

# The Impact and Challenges Faced by Staff in Maintaining Office Equipment in an Organisation: A Study of North Western Polytechnic

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## Abstract

This research work was designed to carry out a look into some of the problems Staff faced in maintaining their office machines. To examine various problems of maintaining the office machines, appropriate literatures were reviewed based on published and unpublished works. Twelve (12) items questionnaires were used to test Three (3) research questions which were administered to thirty-five (35) Staff of some selected Polytechnics in North Western Zone. Data collected were analyzed using mean method in line with the 5-Point Likert-type Rating Scale with appropriate tables. Based on the data collected and analyzed it was discovered among other things that the measures Staff will adopt to avoid breaking down of office machines in modern offices is to have a proper knowledge of the new office machines. Conclusions drawn from the findings showed that lack of organizational decisions and maintenance policy on maintenance and lack of interest in finding the root causes to the failure of office machines in the organization contributed to the breaking down of their office machines. It was recommended among others that organizations should organize conferences, workshops and training, on maintenance, so as to create awareness on the ways Staff can keep their office machine working for as long as possible and in order to reduce their expenses on maintenance.

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### **Background to the Study**

Modern office equipment has significantly simplified routine office tasks. In organizations such as the North Western Polytechnics in Nigeria, which utilize office equipment like computers, printers, photocopiers, and laminating machines, there are challenges associated with maintaining these machines. These challenges include understanding potential issues that may arise during usage, knowing how to address these issues, and determining how to preserve the equipment for extended use in a cost-effective manner without compromising reliability and safety. The key to mitigating these problems is through proper and timely maintenance of the equipment. Effective maintenance strategies, as defined by Faiz and Jabar (2012), involve planned sequences of actions to keep machines functional.

According to James (2014), staff are individuals employed under a contract of employment, either part-time or full-time, with responsibilities to perform their roles effectively, particularly in technical areas. Staff members must possess the necessary skills to maintain equipment in line with organizational goals and objectives. Their responsibilities include ensuring that office machines function optimally, which requires adhering to maintenance protocols.

Maintenance, as defined by Hornby (2012) and Macmillan (2011), refers to the regular checks and repairs necessary to keep equipment in good condition. Onawoga and Akinyemi (2013) further explain that maintenance involves continuous efforts to maintain and improve production processes cost-effectively, preventing machine deterioration before it affects operations.

Staff are required to implement maintenance strategies such as breakdown maintenance, proactive maintenance, preventive maintenance, and predictive maintenance. Breakdown maintenance involves fixing equipment only after failure, while preventive maintenance includes regular inspections and cleaning. Predictive maintenance predicts the service lifespan of parts based on diagnostic checks, and proactive maintenance focuses on identifying and correcting the root causes of machine failures (Perkasa, 2012). Modern office equipment like printers, computers, and copiers are crucial for improving office efficiency and reducing operational stress (Exforsys, 2012).

### **Literature Review**

#### **Definition of Staff**

James (2014) defines a staff member as an individual employed under a contractual agreement, either oral or written, full-time or part-time, with recognized rights and duties. In the context of maintaining office equipment, staff members play a critical role, especially in ensuring that machines function optimally. Staff members, especially those in technical roles, are responsible for handling, operating, and maintaining office equipment, ensuring that tasks are completed efficiently. They contribute to the achievement of the organization's mission, goals, and objectives by ensuring the reliability of equipment (Faiz & Jabar, 2012). As technical experts, they must demonstrate

proficiency and competency in operating and maintaining these machines to avoid disruptions in office operations (Franklin, 2013).

### **Office Machines**

Office machines are indispensable tools in modern organizations, streamlining tasks and improving productivity. Hornby (2012) defines office machines as mechanical or electronic devices used to perform specific office functions. These machines, such as computers, photocopiers, printers, and scanners, have become fundamental to the daily operations of any office. As organizations grow and their reliance on office technology increases, the role of these machines in ensuring efficiency becomes more critical (Macmillan, 2011). Exforsys (2012) also emphasizes that the integration of advanced office machines reduces the manual workload, enhances accuracy, and accelerates task completion.

