

APPRAISAL OF EDUCATIONAL LEADERSHIP AND MANAGEMENT IN THE ERA OF THE 5TH INDUSTRIAL REVOLUTION IN IGNATIUS AJURU UNIVERSITY OF EDUCATION

Nyekwere David EMENIKE

Institute of Education, Ignatius Ajuru University of Education, Port Harcourt, Nigeria

davidmerrick98@gmail.com

ABSTRACT: This study investigated the evaluation of educational leadership and management in the era of the fifth industrial revolution (5IR) at Ignatius Ajuru University of Education. Guided by three research questions, objectives, and two hypotheses, the study adopted a descriptive survey research design. The population consisted of 58 academic staff members from the Department of Educational Management, which served as the sample due to its manageable size. A researcher-developed questionnaire, "Appraisal of Educational Leadership and Management in the Era of the 5th Industrial Revolution" (QAELE5IR), was used to collect data. The instrument's reliability index was established at 0.82 using the Cronbach Alpha statistical method. Mean and standard deviation were used to analyze the research questions, while t-test statistic was used to test the hypotheses at a 0.05 significance level. The findings revealed that 5IR has enhanced the quality of decision-making in educational leadership and improved communication between educational leaders and stakeholders. The study recommends that educational leaders and managers promote digital literacy among teachers and students, invest in infrastructure, and build capacity to support the adoption of 5IR technologies, thereby equipping them to thrive in a rapidly changing world.

Keywords: Educational Leadership, Management, 5th Industrial Revolution.

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INTRODUCTION

The 5th industrial revolution (5IR) is transforming the world at an unprecedented rate, bringing about significant changes in various sectors, including education. Educational leadership and management play a crucial role in navigating the challenges and opportunities presented by 5IR (Bass, 2015). This paper aims to appraise educational leadership and management in the era of 5IR, exploring the challenges, opportunities, and strategic adaptations that can be employed. Academic libraries are vital sites for intellectual interaction, research facilitation, and knowledge dissemination in the context of higher education.

In these changing circumstances, strong leadership is essential for guiding institutions towards innovation, adaptation, and sustainable growth, according to the World Economic Forum (2020). Academic libraries have a variety of leadership philosophies that have a significant impact on operational efficacy, organisational culture, and strategic orientation. The

decisions made by library leaders have a significant impact on the institution's ability to prosper in a time of rapid technological advancement and societal change, regardless of the strategic direction taken by transformational leaders, the practical approach taken by transactional leaders, or the decentralised autonomy encouraged by laissez-faire leaders (Schwab, 2016).

The way a leader engages with their followers, makes choices, and affects organisational results is referred to as their leadership style. In turn, it includes a leader's strategy for inspiring, directing, and enabling members of the organisation. Different behaviours, attitudes, and communication patterns define different leadership styles, which can range from transformational and visionary to transactional and pragmatic (Freeburg, 2020). However, because academic libraries present special possibilities and problems, leadership in these settings is crucial (Dinh et al., 2021). According to Shal et al. (2024), library leaders are custodians of knowledge who are in charge of creating new services, curating collections, and creating environments that support learning and teamwork.

Statement of the Problem

The 5IR is characterised by rapid technological advancements, changing workforce demands, and evolving societal needs. Educational leadership and management in Ignatius Ajuru University of Education, Rivers State, Nigeria face challenges in adapting to these changes, ensuring equity and access to technology, and developing digital literacy among educators and students. The problem lies in identifying effective strategies for educational leaders and managers to navigate these challenges and capitalize on the opportunities presented.

Objectives of the Study

This study aims to investigate the evaluation of educational leadership and management in the era of the fifth industrial revolution (5IR) at Ignatius Ajuru University of Education. The specific objectives are to:

- Examine the impact of 5IR on educational leadership and management in Ignatius Ajuru University of Education.
- Identify the challenges and opportunities presented by 5IR for educational leadership and management in Ignatius Ajuru University of Education.
- Explore strategic adaptations for educational leadership and management in the era of 5IR in Ignatius Ajuru University of Education.

Research Questions

The following questions were raised to guide this study:

- What are the impact of the era of 5IR on the educational leadership and management in Ignatius Ajuru University of Education?
- What are the challenges and opportunities presented by 5IR for educational leadership and management in Ignatius Ajuru University of Education?
- What strategic adaptations can educational leaders to address the challenges and opportunities of 5IR in Ignatius Ajuru University of Education?

