

## DATA DRIVEN DECISION MAKING TOOLS FOR EFFECTIVE SECONDARY SCHOOLS IN NIGERIA

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**ABSTRACT:** This paper examined data driven decision making tools for effective secondary schools in Nigeria. The Data-driven decision-making (DDDM) tools have become essential in improving the effectiveness of secondary schools in Nigeria. These tools enable educators, school administrators, and policymakers to make informed decisions based on empirical data rather than intuition. This study reviewed various DDDM tools, including Learning Management Systems (LMS), Student Information Systems (SIS), data analytics software, and artificial intelligence-based applications, highlighting their role in enhancing teaching, learning, and administrative processes. Moreover, the study examined the impact of these tools on student performance monitoring, resource allocation, and institutional management. It also identifies key challenges affecting their implementation, such as inadequate digital infrastructure, lack of technical expertise, and resistance to technology adoption. Additionally, the research emphasized the need for training programs, policy support, and collaboration between government agencies and private stakeholders to facilitate the widespread adoption of data-driven educational practices. The paper highlighted that integrating DDDM tools in Nigerian secondary schools enhances school efficiency, improves student learning outcomes, and promotes accountability in education. The study concluded that data-driven decision-making tools play a vital role in enhancing the effectiveness of secondary schools in Nigeria. Amongst others, the paper suggested that Government and Policymakers should develop and implement policies that mandate the integration of data-driven decision-making tools in secondary schools.

**Keywords:** Data, Drive, Decision Making Tools, Secondary Schools, Nigeria.

Reference to this paper should be made as follows:

Gentry, D. O., & Olagunju, F. S (2025). Data driven decision making tools for effective secondary schools in Nigeria. *International Journal of Strategic Leadership, Education and Social Sciences*, 1(2), 339-361.

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## INTRODUCTION

Organizations and governments all over the world, individuals are regularly involved in planning activities both consciously and unconsciously. Education is a compound endeavor. It comprises of various processes of decision making concerning different issues and educational problems. The decision made could also be categorized as the collection of scarce teaching and learning resources, the enrolment of students, employment of teaching and non-teaching staff, introduction of the new curriculum, student and staff discipline, staff training and methods of improving pedagogy, resource allocation and educational research, etc. (Oku et al., 2008).

Data serves as the pathway upon which business decisions are made, as such, it must be intentionally planned and guided (Adiele et al., 2010). For a firm to compete satisfactorily in any

industry, it must recognize the importance of data gathering and data analysis. These will no doubt help to improve the productivity and efficiency of the business or organization. Data is very essential in any research experiment because it inhabits a central place in making decisions based on findings resulting from the investigation of such data. Given its central role, it follows that such an important asset as data, deserve effective planning and management in order to protect the integrity and provide an opportunity for effective problem solving which give rise to good decision making. The skills of data gathering and analyses are equally a prerequisite to arriving at an outcome that will be instrumental to solving the problem(s) at hand.

Educational institutions today face intense pressure from rapidly changing external environments and the needs of an ever-evolving global economy. These pressures are creating new demands on schools to produce effective students with skill to compete with the external world (Moran, 2009). To cope with these objectives, improving the quality of school effectiveness through the mobilization of teachers and providing them opportunities in school decision making.

In spite of the wholesome importance of data, it has been observed that most educational institutions have no record of relevant information or data gathered. At the point of decision making, it is often discovered that most data are misplaced when needed (Mark, 2017). In some cases, there is evidence of poor continuous assessment record management, student data, staff data, facilities data etc. leading to falsification in certain cases. The inadequacy of data planning practices in these areas hinders the ability of secondary schools teachers and administrators to make informed decisions leading to suboptimal resources allocation, resulting in wasted resources, unmet needs and inefficient operations. It also gives rise to reduced productivity and decreased stakeholders' satisfaction and compromised student outcomes, which leads to reduced academic achievement, lower graduation rates and decreased post-secondary readiness.

## **CONCEPTUAL CLARIFICATIONS**

### **Decision Making**

Decision making is a major responsibility of all administrators. It is the key function of every administrator that at every stage of the management process, he makes choices among alternative course of action. Heintx and Koontz in Nwankwoala (2016) that decision making is the selection of course of action from among alternatives. It is a central job of constantly choosing what to be done, who to do it and when and where to do it and at times how it will be done. Okumbe (1998) posited that decision making is the process of specifying the nature of particular problem and selecting among available alternatives in order to solve the problem. This definition of decision-making indicates that a problem precedes any decision and that there must be a number of alternative courses of action from which an optimum course will be selected. Knezevich (2009) stated that decision and decision making as follows:

A decision is defined as a conscious choice action from among a well-defined set of often competing alternatives. Decision making is a sequential process culminating in a single decision or series of decisions (choices) which stimulate moves or actions. The sequences of activities called decision making result in the selection of course of action from alternative course intended bring about the future state affairs envisage.

Decisions are a composite of values, facts, and assumptions. Each or all of these may be subject to change from time. Decision making, therefore, is not a onetime activity but rather a

continuing enterprise (Okumbe, 1998). Every successful organization must make decision that enable the organization to achieve its goal and which must meet the critical needs of members of the organization (Morphet et al, 1982). Moreover, Alkin (1992) stated that decisions are made daily in school about the conduct of work, the distribution of resources, and short term goals.

Decision involve policies (the definition of objectives), resources (people, money materials, and authority), and means of execution (integration and synthesis). Insofar as the value content of this type of decision is concerned, the school principal should identify two major values; policy decision that seek purposive action; executing decision that seek coordination of action (Wilson, 2007).

Thus, decision-making is very important and significant in school and in any organization at large to conduct work, distribute resources, plan short-term and long-term goals which bring about the future state of affairs as an intention, and activities of the school. Moreover, a school leaders' main job is to lead the school through effective decision making, and quite often they have to decide on what is to be done, who to do it, and when and where is to be done.

