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**INFLUENCE OF DIGITALIZATION ON PERSONNEL MANAGEMENT IN PUBLIC
SECONDARY SCHOOLS IN BWARI AREA COUNCIL, F.C.T-ABUJA: IMPLICATION
FOR CURRICULUM-IMPLEMENTATION USING PHYSICS AND SOCIAL STUDIES AS
EXAMPLES**

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Abstract

The study investigated the influence of digitalization on school personnel management in Public Secondary Schools, Bwari area council, FCT-Abuja, and highlights the implications for successful curriculum implementation in Physics. A descriptive survey design was adopted for the study. The population for the study was 2500, comprising all teachers and 13 Principals from the 13 public secondary schools in the Bwari Area Council. A simple random sampling technique was used to select a sample of 200 staff for the study. A questionnaire, titled Digitalization and School Personnel Management Questionnaire (DSPMQ), was used for the study. The instrument was validated by experts in educational management, measurement, and evaluation, and the reliability index was tested using Cronbach's Alpha to obtain 0.75 suitable for the study. The descriptive statistics of mean and standard deviation were used to answer the research questions, while the inferential statistics of an independent t-test were used to test the hypotheses at a 0.05 level of significance. The findings of the study revealed that there was a significant influence of the biometric attendance system as well as Closed Circuit Television Cameras on school personnel management in public secondary schools in Bwari Area Council, F.C.T -Abuja. Based on the findings, the study recommends that the Ministry of Education should provide training to the school staff on the use of the biometric attendance system and provide circuit cameras in all the schools as a tool for monitoring their attendance, to enhance efficiency in the school personnel management in the secondary school system.

Keywords: Digitalization, School Personnel Management, Biometrics Attendance System, Closed Circuit Television Cameras.

Introduction

The advent of digitalization has been felt across various nations around the globe. Nigeria is not left behind, as seen in the various sectors, including education, where the influence of digitalization has been largely observed. The influence is in terms of the advancement in the speed of carrying out office work and also assisting in basic leadership in the educational institution. The use of digitalization has the capacity to influence the choices people make, transform the way they carry out their responsibilities, and enhance personal capacity to convey information (Whitney, 2017). Digitalization is a digital transformation process that involves the integration of digital technologies such as biometric attendance machines, Closed Circuit Television Cameras, among others, into all spheres of a business endeavour, leading to changes in the way business operates and deliver value to customers.

Across the centuries, various modalities and advances have been manufactured and widely used in the quest to speed up businesses, especially as regards businesses in educational matters during curriculum implementation. Curriculum is defined as all the planned and unplanned learning experiences in and outside the school for which the school accepts responsibility (Wilfred-Bonse 2019). It is the operational medium through which instructions are carried out. The process of putting all that has been planned as a curriculum document into practice in the classroom through the combined effort of teachers and others concerned with educational progress is regarded as curriculum implementation (Wilfred-Bonse 2018). The utilization of innovations and frameworks other than manual exercises has proven to work effectively during curriculum implementation, making tasks less stressful and resulting in more reliable outcomes.

In the 21st century, institutions such as schools need to pay attention to attendance tracking and monitoring for their personnel during curriculum implementation. This is because monitoring of attendance is believed to be a vital component with regard to aiding the security of personnel as well as their effective performance (Thakkar, 2015) if the curriculum is implemented successfully. Thus, if the educational goals must be achieved, it is pertinent that the management of school personnel by means of digitalization be taken into consideration during curriculum implementation. In order to ensure the effective management of school personnel, it has become very crucial to consider the inclusion of digitalization, which entails monitoring of personnel attendance, evaluation of personnel performance, as well as an effective communication network in the school organization during the curriculum implementation process. There are several and numerous benefits of digitalization that can be imparted on educational delivery, especially in this time and age where the world is a global village. However, many educational institutions at primary, secondary, and tertiary levels experience the challenge of utilizing digitalization effectively with regard to school personnel management.

