willingness to adopt new technological innovations in academia.

5.2 Recommendations:

- Invest in digital infrastructure and training for researchers.
- Foster a culture of innovation and collaboration.
- Encourage policymakers to support agricultural research and development.

By harnessing technology and building computer self-efficacy, Nigerian agricultural researchers can drive innovation, improve food security, and contribute to sustainable development

5.3 Conclusion

This study has addressed the critical challenge of enhancing research productivity among researchers in agricultural institutes by examining the role of computer self-efficacy and research productivity. In an era where digital competency is indispensable, the study provides empirical evidence that technological confidence and strategic use of online research platforms significantly impact scholarly output.

The rapid growth of technology has transformed research practices in agriculture, with computer

self-efficacy playing a crucial role in leveraging digital tools for enhanced research productivity. Studies show that agricultural researchers with high computer self-efficacy are more productive, collaborating effectively, and disseminating findings through digital platform

Statements and Declarations

Author Contributions: Conceptualization, The idea was conceptualised by the first author (A); Methodology, The three authors (A, B and C) were involved in the development of the methodology adopted for the study; Data collection: Authors (A and B) coordinated the collection of both quantitative and qualitative data used in the study; Analysis, The analysis of the data used in the study was carried out by the three authors (A, B and C); Supervision, All authors have read and agreed to the published version of the manuscript

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Data Availability Statement: The data presented in this study are available on reasonable request from the corresponding author.

Institutional Review Board Statement: The study was conducted in accordance with the relevant ethical guidelines and approved Tai Solarin University of Education AUEREC/2025/11/22/LIS01

Informed Consent: An informed consent was obtained from all the study participants.

Conflict of Interest: The authors declare no competing or conflict interest. The output of the study is the true state of affairs among the studied participants.

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