It is the process of choosing from among alternative course of action. It is also the process by which decisions are not only arrived at but implemented. To Ukeje et al (2000), if decision making is not converted into action, it is only a good intention. A decision is the result of deliberation, calculation and thoughtful response to internal and external conditions of the environment. Cezar (2011) stated some prerequisites for making decision include:

- Clearly identify the objectives or goals you want to achieve;
- Gather as many information you can to assess your options;
- Elaborate several possible choices in accordance with your values;
- Reflect on the possible results of each course of actions and estimate if it is acceptable;
- Make a brief list of pros and cons, along with what you consider to be very vital, vital and less vital;
- Learn from previous experience and ask for opinions from those who had a similar situation to contend with.

Cezar (2011) opined that it is only after all the steps above were completed that people can make the decision and monitor their results to make sure they obtain the desired outcome. For simple and obvious choices we can rely on intuition, but for those that are complex and difficult to make closer look is needed. Cezar (2011) posited that people can rely on their intuition when the following happens:

- They are facing a time-urgent situation: In extreme situations such as fire and near death occurrence, even short delays caused by reasoning through a formal decision making process can result in a disastrous aftermaths.
- Conditions are dynamic or goals are ambiguous: If a situation is changing rapidly, then it makes sense of focus on a satisfying solution that can be quickly found.

### **The Nature of Decision Making**

Decision making is the most aspect of educational management. In fact, some authors in the field of management suggest that management is decision making. Decision making is considered to

be the “heart of management”. In the process of planning, organizing, staffing, directing, reporting, and budgeting a manager makes decision (Newcombe & McCormick, 2001).

Decision making is applied in any of the organization activities. Griffith cited in Owen (1997) has highlighted three important concepts concerning the nature of decision making. These are:

- The structure of an organization is determined by the nature of its decision making process;
- An individual’s rank in an organization is directly related to the control exert over the decision process; and
- The effectiveness of an administration is inversely proportional to the number of decision that he/she must personally make.

School administration at all levels along the hierarchy makes decision. The decision may ultimately influence the school’s members. It can therefore be argued that, school principals who make decision on important school issue without adequate information do not facilitate to attainment of organizational goals and frequently lower the morale of members of the organization. As a result, the school principals should facilitate the process of decision making and the communication of those decisions to the members of the organization to attain the school goal and to enlarge the moral of teachers and other staffs. Moreover, since all decisions involve future events, the school principals should learn to analyze the certainty, risk and uncertainty associated with alternative course of action (Morphet et al., 1982).

Vroom-Yetton and Jaggon cited in Invacivich et al. (2005), effective leadership select the appropriate decisions set and permit the optimal participation of followers. This indicates that, even though decision making is an important managerial process, many decisions should be made by member of the groups.

## **TYPES OF DECISION**

The different types of decisions taken by educational managers are some soft-landing directed by the different issues and problems to be handled. Educational managers are confronted with series of problems and issues ranging from recruitment and admission issues, to remuneration issues, supervision and disciplinary matters, etc.

However, some scholars have tried to categorize the different types of decisions. Thus Peretomode (1991) in Nwankwoala (2018) opined that there are two types of decision which are programmed and un-programmed decisions. Chiffith cited in Assefa (1999) classified decision into “individual and group decision, personal and organizational decisions, programmed and non-programmed decision intermediary, appellate and creative decisions, rational and non-rational decisions. In addition, other writers such as

Ivan et al. (2005) and Okumbe (1998) classified based on nature of the problem as programmed decision that is repetitive and routine activities and none-programmed decisions that is novel, unstructured, and new problem.

### **Programmed Decision**

Nwankwoala (2018) stated that these are those decisions that are properly structured, repetitive and routinized and there are laid down rules and procedures for handling them. They are not high

risks decision and as such can easily be delegated. School administrators (principals and headmasters or headmistresses) are known to make this type of decisions. Programmed decisions are also called routine decision. They are decisions taken every now and then. Adiele (2020) stated that programmed decision is a process to be followed in making decision is already laid down. The procedures to be followed in arriving at a programmed decision have already been prescribed and specified. Example is the admission of students into tertiary institutions is based on an existing rule of five credits including Mathematics and English. In this type of decision the educational leader do not need to task himself so much about what should be done, but rather rely on established rules. Other example suffices here: where there exist rules that:

- Guide employment procedure: for example rules that specify the employment of teaching staff based on teaching qualifications;
- Specify the allocation of offices to academic staff based on seniority;
- Guide the promotion of staff based on three years interval period;
- Guide admission process: For example the quota system of admission into tertiary institutions and the policy of indigenes and non-indigenes in state owned tertiary institutions.

The educational implication of the above is that the educational leaders can develop rules and procedures to guide the routine activities of the educational institutions that he superintends by specifications. Thus, the likelihood of error is greater in un/non-programmed decisions than in programmed decision making.

### **Un-programmed/Non programmed Decision**

Nwankwoala (2018) posited that these are uncommon and unique decisions. They are always new and are high risks in nature. They are not laid down programs, rules and regulations for handling the problems that can lead to such decision due their newness. Un-programmed decisions may demand greater expenses. An example of an un-programmed decision that can be taken by a school manager is a decision to construct a new classroom block or workshop house. Okoroma (2016) stated that the making of un-programmed decision demands that administrators should rely heavily on their problem-solving abilities, creativity, intuition and tolerance. In fact, the ability of school administrators to make good un-programmed decisions portrays their effectiveness in managing school affairs. On the other hand, managers of schools who are unable to un-programmed decisions obviously showcase their ineffectiveness.