### **Types of Office Machines**

In the modern office environment, a wide range of machines are utilized to perform essential functions, each catering to specific operational needs. Computers are the backbone of office operations, providing platforms for word processing, data management, and communication (Williamson, 2013). Additionally, printers and photocopiers allow for the physical reproduction of documents, while scanners and shredders contribute to the secure management of information. Laminating machines and franking machines also play specialized roles in document handling and postal processing, respectively (Onawoga & Akinyemi, 2013). Maintaining these machines in good working condition is essential to prevent disruptions and ensure that they continue to serve their intended purposes efficiently.

### **Meaning of Maintenance**

Maintenance is critical to ensuring the smooth operation of office equipment. Williamson (2013) defines maintenance as any action performed to keep a machine functioning correctly, including repairs, regular inspections, and preventive measures. Maintenance involves a proactive approach to detecting potential issues before they become major problems, thereby extending the machine's lifespan and reducing downtime. Macmillan (2011) explains that maintenance activities are designed not only to fix equipment that has failed but also to ensure that machines remain in good working condition to support uninterrupted operations. Preventive maintenance, in particular, is vital in identifying and addressing minor faults before they lead to more significant malfunctions (Faiz & Jabar, 2012).

### **Aims and Objectives of Maintenance**

The primary objectives of maintenance are to increase the lifespan of office equipment, ensure reliability, and minimize operational costs. Moubrey (2013) asserts that maintenance ensures that office machines remain available for use, reducing the likelihood of breakdowns and ensuring that tasks are completed on time. By maintaining office machines, organizations can enhance safety, improve efficiency, and reduce the

cost of repairs (Franklin, 2013). Regular maintenance also contributes to product quality, as well-maintained machines perform better and deliver more accurate results (Rhee et al., 2009). For organizations like North Western Polytechnics in Nigeria, effective maintenance of office equipment is essential to maintaining operational continuity and achieving organizational goals.

### **Maintenance Strategy**

Maintenance strategy refers to a planned approach for maintaining office equipment over time. Moubray (2013) describes maintenance strategy as a set of guidelines that direct maintenance activities to achieve desired performance levels. The selection of an appropriate maintenance strategy is crucial for ensuring machine reliability and minimizing downtime. Franklin (2013) identifies several key maintenance strategies, including Fixed Time/Scheduled Maintenance, which involves routine inspections and servicing based on a set schedule. Condition-Based Maintenance is another strategy, where machines are monitored for signs of wear and tear, and maintenance is performed based on the condition of the equipment. Run-to-Failure Maintenance involves repairing equipment only after it has broken down, while Replacement Maintenance focuses on replacing parts before they fail to prevent system-wide failures (Perkasa, 2012). These strategies help organizations optimize the performance of their office machines, reduce maintenance costs, and extend the lifespan of the equipment (Onawoga & Akinyemi, 2013).

### **Maintenance Approaches in Organizations**

Organizations employ various maintenance approaches depending on their specific needs and the complexity of their machines. Preventive maintenance is widely regarded as one of the most effective strategies for ensuring equipment reliability. As Faiz and Jabar (2012) note, preventive maintenance involves regular checks and servicing to detect potential issues before they lead to equipment failures. This approach not only prolongs the life of the machines but also reduces the need for costly repairs. Predictive Maintenance, another critical approach, uses data and diagnostics to predict when a machine is likely to fail, allowing for timely intervention (Franklin, 2013). Breakdown Maintenance, on the other hand, involves acting only after equipment has failed, which may result in longer downtimes but can be cost-effective in the short term. These approaches are essential for organizations like North Western Polytechnics, where the consistent operation of office equipment is critical for daily activities.

### **Types of Maintenance Approaches**

#### **1. Fixed Time/Scheduled Maintenance Strategy**

Fixed Time/Scheduled Maintenance involves performing specific maintenance tasks at predetermined intervals. This strategy ensures a significant margin between the machine's capacity and its actual duty. Unlike Routine Maintenance, which may not follow a strict schedule, Fixed Time Maintenance is characterized by its set intervals and significant margin. Johnson (2013) describes it as daily tasks like cleaning, inspection, and lubrication aimed at preserving equipment health and preventing failure through regular checks and condition assessments.