Hypotheses

The following hypotheses were formulated and statistically tested at a 0.05 level of significance:

- There is no significant difference in the mean rating on the impact of the era of 5IR on the educational leadership and management in Ignatius Ajuru University of Education.
- There is no significant difference in the mean rating on the strategies adapted by educational leaders to address the challenges and opportunities and 5IR in Ignatius Ajuru University of Education.

THEORETICAL FRAMEWORK

Transformational Leadership Theory

Transformational Leadership Theory emerged from the seminal work of James MacGregor Burns in 1978, who distinguished between transactional and transformational leadership approaches in his political leadership studies. Burns saw transformational leadership as a process where leaders and followers engage in mutual stimulation and elevation, transforming followers into leaders and leaders into moral agents. This foundational framework was subsequently refined and expanded by Bernard Bass in the 1980s, who developed a more comprehensive model that emphasised the leader's ability to inspire followers to transcend their self-interests for the collective good of the organisation (Allix, 2020; Ughulu, 2024).

Ughulu (2024) emphasised the critical importance of transformational leadership in developing nations, particularly highlighting its positive impact on Nigeria's educational and organisational development. Furthermore, Abubakar and Ahmed (2021) noted the significant effect of transformational leadership styles on university performance in Nigeria, underlining its practical application in the higher education sector. Transformational leadership provides a framework for educational administrators to inspire academic communities towards embracing digital transformation, fostering innovation, and preparing students for an increasingly interconnected world. This leadership approach enables educational institutions to transcend traditional boundaries, encouraging creative problem-solving and adaptive capacity essential for thriving in the 5IR landscape (Samson & Ilesanmi, 2019).

The transformational leadership model identifies four key dimensions: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. These components collectively enable leaders to create profound organizational change by fostering higher levels of follower commitment, motivation, and performance. The theory posits that transformational leaders achieve exceptional results by appealing to followers' higher-order needs and values, thereby generating extraordinary effort and dedication. In the context of educational leadership within the Fifth Industrial Revolution (5IR) era, transformational leadership theory demonstrates particular relevance for institutions like Ignatius Ajuru University of Education. The 5IR's emphasis on human-centric technology integration, sustainability, and collaborative innovation requires educational leaders who can navigate complex technological transformations whilst maintaining focus on human development and social responsibility.

CONCEPTUAL CLARIFICATION

Educational Leadership

According to Donkor and Zhou (2020) educational leadership refers to the process of influencing and guiding educators, students, and stakeholders to achieve educational goals. Effective educational leaders possess vision, communication skills, and the ability to inspire and motivate others. They play a crucial role in shaping the direction of educational institutions and ensuring that they are responsive to the needs of students and society.

Educational Management

Educational management involves the planning, organization, and supervision of educational institutions. Effective educational management ensures the efficient use of resources, promotes a positive learning environment, and supports the achievement of educational goals. Educational managers play a vital role in ensuring that educational institutions are well-run and effective in achieving their objectives (Echedom & Omorodion, 2021).

Industrial Revolution Era

According to Northouse (2021), the integration of digital, biological, and physical systems is what defines the fifth industrial revolution (5IR). Emerging technologies including robots, artificial intelligence, and the Internet of Things (IoT) are driving 5IR. In education, 5IR presents opportunities for personalised learning, enhanced student engagement, and improved educational outcomes. However, it also poses challenges for educational leadership and management, including the need to adapt to rapid technological changes and ensure that educators and students have the necessary skills to thrive in a rapidly changing world (Harisanty et al., 2022).

Impact of 5IR on Educational Leadership and Management of Universities

The Fifth Industrial Revolution (5IR) era, characterised by the convergence of digital technologies, artificial intelligence (Oyetola, et al., 2023), and cyber-physical systems, significantly impacts educational leadership and management at Ignatius Ajuru University of Education. Academic library leadership becomes essential in navigating organisational transformation and technological innovation challenges (Shal et al., 2024; Tran, 2023). Transformational leadership proves particularly beneficial for successfully implementing 5IR initiatives by defining compelling visions for institutional futures, encouraging cultures of innovation and continual learning, and enabling individuals to embrace change whilst taking ownership of their work (Husin et al., 2023).

This leadership approach fosters organisational cultures that encourage experimentation, creativity, and risk-taking critical components for fostering technological innovation and adapting to 5IR opportunities and challenges (Donkor & Zhou, 2020). Whilst transactional leadership contributes to 5IR adoption through clear expectations and reward systems, it proves insufficient for encouraging the innovation, adaptability, and resilience required for fully realising 5IR's transformational potential (Van Dun & Kumar, 2023; Lo et al., 2020; Noh, 2023). Conversely, laissez-faire leadership creates obstacles, causing confusion and resistance to change

without adequate direction and support (Tran, 2023). Adaptive leadership emerges as particularly well-suited to 5IR challenges, promoting agility, experimentation, and continuous development through responsive leadership adjustments (Samanta et al., 2023; Butt et al., 2023).