### **Individual and Group Decisions**

Individual and group decisions are kind of decision based on a number of people involved in decision making process. Based on the nature of the problem and the situation, some decisions may be made better by group, while others may be handled by individuals. As pointed out by Obanya (2014) stated that the question of decision making by individuals or involving other should not be determined by leader personal preference, but by the nature of the problem and the situation.

Smith (2011) on his part underlined that individuals and not group, can usually reach more efficient decision for issues that are relatively simple in their elements, which are

objectively and easily separable, and where the issue requires a strict sequence of acts that can be performed readily by single person.

Group decision making is sometime referred to by other writers as participative decision making, collective judgment management or plural management (Jake, 2008). Obanya (2014) stated that in large and complex organization most of the basic and strategic decisions are made by a group of managers rather than by individuals. Decisions relating to the determinant of the organizational objective and formulation of plans, strategies and policies fall in this category.

Today important decisions are made by group than individuals. This is because there is great deal of information available in a participative decision-making process. Supporting this idea, Chanda cited in Ike (2010) stated that group decision would become particularly appropriate for non-programmed decisions because these decisions are complex and few individuals have all knowledge and skills necessary to make the best decisions. This implies that groups can make higher quality decision than individuals because different ideas come together from different groups and select the best form the given alternatives.

Thus, in school context, the school principals are not the only person that makes decision and the other people like teachers implement the decision without involving on the issues; and also the others should to accept the decision to agree with the action to be chosen. Supporting this idea, Sunday (2001) stated that schools principals no longer make decision on their own. That is because they need information and advice from several sources especially teachers and pupils to act rationally.

Generally, decisions may be taken either by an individual or groups. Even if the group decision making may have its own limited disadvantages in school organizations, making the decisions by group is preferable than one individuals. As argued by Richard, (2013), group decision can bring more resource to many decisions than a single individual. Different people bring a variety of information, ideas, and viewpoints. Moreover, group decision helps to facilitate the identification of creative and innovative solution to the problems through participating staff members.

Furthermore, Graffiths (1999) in Nwankwoala (2016) on making his own view categorized decision making in three which are:

- Intermediary decisions
- Appellate decision
- Creative decision

Adiele (2020) stated that decision making can be classified into different categories depending on the level and source it is emanating from which include:

- Classification based on the level and source of decision; and
- Classification based on the nature of decision.

Adiele (2020) posited that classification based on the level and source of decision is of two types which are intermediary and appellate decision making processes.

## Intermediary Decision

This type of decision does not originate with the school administrator. It is normally delegated to him/her by a superior in the organizational hierarchy. Adiele (2020) and Oku et al (2008) stated that decision making here is in response to an authoritative request or directives from a superior officer to a subordinate for an assignment to be carried out. Example of such is the school board. The school's board may direct the principal or headmaster to take certain recommended decision or a particular decision can be frustrating to the school principal, especially where the effect of the decision is uncertain or will create negative impact on the superior or other people around. An example of this decision could be a directive from the school's board to the principal or headmaster not to allow any student who is owing school fees or any other fees to seat for examination. This is why phrases like 'I am directed' or 'I am instructed to' are used in the course of conveying this type of decision.

## Appellate Decision

Decisions are regarded as appellate when they are taken in respect of cases brought by subordinates (Adiele, 2020). Examples of such decision are the ones made to settle conflicts brought by teachers, students and other members of the school staff. Appellate decisions are also requests from the principal to the superior body (State Education Management Board, (SEMB)) for certain action to be taken in the schools.

## DECISION-MAKING PROCESS

Adiele (2020) opined that the basic task in the decision-making process begins with the decision maker asking fundamental questions like:

- What decision should be made (over a given problem, issue, threats etc.) and the strategy, tactics and operational design to be adopted in making such decision?
- Who should execute or implement such decision? (an individual or through collective action)
- When should a decision be made? (proactive or provoked decision)
- How should a decision be made? (should be it be intuitive or informed decision)

The above questions are basic and serve as a guide to good decision making. The decision making process involves some defined tasks that are operationally linked and systematically carried out for the purpose of achieving the decision taken. The activities are in logical sequence, which however, does not follow any commonly acceptable number of tasks. Various scholars of organizational management have different steps and tasks in decision making process.

Steps	Jones and George (2009)	Meshane and Von Glinow (2000)	Hoy and Miskel (2008)	Ukeje, Okorie and Nwagbara (1992)
1	Recognize the need of the decision	Identify problem or opportunity	Recognize and define the problem or issue	Recognize and define the problem or opportunity
2	Generate alternatives	Choose the best alternative style	Initiate action plan, program, communicate, monitor, appraise	Analyze the difficulties in the existing situation

3	Assess alternatives	Develop alternative solutions	Develop a plan or strategic action, identify possible alternatives, consider probable consequences, select action course.	Establish goals and objectives: criteria for problem solution
4	Choose among alternatives	Choose the best solution	Establish criteria for satisfactory solution	Generate alternatives
5	Implement the chosen alternatives	Implement selected alternative	Analyze the difficulties, classify the problems, collect data, specify problem	Gather information
6	Learn from feedback	Evaluate decision outcome		Evaluate the alternatives
7				Choose the best alternative
8				Implement decision

Figure 1: The Decision Making Process of various scholars Chart. Source: Adopted from Adiele (2020).

### Different Data Needed for Decision Making in Schools

The following are data needed for decision making in secondary schools:

#### Students' Data

Administrators and teachers are always using various means to collect students' data which are used in doing a lot of things in the school. This data allows teachers to measure and compare student performance against goals and also in making decisions. Based on those results, teachers can decide how to proceed with their classes. The effectiveness of student data has to do with its timing. Regular and repetitive assessments give teachers and administrators the data they need to effectively guide their approaches with students. Student performance is not the sole responsibility of the school administration, the teachers, or even the students themselves. It is a team effort, and everyone has a role to play in regularly using student data to improve learning experience (Jake, 2008).