## **2. Condition-Based Maintenance Strategy**

Condition-Based Maintenance, also known as on-condition, predictive, proactive, or reliability-centered maintenance, focuses on assessing the actual condition of machinery. According to Williamson (2013), this strategy involves continuous online monitoring of machines during both operational and idle times. Data collected is used to optimally schedule maintenance, thus maximizing production efficiency and preventing catastrophic failures.

## **3. Run-to-Failure Maintenance Strategy**

Run-to-Failure Maintenance is a strategy where maintenance is only performed after a machine has broken down. Although often perceived as unplanned, this approach can also be strategically employed for certain machine parts where replacement is more cost-effective than ongoing maintenance. The decision to adopt this strategy depends on factors like the cost of maintenance versus replacement, and the remaining useful life of the machine.

## **4. Replacement Maintenance Strategy**

Replacement Maintenance involves substituting failed or worn-out parts with new ones. This strategy is used both for unplanned breakdowns and planned replacements after the item has reached the end of its useful life. Firms often perform overhauls as part of this strategy to restore critical machines to optimal operating conditions by replacing major components with new ones.

### **Method for Implementing Maintenance Strategies**

Reuben (2011) outlines the method for achieving maintenance objectives as follows:

1. Assess the proportion of maintenance time spent on reactive versus proactive tasks, aiming to increase proactive efforts.
2. Compile comprehensive machine lists from various sources, including process and machine asset lists.
3. Create a detailed spreadsheet categorizing the production process and listing machines in use.
4. Evaluate the impact of machine failures on production by conducting a criticality assessment of the plant and machinery involved.

### **Importance of Maintenance Strategies**

Jabar (2011) highlights the significance of maintenance strategies for staff in maintaining office machines, including:

- i. Managing large maintenance budgets.
- ii. Scheduling periodic component replacements.
- iii. Making maintenance decisions based on machine condition.
- iv. Monitoring and addressing the root causes of failures.

### **Challenges Faced by Staff in Maintaining Office Equipment**

Maintaining office equipment can be challenging for staff, particularly in resource-limited settings. One of the major challenges is the lack of adequate technical knowledge

among staff members responsible for maintaining machines. As James (2014) points out, staff may have limited training in handling and maintaining complex office equipment, leading to frequent breakdowns and reduced efficiency. Furthermore, budget constraints can limit the availability of spare parts and maintenance tools, making it difficult to perform timely repairs (Williamson, 2013). In some cases, organizations may adopt a reactive approach to maintenance, waiting for machines to fail before acting, which can result in longer downtimes and increased operational costs (Onawoga & Akinyemi, 2013). Additionally, staff may face challenges in adhering to maintenance schedules due to competing responsibilities, further complicating efforts to keep office equipment in optimal working condition.

### Methodology

The research utilized a case study design to examine staff at the North-Western Polytechnics, focusing on those using office machines. Data was collected from 35 staff members across various North Western Polytechnics, including Kaduna Polytechnic, Waziri Umar Polytechnic Birnin Kebbi, Federal Polytechnic Kaura Namoda, and Sokoto State Polytechnic, using a questionnaire containing 12 close-ended questions. Both primary data, through direct distribution and collection of questionnaires, and secondary data from sources like textbooks and journals, were employed. The questionnaire was validated by an expert, and data was analyzed using a five-point Likert Rating Scale, with responses scored based on their mean value. A mean score of 3.05 or higher indicated acceptance, while scores below 3.05 were rejected.

### Findings

**Research Question 1:** What is the measures Staff will adopt to avoid the breaking down of office machine in modern offices?