Challenges and Opportunities Presented by 5IR for Educational Leadership and Management

The Fifth Industrial Revolution presents both significant challenges and transformative opportunities for educational leadership and management. The intricate and subtle relationship between leadership styles and effective 5IR integration reveals the complex terrain of organisational change and technological progress that educational leaders must navigate (Shal et al., 2024; Tran, 2023). The primary challenge lies in effectively managing organisational transformation whilst integrating advanced technologies into existing educational frameworks. However, this challenge simultaneously presents opportunities for transformational leaders to excel by presenting compelling future visions, encouraging innovative cultures, and enabling individuals to embrace change whilst taking responsibility for their roles (Donkor & Zhou, 2020).

Transformational leadership emerges as the most successful approach for inspiring and motivating teams through these complex transitions. Although transactional leadership contributes to 5IR implementation through clear expectations, goal-setting, and incentive systems that motivate technology adoption and workflow adaptation, its short-term focus may limit the full realisation of 5IR's transformational potential (Van Dun & Kumar, 2023; Noh, 2023). The opportunity exists for educational institutions to leverage transformational leadership approaches to maximise 5IR benefits whilst overcoming implementation challenges through strategic vision and cultural transformation.

METHODOLOGY

This study employed a descriptive survey research design to systematically gather and validate data, presenting facts as they exist within the investigated context at Ignatius Ajuru University of Education. The population comprised 58 academic staff members from the Department of Educational Management, with 100% census sampling adopted due to the manageable population size. Data collection utilised a standardised questionnaire titled 'Questionnaire on Appraisal of Educational Leadership and Management in the Era of the 5th Industrial Revolution (QAELME5IR)', employing a modified four-point Likert scale: Very High Extent (4), High Extent (3), Low Extent (2), and Very Low Extent (1). The instrument underwent face and content validation by the researcher's supervisor and two educational management specialists. Reliability testing using Cronbach Alpha Method yielded a coefficient of 0.74, confirming instrument dependability at .05 significance level through test-retest procedures with 20 respondents over two weeks. Complete response rates were achieved from all 58 participants. Data analysis employed descriptive statistics (mean and standard deviation) with 2.5 as the decision criterion for acceptance. Three null hypotheses were tested using SPSS version 20 and t-test statistical technique at 0.05 significance level.

RESULTS

Research question 1: What are the impact of era of 5IR on the educational leadership and management in Ignatius Ajuru University of Education?

Table 1: Impact of era of 5IR on educational leadership and management

s/n	Items	Mean	SD	VHE	Mean	SD	VHE
1	The 5IR has improved the quality of decision-making in educational leadership.	3.22	0.57	Very High Extent	3.62	0.67	Very High Extent
2	5IR technologies have enhanced communication between educational leaders and stakeholders.	3.19	0.61	Very High Extent	3.17	0.85	Very High Extent
3	Educational leaders in the university are adequately prepared to leverage 5IR technologies.	3.16	0.67	Very High Extent	3.52	0.63	Very High Extent
4	5IR has improved the efficiency of administrative processes in the university.	3.22	0.59	Very High Extent	3.76	0.51	Very High Extent
5	5IR have enhanced the management of educational resources.	3.14	0.69	Very High Extent	3.24	0.74	Very High Extent
Grand mean		3.19	0.63	Very High Extent	3.46	0.68	Very High Extent

The mean replies of male and female academic staff in the department of educational management are displayed in Table 1 above for research question one. The mean scores for item 1 are 3.22 and 3.62, with standard deviations of 0.57 and 0.67. The averages of item two are 3.98 and 3.17, with standard deviations of 0.61 and 0.85. Item 3 has standard deviations of 0.67 and 0.63 and means of 3.16 and 3.52. Item 4 has standard deviations of 0.59 and 0.51 and averages of 3.22 and 3.76. The mean scores for item 5 are 3.14 and 3.46 with standard deviations of 0.69 and 0.74. The findings show that both male and female respondents strongly agreed that the 5IR has improved the quality of decision-making in educational leadership, that 5IR technologies have improved communication between educational leaders and stakeholders, and other things. The grand mean is 3.19 and 3.46, with standard deviations of 0.63 and 0.68, respectively.