Student data is a valuable resource that can provide insights into various aspects of a student's academic journey. Understanding and interpreting this data can help educators make informed decisions, personalized teaching strategies, and ultimately improve student outcomes. Ibara (2018) gave the importance of student data which looked at seven examples of student data and what can be seen in them. They include:

- Demographic information;
- Academic performance data;
- Behavioral data;
- Attendance records;
- Socio-emotional learning data;
- Health and wellness data;
- Technology usage data.

## **Demographic Information**

Demographic information provides a broad understanding of the student population, including factors such as age, gender, ethnicity, and socioeconomic background (Ibara, 2018). By analysing demographic data, educators can identify potential disparities and ensure that educational resources are distributed equitably.

For example, by examining the age distribution of students, educators can determine if there is a need for specialized programs or resources for different age groups. Similarly, analysing the gender distribution can help identify any gender-related gaps in academic performance or participation in certain subjects. Furthermore, understanding the ethnic and socioeconomic background of students can shed light on any disparities in access to educational opportunities (Adiele, 2020). This information can guide educators in implementing targeted interventions to support students from underrepresented backgrounds and promote inclusivity in the learning environment.

## **Academic Performance Data**

Academic performance data encompasses student scores, grades, and overall achievement in various subjects. Analysing this data helps educators measure student progress, identify areas of strength and weakness, and make data-driven decisions to improve overall academic performance (Ibara, 2018). Examining student scores and grades, educators can identify patterns and trends in academic achievement. This information can help them identify students who may need additional support or enrichment opportunities. For example, if a student consistently performs poorly in mathematics, educators can provide targeted interventions to improve their understanding of the subject.

Moreover, analysing academic performance data can also help educators evaluate the effectiveness of instructional strategies and curriculum materials. Comparing student performance across different classrooms or schools makes educators identify the best practices to share with their colleagues to enhance teaching and learning outcomes.

## **Behavioural Data**

Behavioural data includes information about student behaviour in the classroom and beyond. It provides insights into student engagement, attitude, discipline records, and social interactions (Zino, 2010, Ibara, 2018). Analysing behavioural data helps educators understand the factors influencing student behaviour and implement effective strategies to substitute a positive and inclusive learning environment. For instance, by examining student engagement levels, teachers can identify students who may be disengaged or struggling with motivation. This information can guide them in designing or engaging extra lessons and activities to increase student involvement and interest in learning.

Furthermore, analysing discipline records can help teachers identify any recurring behavioural issues and implement appropriate interventions. By understanding the underlying causes of disruptive behaviour, teachers can work with students, parents, and other stakeholders to address these challenges and create a supportive and respectful classroom environment.

## **Attendance Records**

Attendance records trail the presence or absence of students in the classroom, and analysing attendance data makes teachers to identify patterns and recognize students who may require additional support or interventions due to prolonged absenteeism (Ibara, 2018). It helps ensure that every student has equal opportunities to engage in the learning process.

Through the examination of attendance data, teachers are able to identify students who frequently miss school and may be at risk of failure in academics. This information can motivate teachers to implement strategies such as personalized catch-up plans or additional tutoring to support these students in their learning journey (Okeke, 2009). In addition, analysing attendance records can also help identify any systemic issues that may be affecting student attendance, such as transportation challenges or health-related barriers.

## **Social-Emotional Learning Data**

Social-emotional learning data captures information about a student's emotional well-being, social skills, and mind-set. Through the understanding of these aspects of student's development, teachers can implement directed interventions to promote self-awareness, self-management, social awareness, relationship skills, and responsible decision-making (Ibara, 2018).

For example, by analysing social-emotional learning data, teachers can identify students who may be experiencing high levels of stress or anxiety. This information can guide them in implementing strategies such as mindfulness exercises or counselling services to support students' mental health and well-being.

Furthermore, understanding students' social skills and relationship-building abilities can help educators create a positive and inclusive classroom environment. By identifying students who may struggle with social interactions, teachers can provide opportunities for peer collaboration and implement social-emotional learning programs to improve students' interpersonal skills.

## **Health and Wellness Data**

Health and wellness data provides insights into a student's physical health, including medical conditions, allergies, medications, and overall well-being. By considering this data, teachers can ensure that appropriate accommodations and support are provided to optimize a student's learning experience (Ibara, 2018). The analysis of health and wellness data, teachers can identify students with specific medical conditions or allergies that may require special attention or accommodations. This information can help create a safe and inclusive learning environment where students' health needs are met.

Moreover, understanding students' overall well-being can help teachers implement strategies to promote a healthy lifestyle, and considering factors such as nutrition, physical activity, and sleep patterns, educators can provide guidance and resources to support students' overall well-being, which can positively influence their academic performance.

## **Technology Usage Data**

Technology usage data helps teachers understand how students engage with technology in the learning environment. This data reveals patterns, preferences, and proficiency levels, which allows teachers to integrate technology effectively into their instruction to develop student engagement and promote digital literacy (Cezar, 2011).

Teachers can identify students' preferred learning platforms and tools by analysing technology usage data. This information can guide them in selecting appropriate digital resources that align with students' interests and learning styles, ultimately enhancing their engagement and motivation.

Furthermore, technology usage data can help teachers assess students' digital literacy skills. By understanding students' proficiency levels, teachers can provide targeted instruction and support to develop essential digital skills necessary for success in the digital world.

## **Staff Data**

Adele (2020) posited that there are 12 (twelve) different types of employee data and their significance. Each type serves a distinctive purpose, from informing diversity initiatives to enhancing employee engagement and improving your hiring processes.

### **Personal Information**

Personal information includes names, dates of birth, and addresses. The information helps in identifying employees within an organization. It is also the initial set of data collected in the employee lifecycle, for administrative, legal, and emergency purposes (Adiele, 2020).