Brennen & Kreiss (2016) stress that digitalization is the process of maximizing digital technologies to transform business models, organizational activities, and societal operations, thereby improving efficiency, productivity, and user experiences. It involves more than simply converting analog data into digital form; digitalization includes the integration of digital technologies into all aspects of life and work. In view of this, Borisenkov et al. (2021), opined that digitalization in education is the utilization of a variety of approaches for the transitioning of conventional modes of teaching and learning to the virtual world, including the use of online assessments, web-seminars, conferences, workshops, and electronic platforms, to mention but a few. It is the utilization of a variety of technological approaches for the transition of conventional modes of teaching and learning to the virtual world. Digitalization of the school personnel involves the teachers, students, administrative staff, as well as other employees' usage of technology, which would result in the effective and efficient management of their activities. In addition, Gillpatrick (2020) is of the view that the

transfer of data from analogue to digital technologies is perceived as a major driver of innovation in teaching and learning during curriculum implementation.

Furthermore, technology has already impacted the effectiveness of personnel management due to the present-day personnel management courses that make use of various online avenues for training and development of staff, thereby enabling them to learn at their own pace and comfort (Uwaleke & Iyala, 2020). Despite all these benefits, there are also some challenges that are associated with the use of digitalization for personnel management in the educational process, such as the inadequate supply of power, technical issues like malfunctioning of the machine, among others.

Personnel Management, according to Vaghela (2015), is a phase of management that deals with the effective control and utilization of the workforce in contrast to other sources of power. It entails planning, organizing, directing, and controlling various operative functions of procuring, developing, maintaining, and using a labour force in such a manner that the objectives for which the organization was established would be attained both in terms of economy and its effectiveness. The planning, organizing, directing and controlling have to do with human resources. Human resources are very significant to the growth and development of the school organization. Human beings are in charge of all other variables that exist in the organization. The school personnel are saddled with the responsibilities that may often be overwhelming and heavy on them, especially when it comes to handling sensitive and confidential data, dissemination and communication of information in the university, hence the need for the digitalization of school personnel, which involves the usage of computer biometric systems and so on, as mentioned earlier.

A computer biometric personnel clocking system is referred to as an automated process that verifies the identity of staff as well as captures their traits at high speed and with high levels of accuracy. The effective management of the computerized personnel clocking systems has the capacity to ensure the overall performance of the school system. An effective computerized biometric employee clocking system has the advantages of dealing with attendance timing, identification of personnel, as well as payroll computation and also to ensure a more accurate staff attendance records, eliminating the possibility of some staff members clocking in and out for their colleagues, an authentic identification of workers and more accurate payroll computation for staff members, which results in a positive and productive set of workers (Shehu & Dika, 2011).

Biometrics is a software solution used for data entry, data tracking, and data management of all human resource operations of an organization. It serves as a central repository for employee-related information and streamlines human resource processes such as recruitment, payroll, benefits administration, performance management, and compliance with labor laws. The bio-metrics is designed to automate and support human resource functions and decision-making. Thus, the benefits of using biometrics include reducing administrative burden and paperwork. This may be adopted for effective school personnel management. Physical biometrics consists of DNA, fingerprints, facial recognition, and eye examination, that is, iris and retina. Conducting biometrics comprises the acknowledgement of the voice and handwritten marks (Mustafa, 2017).

It was observed that the management of school personnel during curriculum implementation over time, in public secondary schools in Bwari Area Council, Abuja, has worked out different traditional mechanisms aimed at combating the high rate of absenteeism from work, as well as other misconduct among various staff members (Kanu, 2024). However, it has been noted that such methods, rather than improving the efficiency of school personnel management, prove abortive. One wonders if digitalization will influence the public secondary school personnel management in the Bwari Area Council in a positive way during the curriculum implementation process. Thus, the

study seeks to carry out an investigation into the digitalization of school personnel management in the public secondary schools in the Bwari Area Council, FCT-Abuja, Nigeria.