Research Question 2: What are the challenges and opportunities presented by 5IR for educational leadership and management in Ignatius Ajuru University of Education?

Table 2: Challenges and opportunities presented by 5IR for educational leadership and management

s/n	Items	Mean	SD	VHE	Mean	SD	VHE
6.	The adaptation of 5IR technologies poses significant financial challenges for educational institutions.	3.24	0.56	Very High Extent	3.17	0.71	Very High Extent
7.	Educational leaders and managers lack the necessary skill to effectively leverage 5IR technologies.	3.19	0.60	Very High Extent	3.55	0.57	Very High Extent
8.	5IR technologies present opportunities for personalised learning and improved student outcomes.	3.22	0.61	Very High Extent	3.38	0.68	Very High Extent
9.	5IR enables educational institutions to reach a wider audience and increase access to education.	3.18	0.57	Very High Extent	3.41	0.73	Very High Extent
10.	5 IR technologies enhance the efficiency and effectiveness of educational management	3.12	0.64	Very High Extent	3.34	0.67	Very High Extent
Grand mean		3.19	0.60	Very High Extent	3.37	0.67	Very High Extent

The mean responses of male and female respondents about the potential and difficulties given by 5IR for educational leadership and management at Ignatius Ajuru University of Education are displayed in Table 2 above for research question two. Item 6 contains mean scores of 3.24 and

3.17 with standard deviations of 0.56 and 0.71; item 7 contains means of 3.19 and 3.55 with standard deviations of 0.60 and 0.57; item 8 contains means of 3.22 and 3.38 with standard deviations of 0.61 and 0.68; item 9 contains means of 3.18 and 3.41 with standard deviations of 0.57 and 0.73; and item 10 contains mean scores of 3.12 and 3.34 with standard deviations of 0.64 and 0.67. With a standard deviation of 0.64 and 0.67 and grand mean 3.19 and 3.37 According to the results, both male and female respondents firmly agreed that there are substantial financial obstacles associated with educational institutions' adoption of 5IR technologies; among other things, educational leaders and managers are not equipped to use 5IR technologies effectively.

Research Question 3: What strategic adaptations can educational leaders to address the challenges and opportunities of 5IR in Ignatius Ajuru University of Education?

Table 3: Strategic adaptations that educational leaders can use to address the challenges and opportunities of 5IR

s/n	Items	Mean	SD	VHE	Mean	SD	VHE
11.	Developing a clear strategic plan for 5IR adaptation is essential for educational institutions.	3.09	0.68	Very High Extent	3.00	0.76	Very High Extent
12.	Investing in professional development for educators and staff is crucial for successful 5IR implementation.	3.10	0.63	Very High Extent	3.17	0.89	Very High Extent
13.	Fostering a culture of innovation and experimentation is important for educational institutions to thrive in the 5IR era.	3.09	0.65	Very High Extent	3.17	0.81	Very High Extent
14.	Educational leaders should prioritise building partnerships with industries and other stakeholders to leverage 5IR opportunities.	3.07	0.64	Very High Extent	3.00	0.80	Very High Extent
15.	Effective communication and stakeholder engagement are critical for successful 5IR	3.07	0.68	Very High Extent	3.28	0.84	Very High Extent
Grand mean		3.08	0.66	Very High Extent	3.12	0.82	Very High Extent

The mean response of the respondents to the third study question, which focuses on the potential and difficulties of 5IR at Ignatius Ajuru University of Education, is displayed in Table 3 above. The mean scores for item 11 are 3.09 and 3.00, with standard deviations of 0.68 and 0.76. Item 12 has standard deviations of 0.63 and 0.89 and averages of 3.10 and 3.17. Item 13 has standard deviations of 0.65 and 0.81 and means of 3.09 and 3.17. Mean scores for item 14 are 3.07 and 3.00, with standard deviations of 0.64 and 0.80. The mean scores for item 15 are 3.07 and 3.28, with standard deviations of 0.68 and 0.84. With a standard deviation of 0.66 and 0.82 and a grand mean of 3.08 and 3.12 According to the data, both male and female respondents believe that creating a clear strategy plan for 5IR adoption is crucial for educational institutions; among other things, that funding staff and teacher professional development is essential to the effective implementation of 5IR.

Test of Hypotheses

Hypothesis 1: There is no significant relationship between the impact of the era of 5IR on the educational leadership and management in Ignatius Ajuru University of Education.

