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Impact of Electronic Manpower Planning Practices on Organizational Performance in Manufacturing Companies in Cross River State

[1]Patience Undelishima USHIE, [2]Veronica Ezioma NWAUKWA,
[1]Eleng Seyifunmi NTAMI and [3]Nancy Nneoma NWAUKWA

[1]Department of Business Education, Faculty of Vocational and Entrepreneurial Education, University of Calabar, Nigeria.
[2]Department of Technology and Vocational Education, Faculty of Education, Nnamdi Azikiwe University, Awka, Nigeria
.[3]Department of International Relations, Faculty of Political Science, Gime American University, Turkey
Corresponding Author: Email: angelicezims@gmail.com Phone No: +2348038682658

ABSTRACT

This study investigated the impact of electronic manpower planning practices on organizational performance in manufacturing companies in Cross River State, Nigeria. In an era where technology-driven solutions are increasingly shaping operational efficiencies, the study explored the extent to which electronic manpower planning and electronic recruitment practices influence organizational outcomes. Adopting a descriptive survey design, the research sampled 258 human resource management personnel from 21 manufacturing companies in the state. Data were collected using a structured and validated questionnaire titled *Electronic Human Resources Management Practices and Organization Performance Questionnaire (EHRMPOPQ)*, with a reliability coefficient of 0.82. Linear regression analyses revealed that electronic manpower planning practices accounted for 50.4% of the variation in organizational performance, while electronic recruitment practices explained 68.9% of the variance. The results showed that both electronic manpower planning and electronic recruitment practices significantly and positively impact organizational performance, leading to enhanced workforce efficiency, cost optimization, and improved employee satisfaction. The study concludes that the adoption of electronic manpower planning systems is instrumental in fostering operational excellence and recommends that manufacturing companies invest in advanced electronic HR systems, continuous employee training, and robust data security measures. By doing so, they can sustain competitive advantage and achieve higher levels of productivity in an increasingly digitalized industrial landscape.

Keywords: *Electronic manpower planning, electronic recruitment, organizational performance, manufacturing companies, human resource management.*

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Introduction

In the contemporary business environment, organisations are continually seeking ways to enhance productivity, optimise workforce management, and increase overall performance. One such strategy that has gained significant attention is the adoption of electronic manpower planning practices. Electronic manpower planning refers to the integration of technology and digital tools in managing human resources within organisations. It is an innovative approach to workforce management that integrates digital solutions into traditional manpower planning processes. It involves the use of information technology tools such as Human Resource Management Systems (HRMS), Enterprise Resource Planning (ERP) systems, and specialised manpower planning software to streamline various functions such as recruitment, training, scheduling, performance management, and labour forecasting (Chien & Chen, 2024). These practices involve the use of software and data-driven solutions to forecast, schedule, and allocate labour resources efficiently. By using advanced algorithms, data analytics, and real-time data collection, EMP systems enable companies to make informed decisions about workforce needs and optimise the allocation of human resources. This shift towards electronic solutions has allowed manufacturing companies to move away from manual and paper-based processes, leading to more accurate, timely, and efficient manpower planning (Harris, 2023).

The manufacturing industry plays a significant role in the economy of any nation as it motivates the nation at large. This is because the sector is part of the protection and restoration system of the economy, and the successful operation of the industry can provide the needed energy for other industries and the development of the entire economy (Abate, 2022). The manufacturing industry is highly dependent on human resources for production processes. Efficient manpower planning ensures that the correct number of skilled workers are available at the right time and place, thus contributing to the smooth functioning of production lines. With electronic manpower planning practices, manufacturing companies can significantly improve in several key areas.

One of the most significant advantages of electronic manpower planning is the ability to improve workforce efficiency (Ejumudo, 2014). EMP systems allow for the real-time tracking of labourutilisation, helping managers identify areas where workforce deployment can be optimised. These systems can analyse historical data, predict future labour needs, and adjust staffing levels accordingly, ensuring that the production process runs smoothly without the risk of underutilisation or overstaffing (Harris, 2023). As a result, manufacturing companies can reduce idle time, minimise operational bottlenecks, and enhance overall productivity.Labour is often one of the most significant expenses in manufacturing companies. By automating the manpower planning process, companies can achieve significant cost savings (Dulebohn & Marler, 2015; Efuntade& Akinola, 2021). Electronic manpower planning helps reduce overtime costs by ensuring that staffing levels are appropriately balanced based on demand fluctuations and production schedules (Loto, 2012). Additionally, these systems can help minimise recruitment costs by identifying skill gaps within the workforce and ensuring that the hiring process is aligned with actual business

needs (Kim, 2015; Njeje et al., 2018). By reducing errors in workforce allocation and planning, companies also minimise the risk of costly disruptions in the production process.