Statement of the Problem

One of the most prevalent challenges regarding school personnel management in secondary schools in Abuja is absenteeism. Several staff members abscond from work while they receive their monthly pay, thus leading to resource misappropriation and wastage. The use of analogue techniques, such as constant and close monitoring, has not been effective in reducing the rate of misconduct among the staff. This is due to the fact that despite the hand-operated as well as regular checks for all activities carried out by the staff, absenteeism, lateness to work, truancy and other acts of indiscipline are very much prevalent among the staff of public secondary schools in Bwari Area Council. The resultant effect occasioned by the use of the traditional methods aforementioned has given rise to the relevance of the advent of digitalization in the school personnel management in the school system. In addition, there is a serious challenge of the abuse of social media as some staff engage in personal phone conversations, browsing inappropriate sites during their office hours. In view of the above-mentioned challenges, the researcher decided to examine the influence of digitalization on school personnel management in public secondary schools in the Bwari Area Council, FCT-Abuja.

Purpose of the study

The main purpose of the study is to investigate the influence of digitalization on school personnel management in Public Secondary Schools, Bwari, Abuja. Specifically, the study seeks:

1. To determine the influence of the biometric attendance system on school personnel management in public secondary schools in Bwari Area Council, F.C.T.- Abuja.
2. To examine the influence of closed-circuit television on school personnel management in public secondary schools, in the Bwari Area Council, F.C.T.- Abuja.

Research Questions

- i. What is the influence of the biometric attendance system on school personnel management in public secondary schools in Bwari Area Council, F.C.T., Abuja?
- ii. What is the influence of Closed Circuit Television on school personnel management in public secondary schools in Bwari Area Council, F.C.T.- Abuja?

Statement of Hypotheses

HO₁: There is no significant influence of the biometric attendance system on school personnel management in public secondary schools in the Bwari Area Council, F.C.T.- Abuja

HO₂: There is no significant influence of Closed Circuit Television on school personnel management in public secondary schools in Bwari Area Council, F.C.T.- Abuja.

Research Methodology

The study is a quantitative research employing a descriptive survey design, which was adopted in the study. The population of the study comprises 2500 teachers from the 13 public secondary schools in the Bwari Area Council. 200 teachers were selected as the sample size, which includes principals from two senior secondary schools for the study, Krejcie and Morgan (1970). The instrument for the data collection was a structured 10-item questionnaire titled "Digitalization and School Personnel Management Questionnaire(DSPMQ), and it was constructed following the modified Likert scale 4-point rating scale of SA= strongly agree (4), A=Agree (3), D=Disagree (2), and SD= Strongly Disagree (1). The researcher, with the help of two research assistants, administered the questionnaires. The instrument was validated by experts, and the result obtained was 0.80 as the logical validity index. The data obtained was used to compute the reliability index

of the instrument using Cronbach's Alpha reliability method, for which the result obtained was 0.75. The result obtained was used to find the reliability indices of 0.75 for the questionnaire. All the items on the questionnaire were answered using the descriptive statistics of mean and standard deviation to answer the research questions, while the independent t-test statistics were used to test the hypotheses at a 0.05 level of significance. The decision criterion for classifying each item into 'agreed and disagreed' was 2.50.

Results

Responses to the Research Questions

The results of the responses given to the research questions are presented below in Tables1-2:

Research Question 1: What is the influence of the biometric attendance system on school personnel management in Public Secondary Schools in Bwari Area Council, F.C.T.- Abuja?

Table 1: Mean and Standard Deviation showing the influence of biometric attendance system on school personnel management in Bwari Area Council, F.C.T.-Abuja.

S/N	Items	SA	A	D	SD	Mean	Std Dev	Remarks
1	A biometric attendance system enhances staff punctuality	150	20	20	10	3.55	1.06	High
2	Biometric attendance systems help to easily identify staff in real time	140	25	25	10	3.48	1.04	High
3	A biometric attendance system ensures the integrity of data	145	20	20	15	3.48	1.04	High
4	Biometric attendance systems effectively capture the work hours of personnel	130	30	25	15	3.38	1.03	High
5	The use of a biometric system provides accurate data for staff payroll	140	30	20	10	3.50	0.95	High
Cluster Mean						3.48	1.02	

Scale Mean 2.50, n=200

From table 4.1, it could be deduced that the mean values of 3.55, 3.48, 3.48, 3.38, and 3.50 were obtained for items 1,2,3,4, and 5. The cluster mean of 3.48 was greater than the scale mean of 2.50, which indicated that virtually all the respondents agreed that the use of biometric attendance system enhances staff punctuality, identifies staff in real time, ensures the integrity of data, effectively captures the work-hours of staff, and provides accurate data for staff payroll Furthermore, the cluster mean being 3.48 which is greater than the mean scale of 2.50 for a 4 point likert scale. This implies there is a strong influence of the biometric attendance system on school personnel management of public secondary schools in the Bwari Area Council, FCT, Abuja.