**Table 1:** Mean on measures that Staff will adopt to avoid the breaking down of office machine in modern offices.

S/NO	Variables	SA (5)	A (4)	UD (3)	D (2)	SD (1)	$\sum x$	$\bar{X}$	Remark
1	Proper knowledge of the new office machines will help in solving the challenges faced by Staff in modern offices.	25	10	0	0	0	165	4.7	Accepted
2	Constant training and retraining of Staff in organization on how to maintain office machines will help them in noticing faults in office machines.	23	12	0	0	0	163	4.7	Accepted
3	Proper awareness of the maintenance strategies will help the Staff in resolving some technical problems in office machines.	18	16	1	0	0	157	4.5	Accepted
4	Replacement of faulty machines parts are the most preferred way of bringing machines to its useful life.	20	11	1	2	1	152	4.3	Accepted



From Table One, it was observed that respondents strongly agreed, with a mean score of 4.7, that having proper knowledge of new office machines would help address the challenges faced by staff in modern offices. They also concurred, with the same mean score of 4.7, that constant training and retraining of staff on office machine maintenance would aid in identifying faults. Additionally, respondents agreed, with a mean score of 4.5, that awareness of maintenance strategies does not always assist staff in resolving technical problems with office machines. Lastly, they agreed, with a mean score of 4.3, that replacing faulty machine parts is the most effective method for restoring a machine to its functional state.

**Research Question 2:** What are the preventive measures Staff will adopt in the maintenance of office machines in modern offices?

**Table 2:** Mean on preventive measures that Staff will adopt in the maintenance of office machines in modern offices.

S/NO	Variables	SA (5)	A (4)	UD (3)	D (2)	SD (1)	$\sum x$	$\bar{X}$	Remark
1	Waiting until office machines stop working before servicing it inhibits good preventive measures.	14	3	1	5	12	107	3.1	Rejected
2	Organizational decisions and maintenance policy on maintenance aids maintenance culture.	15	12	7	0	1	145	4.1	Accepted
3	Observation of office machines in order to predict the possibilities of failure before it occurs is a preventive measure.	18	17	0	0	0	158	4.5	Accepted
4	Fixing any part of your office machines that has signs of future failure in your organization will help in preventing possible breakdown of the machines.	25	9	0	1	0	163	4.7	Accepted
5	Employing the service of maintenance experts that will help in predicting the future failure of your office machines can also be seen as a preventive measure.	20	12	3	0	0	157	4.5	Accepted

From Table Two, it is evident that respondents agreed, with a mean score of 3.1, that waiting until office machines break down before servicing them hinders effective preventive measures. They also concurred, with a mean score of 4.1, that organizational decisions and maintenance policies positively influence the maintenance culture. Additionally, with a mean score of 4.5, respondents affirmed that observing office machines to predict potential failures is a proactive preventive measure. A mean score of 4.7 indicated strong agreement that fixing parts showing signs of future failure can prevent breakdowns. Furthermore, respondents agreed, with a mean score of 4.5, that hiring maintenance experts to predict potential failures is a valuable preventive strategy.

**Research Question 3:** What are the measures Staff will adopt in predicting the problems of office machines in modern offices?

**Table 3:** Mean on measures Staff will adopt in predicting the problems of office machines in modern offices.

S/NO	Variables	SA (5)	A (4)	UD (3)	D (2)	SD (1)	$\sum x$	$\bar{X}$	Remark
1	Lack of interest in finding the root causes to the failures of office machines in organizations makes it difficult to predict machine problems.	15	18	1	1	0	152	4.3	Accepted
2	Lack of enough number of maintenance experts in your organization helps in increasing the maintenance challenges faced by Staff and this inhibits predictive ability.	16	15	2	0	2	148	4.2	Accepted
3	Understanding the strategies for monitoring your office machines assists you in detecting possible problems that may arise in the process of using the office machines.	16	18	1	0	0	155	4.4	Accepted

From Table Three, it was noted that respondents agreed with a mean score of 4.3, indicating that insufficient interest in identifying the root causes of office machine failures hinders the ability to anticipate potential issues. Additionally, with a mean score of 4.2, respondents acknowledged that a shortage of maintenance experts in the organization exacerbates maintenance challenges for staff and impairs predictive capabilities. Furthermore, respondents agreed with a mean score of 4.4 that having a solid understanding of monitoring strategies aids in identifying potential problems that might occur during the use of office machines.