### **Demographic Information**

Demographic information here include the following: age, gender, ethnicity, disability status, veteran status (Emenike, 2012; Ibara, 2018). The purpose of collecting the information includes:

- Demographic data is important for developing diversity and inclusion strategies. It informs targeted initiatives to enhance workplace equity and representation.
- Equal opportunity monitoring (EOM) and reporting, ensuring adherence to legal standards.

### **Job-Related Data**

Job-related data include information like position, department, job description, start-up date, employment details and status (full-time, part-time, contract, etc.), work location, and office assignment (Adiele, 2020). The need of the information in an organization includes:

- It highlights current workforce capabilities and identifies gaps. For example, it helps pinpoint areas where additional hiring is needed, whether for specific skills, roles that are currently unoccupied, or to enhance departmental capabilities.

- It shows workforce distribution and structure. This allows for a clear view of how employees are spread across various departments and locations. It can reveal whether certain areas are understaffed or overstaffed.

### **Compensation and Benefits Data**

Owhondah (2018) stated the following information are all inclusive in the compensation data. Salary, bonuses, overtime pay, commissions, pay raises and history, pay grades and bands, equity or stock options while benefits data include health insurance, retirement plans, paid time off (PTO), parental leave, wellness programs, educational assistance, and any other perks like gym memberships, relocation assistance, free meals, etc. The purpose of the information given in compensation and benefit data include:

- It helps identify pay disparities to achieve fairness internally and in comparison to the industry.
- It ensures compliance with compensation-related laws and regulations, such as equal pay for equal work, overtime pay, and minimum wage.
- It aids offer benefits based on employee preferences and cost-effectiveness.
- It helps analyze the impact of compensation and benefits on employee retention, satisfaction, and recruitment efforts.

### **Attendance and Time Tracking**

The information required in attendance and time tracking include basic attendance data (clock-in and clock-out times, total hours worked, late arrivals, early departures; Time off and leaves (paid time off (vacation days, sick leave, and personal days), unpaid time off, maternity/paternity leave, bereavement leave, jury duty and other statutory leaves); Advanced time tracking: project time tracking, overtime tracking (including overtime rates where applicable), break times (logs the duration and frequency of breaks taken during the workday) (Adiele, 2020). The goal of collecting the attendance and time tracking includes

:

- Helps ensure adherence to local and federal labor laws regarding work hours, overtime, breaks, and minimum wage requirements.
- Detailed reports on attendance patterns, absenteeism rates, and other relevant metrics help management review employee attendance. For example, it helps identify patterns, such as recurring absenteeism or frequent late arrivals.
- Track of accrued and used PTO, sick leave, and other time off types, provides visibility for both employees and managers.
- Correlates work hours with output metrics to measure productivity levels.
- Helps calculate labor costs associated with projects, departments, or the entire organization.

### **Educational and Professional Background**

Adiele (2020) and Owhondah (2018) stated that the employee is required to give the following information like Educational background: Degrees and certifications, institutions attended, field

of study, academic achievements (example: awards, scholarships); Professional experience: Previous employers, past job titles, skills (including both hard skills and soft skills), notable accomplishments received in previous positions, ongoing learning and development activities (including workshops, seminars, and courses); and additional qualifications like languages, volunteer experience, publications and patents, professional memberships. The above information helps to:

- Assess if the employee is fit for current and potential future roles.
- Identify candidates for succession planning and leadership development programs.
- Tailor training and development initiatives to address individual and organizational needs.
- Cultivate an environment that prioritizes ongoing learning and career development.

### **Emergency Contact Information**

An employer requires the following information from an employee for emergency contact information. They include: Basic Contact Details: Contact's name, relationship to the employee; Contact Information: Primary phone number, secondary phone number (if any), email address, physical address; Special Instructions: Preferred method of contact, any additional notes or relevant information the emergency contact or employee thinks the organization should be aware of (e.g., specific medical conditions, preferred hospitals or doctors) etc. The aim of the above information is:

- To ensure the safety and security of employees during emergencies or critical situations. This information allows organizations to quickly reach out to designated contacts in case an employee faces a health issue, accident, or any emergency while at work or during business-related activities.

### **Legal and Compliance Documents**

In this legal and compliance document, Sunday (2001) stated the following are captured in it which are:

Job responsibilities, salary, benefits, confidentiality obligations, termination conditions; Tax Documents: W-4s or equivalent forms for tax withholdings, W-2s or 1099s for year-end tax reporting; Work Eligibility Verification: e.g: Required identification documents (e.g., International passport, voter's card, driver's license, National ID, others); Background Checks: Criminal, financial, and employment verification reports; Policy Acknowledgments: Employee signatures on company policy documents, such as codes of conduct and privacy policies; Training Records: Documentation of mandatory compliance training completions (e.g., sexual harassment, data protection); Licenses and Certifications: Details of required professional licenses or certifications, including expiry and renewal information; Disciplinary Records: Documentation related to disciplinary actions, reasons, and outcomes; Accommodation Requests: Records of requests and approvals for accommodations under disability laws or other relevant statutes and Audit Documentation: Records demonstrating compliance with legal and regulatory standards, used for audits. The purpose of this information are to:

- Ensures adherence to laws and regulations, avoiding penalties and reputational damage.
- Documents agreements and policies that safeguard employee interests and rights.
- Provides a basis for resolving disputes with factual documentation.
- Tracks completion of mandatory training sessions, especially those related to compliance, ethics, and safety.

Zino (2010) and Richard (2013) stated the information require in performance and goals are: Performance Metrics: innovation and initiative contributions; Goals and Objectives: Individual goals (SMART objectives aligned with roles), team goals (collective objectives for collaboration), and organizational objectives (e.g., revenue targets); Performance Reviews and Feedback: Self-assessments, manager assessments, peer feedback, and continuous feedback throughout the year for ongoing improvement and Development and Growth: Professional development plans for career growth and performance improvement, succession planning details including readiness for higher roles and development needs. The following information will assist in recognizing achievements and areas for improvement, guiding performance management processes.