Research Question 2: What is the influence of Closed Circuit Television on school personnel management in Public Secondary Schools in Bwari Area Council, F.C.T.- Abuja?

Table 2: Mean and Standard Deviation showing the influence of Closed Circuit Television Cameras on school personnel management in public secondary schools in Bwari Area Council, F.C.T., Abuja.

S/N	Items	SA	A	D	SD	Mean	Std Dev	Remarks
6	The closed-circuit television helps in improving personnel productivity	150	25	15	10	3.53	0.95	High
7	Closed-circuit television enables prompt tracking of events in the school	140	20	20	20	3.40	0.91	High
8	Closed-circuit television improves the safety of school personnel	150	20	15	15	3.53	0.94	High
9	Closed-circuit televisions help to monitor the staff and students' relationship	130	30	20	20	3.35	0.89	High
10	The use of closed-circuit television helps to curb the rate of indiscipline among school personnel	155	25	10	10	3.63	0.86	High
Cluster Mean						3.49	0.91	

Scale Mean 2.50, n=200

From table 2, it could be observed that the mean values of 3.53, 3.40, 3.53, 3.35, and 3.63 were obtained for items 6,7,8,9, and 10. The cluster mean was 3.49, which is greater than the scale mean of 2.50 on a 4-point Likert scale. This indicated that virtually all the respondents agreed that closed-circuit television helps in improving personnel productivity, enables prompt tracking of events in the school, improves the safety of school personnel, helps to monitor staff and students' relationships, and helps to curb the rate of indiscipline among school personnel. The implication of this is that there is a strong influence of closed-circuit television on school personnel management in public secondary schools in Bwari Area Council, F.C.T.-Abuja.

Test of Hypotheses

The two null hypotheses were tested using an independent t-test at a 0.05 level of significance, with results presented in Tables 3-4.

HO₁: There is no significant effect of the biometric attendance System on school personnel management in Public Secondary Schools in Bwari Area Council, FCT- Abuja.

Table 3: t-test analysis showing influence of biometric attendance system on school personnel management in public secondary schools in Bwari Area Council, FCT-Abuja.

Significant at degree of freedom=398; $P < 0.05$, $t_{\text{calculated}}$

S/N	Variables	N	df	Mean	Std Dev	t_{cal}	Sig. (2-tailed)	Decision	Conclusion
1	Biometric Attendance System	200	398	41.81	8.40	34.902	0.000	Reject H_{01}	Significant
2	Personnel Management	200		20.94	3.14				

Table 3 showed the t-test analysis of the impact of the biometric attendance system on school management in public secondary schools in the Bwari Area Council, FCT Abuja. The t-calculated value was 34.902. The P-value of 0.000 was less than the level of significance of 0.05, and the degrees of freedom were 398. Thus, hypothesis 1 was therefore rejected, implying that the biometric attendance system had a significant influence on school personnel management of public secondary schools in Bwari Area Council, FCT Abuja.

HO₂: There is no significant influence of Closed Circuit Television Cameras on school personnel management in Public Secondary Schools in Bwari Area Council, FCT- Abuja

Table 4: t-test showing the influence of Closed Circuit Television on school personnel management in Public secondary schools in Bwari Area Council, FCT Abuja.