Electronic manpower planning systems provide managers with access to detailed and accurate data on workforce performance and labour trends. This data-driven approach enables managers to make informed decisions about staffing, training, and resource allocation (Bondarouk& Ruel, 2014; Sullivan & Tang, 2016). With real-time access to data, decision-makers can assess current workforce performance, identify potential issues, and proactively adjust manpower plans to meet production targets. Moreover, EMP systems enable manufacturing companies to evaluate various scenarios based on workforce needs, making it easier to anticipate labour shortages, skill gaps, or other challenges that may arise (Emerole, 2015). Effective manpower planning not only benefits the company but also contributes to higher levels of employee satisfaction. When staffing levels are appropriately managed, employees experience less stress from overwork and are more likely to be satisfied with their roles. Moreover, by utilising electronic manpower planning systems, companies can more effectively match employees' skills with job requirements, leading to more rewarding and fulfilling work experiences (Jiang & Chen, 2019). In addition, transparency in scheduling and equitable distribution of work contribute to improved employee morale, reducing turnover rates and fostering a positive work culture.

The integration of electronic manpower planning practices can lead to substantial improvements in organisational performance. These improvements can be observed in various key performance indicators (KPIs) such as productivity, quality of output, customer satisfaction, and financial performance (Meyer & Becker, 2014). By ensuring optimal workforce deployment, electronic manpower planning directly influences productivity levels. The ability to forecast labour requirements and adjust staffing levels accordingly enables manufacturing companies to maintain consistent output. Studies have shown that companies with efficient manpower planning systems experience higher productivity levels, as they are better equipped to meet production demands without overburdening their workforce (Alkhadher et al., 2014; Meyer & Becker, 2014; Nivlouei, 2014).

Additionally, by minimising downtime due to poor planning, companies can increase the overall output of their production processes. The quality of products in manufacturing is closely linked to the skill level and experience of the workforce. By utilising electronic manpower planning tools, manufacturing companies can ensure that workers are deployed to tasks that match their skill levels, leading to higher-quality outputs. Furthermore, the data-driven approach to manpower planning enables companies to identify areas where additional training or skill development may be required, leading to continuous improvement in workforce capabilities (Kumar & Gopalakrishnan, 2012).

Objectives of the study

Specifically, this study sought to determine:

I. The extent of influence electronic manpower planning practice has on organisational performance in manufacturing companies in Cross River State.

II. The extent of influence electronic recruitment practices have on organisational performance in manufacturing companies in Cross River State.

Research Questions

The following research questions guided the study:

I. To what extent does electronic manpower planning practice influence organisational performance in manufacturing companies in Cross River State?

II. To what extent does electronic recruitment practice influence organisational performance in manufacturing companies in Cross River State?

Research Hypotheses

The following null hypotheses were formulated and tested at a .05 level of significance:

H_{01}: Electronic manpower planning practices do not significantly influence organisational performance in manufacturing companies in Cross River State

H_{02}: Electronic recruitment practice does not significantly influence organisational performance in manufacturing companies in Cross River State.

Methodology

The study utilised a descriptive survey design. The population of the study comprised 725 human resource management staff in the human resource department of the twenty-one manufacturing companies in Cross River State (Manufacturers Association of Nigeria, Cross Rivers State Chapter, 2022). A sample of 258 respondents was selected to participate in the study using stratified and simple random sampling methods. Data for the study was collected using a validated questionnaire titled: 'Electronic Human Resources Management Practices and Organization Performance Questionnaire (EHRMPOPQ), with a reliability coefficient of 0.82.

Results

Table 1 below shows the linear regression showing the extent of influence of electronic manpower planning practice on organisational performance in manufacturing companies in Cross River State

Table 1: Linear Regression showing the extent of influence of electronic manpower planning practice on organisational performance in a manufacturing company in Cross River State

Variables	R	R^2	Adjusted R^2	Standard Error of the Estimate
e-Manpower Planning Practice				
	.710	.504	.501	.3666
Organisational Performance				

The result revealed that the R-value of .710 is the strength of the influence of electronic manpower planning practice on organisational performance in manufacturing companies in Cross River State. At the same time, the R^2 value of .504 indicated that only 50.4% variation in organisational performance in manufacturing companies could be explained or is influenced by electronic manpower planning practice. This result implies that, to a great extent, electronic manpower planning practice influences organisational performance in manufacturing companies in Cross River State.

Also, Table 2 shows the linear regression of the extent of electronic recruitment practice's influence on organisational performance in manufacturing companies in Cross River State.