Training Programs: Details on completed, ongoing, and planned courses, workshops, and seminars, including content focus and completion date; Skills and Competencies: Specific skills or competencies gained from training, relevant to the employee's role and organizational goals; Development Plans: Customized plans outlining career progression opportunities and required training; Effectiveness and Feedback: Evaluations of training impact on performance and skill applicability; Compliance Training: Documentation of completed mandatory training for regulatory compliance and Training Investment: Data on costs and resources allocated to training and development, supporting budgeting and investment analysis (Jake, 2008). The purpose of gathering the information is to:

- Identifying development opportunities for employees
- Aligning training programs with organizational goals
- Links training programs to performance improvements, helping to identify the most effective initiatives for enhancing employee productivity and quality of work.
- Measures the impact of training and development investments on business outcomes

Sandling (2009) stated the various information are seen in the exit and records information. They are:

Reasons for Leaving: Categorizes exits such as resignation, retirement, termination, or layoff; Exit Interview Summaries: Insights and key takeaways from exit interviews, with suggestions for organizational improvements; Last Day of Employment: The employee's final working day, important for administrative closure and security protocols; Employment Length: Duration of the employee's tenure with the organization; Termination Details: For involuntary exits, details including the rationale for termination, documentation of the process, and any legal considerations; Post-Employment Information: Information on whether the departure was amicable and if the individual is eligible for rehire and Turnover Rates: Calculation of turnover metrics (Mark, 2017; Tobi, 2010)). The aim of collecting the various data includes:

- Provides insights into employee turnover. Analyzing the reasons behind employee departures, and identifying patterns or trends may indicate underlying issues within the organization, such as management practices, compensation, work-life balance, or career development opportunities.
- By understanding why employees leave, organizations can develop targeted retention strategies.
- Insights from exit data can highlight skill gaps and competencies to look for in new hires. It also helps refine succession planning processes.
- Documentation related to terminations, especially involuntary ones, is necessary for legal compliance. It helps make sure that the organization has followed fair and lawful processes, which can be important in the event of disputes or legal challenges.
- Helps manage costs related to recruitment, hiring, and training by reducing turnover.

Ibara (2018) posited that facility data refers to information related to the physical environment and resources of an educational institution, such as:

- Building and room usage;
- Maintenance and repair needs;
- Energy consumption and sustainability;
- Technology infrastructure;
- Safety and security measures;
- Accessibility and inclusivity features;
- Space utilization and optimization;
- Asset management and inventory;
- Environmental conditions (e.g., temperature, lighting, air quality);
- Compliance with regulations and standards

Akuth (2017) stated that effective facility data planning involves the following key components:

**Asset Management:** Tracking and managing facilities assets, including condition, age, and performance, is crucial for making informed decisions about replacement, upgrades and maintenance. Asset management involves asset clarification and categorization, condition assessment and scoring, lifecycle analysis and planning and resources allocation and budgeting.

**Space Management:** Analyzing space usage, allocation and optimization is necessary for maximizing space efficiency, reducing waste and improving occupant productivity. Space management involves space inventory and mapping; occupancy analysis and reporting; space allocation and reallocation and workspace design and optimization (Akuth, 2017).

**Maintenance Planning:** Using data to schedule and prioritize maintenance activities is essential for extending assets lifespan, reducing downtime and improving overall facility condition. Maintenance planning involves predicative maintenance scheduling; preventive maintenance planning; reactive maintenance management and maintenance cost analysis and reporting (Jake, 2008; Ibara, 2018). Facility data is one of the essential data required for effective decision-

making in educational institutions which cannot be overemphasized. Here are some ways facility data can inform decisions (Ike, 2010; Sandling, 2009 & Smith, 2011):

- Space optimization: Analyzing usage patterns and capacity to identify opportunities for better space utilization.
- Maintenance and repair: Identifying areas needing maintenance or repair to prevent costly fixes and ensure student safety.
- Energy efficiency: Monitoring energy consumption to reduce waste, lower costs, and minimize environmental impact.
- Capital planning: Informing decisions on renovations, expansions, or new construction projects.
- Budgeting: Allocating resources effectively based on facility needs and priorities.
- Safety and security: Identifying potential risks and taking proactive measures to ensure a secure environment.
- Compliance: Ensuring adherence to regulatory requirements and standards.
- Student experience: Creating a comfortable and supportive learning environment.
- Sustainability: Implementing eco-friendly practices and reducing the institution's carbon footprint.
- Strategic planning: Integrating facility data into long-term planning and goal-setting.

Jones and George (2009) stated some additional ways facility data can be used for effective decision-making:

- Identifying trends: Analyzing data to identify patterns and trends in facility usage, energy consumption, and maintenance needs.
- Predictive maintenance: Using data to predict when maintenance or repairs are needed, reducing downtime and extending equipment lifespan.
- Energy benchmarking: Comparing energy usage to similar institutions or benchmarks to identify areas for improvement.
- Space allocation: Optimizing space allocation based on program needs, student enrollment, and faculty requirements.
- Emergency preparedness: Using facility data to inform emergency response plans and ensure business continuity.
- Compliance reporting: Generating reports to demonstrate compliance with regulatory requirements and standards.
- Stakeholder engagement: Sharing facility data with stakeholders to promote transparency and collaboration.
- Data-driven design: Using facility data to inform design decisions for new construction or renovation projects.
- Operational efficiency: Streamlining operations and reducing waste by analyzing facility data.
- Return on investment (ROI) analysis: Evaluating the financial impact of facility-related decisions and investments.