Significant at $df=398$; $P < 0.05$

S/N	Variables	N	Df	Mean	Std Dev	t_{cal}	Sig. (2-tailed)	Decision	Conclusion
1	Closed Circuit Television Cameras	200	398	41.77	8.430	30.812	0.000	Reject H_{02}	Significant
2	Personnel Management	200		20.94	3.144				

Table 4 revealed the t-test analysis of the influence of Closed Circuit Television Cameras on school personnel management in public secondary schools in Bwari Area Council, FCT Abuja. The t-calculated value of 30.812. The p-value of 0.000 was less than 0.05 level of significance and the degree of freedom is 398. Thus, hypothesis 2 is therefore rejected and this implied that closed circuit television cameras had significant influence on school personnel management in public secondary schools in Bwari Area Council, FCT Abuja.

Summary of Findings

The summary of findings from the above study implies the following;

1. There is a significant influence of the biometric attendance system on school personnel management in public secondary schools in Bwari Area Council, FCT, Abuja.
2. There is a significant influence of closed-circuit television on school personnel management in public secondary schools in the Bwari Area Council, FCT, Abuja.

Discussion

Findings on research question one indicated that virtually all the respondents agreed that the use of a biometric attendance system enhances staff punctuality, helps to easily identify staff in real time,

ensures the integrity of data, effectively captures the work-hours of personnel, and provides accurate data for staff payroll, for school personnel management of public secondary schools in Bwari Area Council, FCT Abuja. The data provided on the biometric attendance system includes the staff's fingerprints, retinal and iris scans, the arrangement of the blood vessels of the fingers or the whole hand, as well as the voice of the individual. This biometric attendance system assists in curbing acts involving fraud and other non-disciplinary actions within the school premises. The challenge of absenteeism from work, lateness and truancy and even impersonation are dealt with through the integration of a biometric attendance system into the school system.

The findings of the study also indicated that there is a significant impact of closed-circuit television cameras on school personnel management in public secondary schools in the Bwari Area Council, FCT Abuja. The use of closed-circuit television cameras highlighted the potential benefits of CCTV cameras in promoting discipline, safety, and classroom management, preventing crime, as well as concerns related to privacy, autonomy, trust, student motivation, engagement, critical thinking skills, and classroom dynamics; thus revealing the influence of closed-circuit television cameras on school personnel management of public secondary schools. The cameras are often placed at strategic places in the school, including the entrances, walkways, hallways, stairways, and classrooms. The cameras help in monitoring any potential security threats while ensuring that all staff members carry out their responsibilities efficiently and effectively.

Implication for Curriculum Implementation.

The findings to curriculum implementation imply that since there is a significant influence of biometric attendance system and closed circuit television on school personnel management in public secondary schools in Bwari Area Council, FCT Abuja the biometric attendance system and close circuit television should be adopted on personnel management in public secondary schools in Bwari Area Council, FCT Abuja for efficiency during curriculum implementation of school subjects by teachers using Physics and Social Studies as example. Physics is a science subject, while Social Studies is an integrated subject that cuts across and borrows concepts from Social Science, Arts, and Humanities to study human existence in the environment. The implication of this is that curriculum in science, social science, arts, and humanities in all schools should be implemented successfully using a biometric attendance system and a closed-circuit television camera for proper attendance of staff in the workplace.

Conclusions

Based on the findings of the study, it is concluded that there is a significant impact of biometric attendance system which results in the safety if data and identity of staff, thus facilitating effective school personnel management in terms of reducing staff lateness to work as well as truancy among staff in public secondary schools in Bwari Area Council, FCT Abuja, and that there is a significant impact of closed circuit television cameras, as a means of promoting discipline, safety and classroom management, thus preventing any form of staff misconduct as well as other acts of indiscipline among staff members in the school system.

Recommendations

The study therefore recommended that the Ministry of Education should ensure that the staff members of the public secondary schools in Bwari Area Council undergo regular seminars or workshops sponsored by the ministry to enable them to comprehend the relevance of the use of the biometric attendance system, rather than seeing it as a means of policing them. This would ensure both their effectiveness and efficiency in the school system.

The Ministry of Education (MOE) should formulate policies that ensure that closed-circuit television cameras are provided across all the public secondary schools to effectively manage the school personnel, thereby reducing indiscipline and misconduct among the staff of public secondary schools in Bwari Area Council, FCT-Abuja, especially in implementing the school curriculum using Physics as an example.

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