### Discussion

The first research objective aimed to identify the measures staff could adopt to prevent the breakdown of office machines in modern workplaces. Respondents strongly agreed, with a mean score of 4.7, that having adequate knowledge of new office machines helps address challenges faced by staff. Similarly, they accepted, with a mean score of 4.7, that regular training and retraining on office machine maintenance help staff detect faults. However, respondents also noted, with a mean score of 4.5, that general awareness of maintenance strategies is not always effective in resolving technical issues. They further agreed, with a mean score of 4.3, that replacing faulty machine parts is the preferred method for restoring machines to working condition. These findings align with Franklin (2013), who stated that a maintenance strategy specifies the necessary actions, timing, and scope for maintaining equipment.



The second research objective explored whether waiting until office machines fail before servicing affects preventive measures. Respondents moderately agreed, with a mean score of 3.1, that delaying maintenance until a machine fails hinders good preventive practices. They also agreed, with a mean score of 4.1, that organizational decisions and maintenance policies support a strong maintenance culture. Additionally, respondents accepted, with a mean score of 4.5, that monitoring office machines to predict potential failures is a preventive strategy. Furthermore, with a mean score of 4.7, they agreed that fixing parts showing signs of future failure helps prevent breakdowns, and employing maintenance experts, with a mean score of 4.5, was seen as an effective preventive measure. These findings support Johnson's (2013) assertion that daily maintenance is essential for retaining machines' healthy working conditions and preventing frequent failures.

The aim of research question three was to assess the measures staff will implement to anticipate issues with office machines in modern offices. The results revealed that respondents agreed, with a mean score of 4.3, that a lack of interest in identifying the root causes of machine failures impedes problem prediction. Additionally, with a mean score of 4.2, it was noted that an insufficient number of maintenance experts in the organization increases maintenance challenges for staff and hinders predictive capabilities. Respondents also concurred with a mean score of 4.4 that comprehending monitoring strategies aids in detecting potential issues with office machines. This finding aligns with Perkasa (2012), who emphasized the importance of employing key maintenance strategies, such as Fixed Time/Scheduled Maintenance, Condition-Based Maintenance, Run-to-Failure Maintenance, and Replacement Maintenance, to maintain office machines effectively.

### **Conclusion**

This study explored the challenges staff face in maintaining modern office machines in selected North Western Nigerian Polytechnics. It highlights the importance of understanding and implementing various maintenance strategies – such as breakdown, proactive, preventive, and predictive maintenance – to ensure operational efficiency and cost-effectiveness. Neglecting regular maintenance can lead to disruptions and increased costs. The study emphasizes the need for staff awareness, regular training, and proactive measures to prevent breakdowns. Recommendations include organizing workshops and training to improve staff competence. Overall, the findings underscore the necessity of a systematic maintenance strategy for sustaining the functionality of modern office equipment.

### **Recommendations**

Based on the findings and conclusions of this research, the following recommendations are proposed:

- i. Ongoing Training: Organizations should implement regular training and retraining programs for staff to keep them updated on effective maintenance strategies. This will ensure that employees are well-informed about the latest

- practices and techniques in machine upkeep.
- ii. Expert Consultation: To alleviate the burden of maintenance tasks, organizations should consider hiring maintenance experts. Their specialized knowledge can help streamline maintenance processes and address complex issues efficiently.
  - iii. Educational Events: It is advisable for organizations to organize conferences, workshops, and seminars focused on preventative measures for office machines. These events will provide staff with valuable insights on how to prevent equipment breakdowns and enhance overall machine longevity.
  - iv. Proactive Maintenance: To minimize maintenance costs, staff should adopt a proactive approach by addressing issues before machines fail. Regular monitoring, timely servicing, and prompt replacement of worn-out parts can prevent potential breakdowns and reduce overall maintenance expenses.

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