Table 4: t-Test (t) on the relationship between the impact of the era of 5IR and educational leadership and management

Variable	N	X	SD	Df	t-cal	t-crit.	s/level	Decision
Male	30	3.19	0.04	56	-2.69	1.96	0.05	Rejected
Female	28	3.46	0.25					

In Table 4, the mean and standard deviation for male respondents were 3.19 and 0.04, respectively, whereas the mean and standard deviation for female respondents were 3.46 and 0.25, respectively. For a two-tailed test, the t-crit was 1.96 at the 0.05 level of significance, and the t-cal value was -2.69. The outcome indicated that t-cal was more than critical, indicating that the null hypothesis was rejected. Thus, the results showed that educational leadership and management at Ignatius Ajuru University of Education are significantly impacted by the 5IR period.

Hypothesis 2: There is no significant relationship between the strategies adapted by educational leaders to address the challenges and opportunities and 5IR in Ignatius Ajuru University of Education.

Table 5: t-test (t) on the relationship between the strategies adapted by educational leaders to address the challenges and opportunities and 5IR

Variable	N	X	SD	Df	t-cal	t-crit	s/level	Decision
Male	30	3.08	0.13	56	-.728	1.96	0.05	Accepted
Female	28	3.12	0.12					

Table 5 showed that male respondents had a mean and standard deviation of 3.08 and 0.13 respectively, while female respondents had a mean and standard deviation of 3.12 and 0.12 respectively. The t-cal was -.728, while the t-crit was 1.96 at 0.05 level of significance for two-tailed test. The result showed that t-cal was less than the t-crit which means that the null hypothesis was accepted. Therefore, the findings indicated that between the strategies adapted by educational leaders to address the challenges and opportunities and 5IR.

DISCUSSION OF FINDINGS

The results of research question one, presented in Table 4, indicated that the 5IR has augmented the quality of decision-making in educational leadership; that 5IR technologies have facilitated communication between educational leaders and stakeholders; that educational leaders in the university are sufficiently equipped to utilise 5IR technologies; that 5IR has increased the efficiency of administrative processes within the university; and that 5IR has improved the management of educational resources. The discovery aligns with the assertions of Shal et al. (2024) and Tran (2023), who articulated that the correlation between leadership styles and the effective implementation of the Fifth Industrial Revolution (5IR) is intricate, involving library leaders' capacity to motivate, empower, and direct their personnel in adopting transformative technologies to improve library services, resources, and operations.

Table 5 of the study elucidated the mean responses of participants about the strategic

adjustments that educational leaders may employ to tackle the difficulties and possibilities presented by the Fifth Industrial Revolution at Ignatius Ajuru University of Education. The respondents concurred that: formulating a definitive strategic plan for 5IR adaptation is vital for educational institutions; investing in professional development for educators and staff is imperative for successful 5IR implementation; cultivating a culture of innovation and experimentation is essential for educational institutions to flourish in the 5IR era; educational leaders should prioritise establishing partnerships with industries and other stakeholders to capitalise on 5IR opportunities; and that effective communication and stakeholder engagement are crucial for successful 5IR outcomes. This finding contradicts the assertion of Abata-Ebire et al. (2023), who claimed that effective communication, collaboration, and accountability are crucial for alleviating the potential disadvantages of laissez-faire leadership and ensuring that staff possess the necessary resources, skills, and support to adopt 5IR technologies and initiatives. Samanta et al. (2023) concurred that adaptive leadership is especially appropriate for addressing the problems and possibilities posed by the Fifth Industrial Revolution in academic libraries.

CONCLUSION

This study has demonstrated the identification of viable solutions for educational leaders and managers to traverse these hurdles and capitalise on the possibilities given by the Fifth Industrial Revolution. The fifth industrial revolution poses both problems and opportunities for educational leadership and administration. To address these changes, educational leaders and administrators must formulate strategic adjustments, such as investing in infrastructure and capacity development, enhancing digital literacy, and cultivating a culture of innovation and creativity. By adopting the opportunities given by the Fifth Industrial Revolution enable educational institutions to better educational results, promote student engagement, and equip students for success in a fast evolving environment.

Recommendations

Based on the appraisal of educational leadership and management in the era of 5IR, the following recommendations are made:

- Educational institutions should invest in the necessary infrastructure and capacity building to support the adoption of 5IR technologies.
- Educational leaders and managers should promote digital literacy among educators and students to ensure that they have the necessary skills to thrive in a rapidly changing world.
- Educational institutions should develop strategic partnerships with industry and other stakeholders to stay abreast of emerging trends and technologies.

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