Kitty (2001) stated that the effective ways to use facility data for decision making include:

- Data analytics: Applying statistical methods to identify trends and patterns.
- Data visualization: Presenting complex data in a clear and actionable format.
- Benchmarking: Comparing facility performance to similar institutions or industry standard.
- Predictive modelling: Using data to forecast future facility needs and optimize planning.
- Collaboration: Sharing facility data with stakeholders to promote transparency and informed decision making.

### **Academic Performance Data**

Owhondah (2018) and Ibara (2018) stated some of the information that is required from administrators and teachers in stating the academic performance of students in the school as:

- Grades: GPA (Grade Point Average), individual course grades, or standardized test scores. This is used to appraise student performance, identify areas for improvement and determine eligibility for advanced courses or graduation.
- Attendance: Number of absences, tardiness or attendance percentage. This is used to identify attendance patterns, checkmate truancy and provide support for students struggling with attendance
- Course completion: Number of subjects offered, courses passed and failed. This is tracked to ensure students meet graduation requirements, identify course sequencing issues, and inform scheduling decisions.
- Standardized test scores: This include WAEC, NECO, JAMB and other national examinations. This is used to evaluate the growth of students, compare performance across schools, and provide targeted feedback to students
- Assignments and assessments: Scores on quizzes, exams, projects, or homework. It is used to refine instruction, adjust assessment strategies, and provide targeted feedback to students.
- Learning outcomes: It measured to assess mastery of specific skills or knowledge, often measured by titles, inform instruction, and adjust curriculum pacing.
- Progress tracking: Improvement over time, such as growth in reading levels or mathematics skills. This is used to identify students needing additional support, adjust instruction, and provide early intervention.
- Behavioral data: Disciplinary actions, engagement, or motivation metrics.
- Demographic data: Student characteristics like age, gender, ethnicity or socioeconomic status.

These variables according to Wali (2017) can be used to identify areas of strength and weakness; student placement and scheduling; inform instruction strategies and resource allocation; teacher professional development; evaluate program effectiveness and also conduct research and predictive analytics.

## **PRINCIPALS AND TEACHERS PARTICIPATION IN DECISION MAKING USING RELEVANT DATA**

The principle of Management by Objectives (MBO) in Obanya (2014) stresses collective decision making and policy formulation, setting goals, steps and expectations for effective and efficient realization of organizational goals and objectives. This implies that both principals and teachers (their subordinates) should be involved in decision making in schools. However, it must be noted that the involvement of subordinates could have better positive and negative consequences. Thus, Hoy and Miskel (1982) in Nwankwoala (2016) advised that the issue should not be whether to involve them or not, but under what circumstance and conditions should subordinates be involved in decision making.

This brings about the concept of zone of acceptance which is the career within which subordinates are willing to comply with some administrative directives without question and the range of actions they are willing to take at the administrators' (principals) request. There are also situations where by school administrators are in dilemma of how to improve on the effectiveness of decision taken. These results from the fact that decisions that would objectively work best might not be acceptable to the people affected. On the other hand, decisions that are most supported by subordinates may not be the best one to make. So there are always a problem when quality considerations conflict with acceptable consideration. On this same grounds, Maier (1963) in Okoroma (2016) stated two criteria for assessing decision effectively. They are:

- Objective quality of the decision which deals with how well the administrator carries out the formal decision making process (i.e. diagnoses of the problem, collection of alternatives etc.) in a case of technical problem, a quality decision may be enough to solve it.
- Acceptance of the decision by those who must execute it. If people are involved in the problem, quality decision may not be enough. Okoroma (2016) suggested that problem situations should be evaluated or assessed to ensure the type of problem and see how it could be addressed for solution to quality and/or acceptance.

### **Effective Decision Making in Secondary Schools**

Effective decision making in secondary schools entails the process of making informed, thoughtful and well-reasoned choices that support students learning, school improvement and organizational effectiveness. Decision making is a critical leadership function that can impact students' outcomes, teachers' effectiveness and school culture (Leithwood & Jantzi, 1999). Effective decision making involves considering multiple perspectives, evaluating evidence and choosing options that align with school goals and priorities. Some several key components of effective decision making in secondary schools:

**Data driven decision making:** Using data and evidence to inform decisions about instruction, assessment and other student support (Rothman, 2006). This involves:

- Collecting and analyzing data on students' performance and progress
- Using data to identify areas for improvement and inform instructional decisions
- Evaluating the effectiveness of instructional strategies and programs

Collaborative decision making: Involves teachers, administrators and other stakeholders in the decision making process to build ownership and support (Leithwood & Jantzi, 1999). This involves building a collaborative culture and trust among stakeholders; encouraging open communication and feedback and fostering a sense of shared responsibility and ownership.

Student-centered decision making: Prioritizing students' needs and interests in decision making to ensure that choices support students learning and well-being.

Strategic decision making: Aligning decisions with the school goals and priorities to ensure that choices support long-term improvement (Hill, 2007). This involves developing a clear vision and mission for the school; establishing clear goals and priorities and ensuring that decisions align with the school goals and objectives.

Reflective decision making: Reflecting on decision and their impact to identify areas for improvement and refine decision making processes (Emenike, 2012). This involves reflecting on decisions and their impact, evaluating the effectiveness of decisions and refining decision-making processes and strategies

### **SOME BENEFITS OF EFFECTIVE DECISION MAKING**

Studies have shown that effective decision making in secondary schools can lead to numerous benefit which include:

- Improved students outcomes: Data driven decision making can lead to increased student achievement and reduced achievement gaps (Rothman, 2006).
- Enhanced teacher effectiveness: Collaborative decision making can lead to increased teacher motivation and job satisfaction (Leithwood & Jantzi, 1999).
- Stronger school culture: Student centered decision making can lead to increased student engagement and motivation (Marzano, 2007).
- Better accountability: Reflective decision making can lead to increased transparency and accountability in decision making (Schon, 1983).
- Increased efficiency: Strategic decision making can lead to improved resource allocation and reduce waste (Hills, 2007).

### **CHALLENGES AND LIMITATIONS TO EFFECTIVE DECISION MAKING IN SECONDARY SCHOOLS**

Some of the several challenges and limitations to effective decision making in secondary schools are:

- Limited resources: Insufficient budget and personnel can constrain decision making options and limit the ability to implement choices (Marzano, 2007).
- Complexity of decision making: Decision making in secondary schools involves multiple stakeholders, competing priorities and uncertain outcomes (leithwood & Jantzi, 1999).

- Lack of data literacy: Teachers and administrators may not have the necessary skills to interpret and act on data (Krajcik & Shin, 2010).
- Resistance to change: Implementing new decisions can require significant changes to instructional practices and school culture (Hattie, 2009).
- Balancing short-term and long-term goals: Decision makers must balance immediate needs with long-term goals and priorities (Hill, 2007).
- Poor technical skill in decision making: Most persons appointed into educational leadership positions lack the technical skills in decision making ability and therefore are prone to making wrong decisions. Technical knowledge and experience are all needed to enhance effective decision making skills of educational administrators.
- Lack of consultation: Most leaders finds it difficult to consult subordinates on crucial issues of general concern, hence the chances of their decision succeeding is far.
- Poor support base from subordinates: Support staff does not have the skill and knowledge to contribute to decision making, this limits far reaching decision.
- Sentiments, biases, individual considerations and preconceived ideas of the educational leader may hinder good sense of judgment and this may badly influence the decision making process (Adiele, 2020).
- Time constraint: Decision making is time consuming, time spent making decision can be used in achieving more results on other equally important issues. So time spent on making one decision is an opportunity cost to other important activities (Adiele, 2020).
- Bureaucratic bottleneck: The bureaucratic procedures involved in the process of taking certain decision on policy matters has been a source of poor outcomes in administrative decisions among educational administrators (Adiele, 2020).
- External influence: There are situations whereby the administrator is influenced by superior offices to take wrong decision. And when this happens, goal attainment is compromised (Nwankwoala, 2018).

### **Best Practices**

To overcome these challenges, experts recommended the following:

- Prioritize student needs: Ensuring that decisions prioritize student needs and interests to support students learning and well-being (Marzano, 2007).
- Reflecting on Decision: Regular reflection on decisions and their impact to identify areas for improvement (Schon, 1983).
- Investing in data infrastructure: Developing systems and tools to support data collection, analysis and sharing (Rothman, 2006).
- Providing decision making training: Offering teachers and administrators training and support on decision making processes and strategies (Leithwood & Jantzi, 1999).
- Fostering a collaborative culture: Encouraging collaboration and communication among stakeholders to build trust and support for decision making (Marzano, 2007).

### **THE EDUCATIONAL LEADERS AND DECISION MAKING COMPETENCES**

Decision making is central to the achievement of educational goals. Decisions are needed to determine policy issues. Decisions are also needed to implement educational programs and

policies, and decisions are equally needed to regulate the conducts of individuals and groups within and outside the educational system (Obi, 2009). It is for these reasons that those saddled with the leadership position in the educational sector are given power and authority to make different types of decisions in the process of discharging their duties. How well educational leaders are conversant with the decision making process and the extent to which they develop competence in making good decisions, to that extent they will be effective in performing their leadership functions. Okoroma (2016) and Adiele (2020) stated that educational leader will need to be competent in decision making in so many ways like:

- Competency in differentiating among types of decision, who makes them and when each type can be made;
- Competency in knowing his area of jurisdiction in decision making and the role expectations of his subordinates in decision making and implementation;
- Competency in determining the amount and type of information needed to reach a decision;
- Competency in determining the appropriate involvement of other people in the decision making process;
- Competency in establishing priorities and rank the priorities according to their importance of action;
- Competency in anticipating both intended and unintended consequences of decisions
- Competency in ensuring that decisions are geared towards educational goals and objectives.

## **CONCLUSION**

Data-driven decision-making tools play a vital role in enhancing the effectiveness of secondary schools in Nigeria. These tools provide school administrators, teachers, and policymakers with reliable insights that facilitate informed decisions regarding curriculum development, student performance monitoring, resource allocation, and overall institutional management. The integration of data analytics, school management systems, and artificial intelligence-based tools has contributed to improved educational outcomes by enabling schools to track progress, identify challenges, and implement targeted interventions. Moreover, adopting data-driven decision-making tools fosters accountability and transparency in school administration. With real-time data collection and analysis, stakeholders can evaluate the effectiveness of teaching methodologies, assess student learning gaps, and optimize resource distribution.

Furthermore, digital platforms such as Learning Management Systems (LMS) and Student Information Systems (SIS) have streamlined administrative tasks, reducing inefficiencies and allowing educators to focus more on instructional delivery. Additionally, despite the numerous benefits, challenges such as inadequate digital infrastructure, lack of trained personnel, and resistance to technology adoption hinder the full implementation of data-driven decision-making in Nigerian secondary schools. Addressing these barriers requires investment in capacity building, provision of necessary technological resources, and policy support to encourage the adoption of data-centric approaches. Collaboration between government agencies, private stakeholders, and educational institutions is essential to establish a sustainable framework for data-driven school management.

## Suggestions

Based on the literature reviewed, the following suggestions were made:

- Government and Policymakers should develop and implement policies that mandate the integration of data-driven decision-making tools in secondary schools.
- School Administrators should adopt and implement data-driven tools such as Learning Management Systems (LMS) and Student Information Systems (SIS) for efficient school management.
- Teachers should utilize available data-driven tools to monitor student progress and adapt teaching strategies to improve learning outcomes.
- Non-Governmental Organizations (NGOs) and Educational Agencies should conduct research and advocacy to promote the adoption of data-driven decision-making in Nigerian secondary schools.

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