Table 2: Linear Regression showing the extent of influence of electronic recruitment practice on organisational performance in manufacturing companies in Cross River State

Variables	R	R^2	Adjusted R^2	Standard Error of the Estimate
e-Recruitment Practice				
	.830	.689	.680	.1366
Organisational Performance				

The result revealed that the R-value of .830 is the strength of the influence of electronic recruitment practice on organisational performance in a manufacturing company in Cross River State. At the same time, the R^2 value of .680 indicates that only 68.9% variation in organisational performance in a manufacturing company is explained or is influenced by electronic recruitment practice. This result implies that, to a great extent, electronic recruitment practice influences organisational performance in manufacturing companies in Cross River State. Table 3 shows the results used to test the first null hypothesis.

Table 3: Simple Linear Regression Analysis showing the influence of electronic manpower planning practices on organisational performance in manufacturing companies in Cross River State

Model	Sum of squares	Df	Mean square	F-cal	Sig.	Decision
Regression	120.212	1	120.21			
				7.99.	.004	*
Residual	3851.913	256	15.05			
Total	870.55	257				

***significant at 0.05 alpha level; df=1 and 256;**

Entries in Table 3 show that the calculated F-value of 7.99 and the Sig-value (.004) is less than the level of significance (.05) at 1 and 256 degrees of freedom. With this result, the null hypothesis that electronic manpower planning practices do not significantly influence organisational performance in manufacturing companies in Cross River State was rejected. This implies that electronic manpower planning practices significantly influence organisational performance in manufacturing companies in Cross River State.

The results presented in Table 4 were also used to test the second null hypothesis.

Table 4: Simple Linear Regression Analysis showing the influence of electronic recruitment practices on organisational performance in a manufacturing company in Cross River State

Model	Sum of squares	df	Mean square	F-cal	Sig.	Decision
Regression	127.683	1	127.683			
				8.50	.001	*
Residual	3844.441	256	15.017			
Total	3972.124	257				

***significant at 0.05 alpha level; df=1 and 256**

Entries in Table 4 show that the calculated F-value of 8.50 and the Sig-value (.001) is less than the level of significance (.05) at 1 and 256 degrees of freedom. With this result, the null hypothesis that electronic recruitment practices do not significantly influence organisational performance in manufacturing companies in Cross River State was rejected. This implies electronic recruitment practices significantly influence organisational performance in manufacturing companies in Cross River State.

Discussion of Findings

Findings indicated that electronic manpower planning practice, to a great extent, influences organisational performance in manufacturing companies in Cross River State. It further showed that e-manpower planning practices significantly influence organisational performance in manufacturing companies in Cross River State. The finding is in line with the finding of Richter et al., 2017), who, in a study, identified the effects of electronic human resource management (e-HRM) on social performance through the use of two types of HRM practices: administrative and strategic and observed that three dimensions of e-HRM (relational, transformational and operational) affect HRM practices at both administrative and strategic influence social performance. The finding also aligns with the finding of Njeje et al. (2018), who examined the effect of e-human resource planning systems and their effect on the organisational efficiency of Saccos in Kenya and found that e-human resource planning had no significant influence on organisation efficiency. The findings also affirm the observation of Katua et al. (2014) that human resource planning strategies can enhance the performance of a firm and that firms ought to develop and document strategies for human resource planning with the object of enhancing both employee and organisational performance.

The finding may be due to the fact that manpower is very crucial to the operations of any manufacturing company. Manpower planning is very tasking, whether short-term or long-term term and the utilisation of electronics aids the process and fosters efficiency in detecting the problem of surplus and deficit of manpower and organising the workforce to be skilful, resourceful and capable of adapting to the changing work environment. This contributes to the effectiveness, efficiency and overall performance of the company. More so, the management of manpower is very costly and contributes a significant percentage of the general cost of operation of manufacturing companies. The use of electronic manpower planning likely facilitates the reduction of labour costs substantially by maintaining a balance between the demand for and supply of human resources.

Management, through the utilisation of an electronic planning strategy for manpower, is likely able to easily identify and plan measures to maximise their employees through effective participation in decision-making processes, development, and retention. Manufacturing companies that have poor manpower planning systems are likely to face the challenge of losing skilled and quality personnel as well as experience persistent industrial instability, which is unhealthy for the performance of the firm.

The result showed that electronic recruitment practices greatly influence organisational performance in manufacturing companies in Cross River State.The finding is in consonant with the finding of Hamidianpour et al., (2016) who conducted a study to assess the impact of electronic human resource management on creation of organisational agility in the Bushehr Banks, Iran and the presented conceptual model and indicated that using electronic learning of human resources, electronic payment of human resources, human resources maintenance and electronic performance appraisal of human resources and also electronic human resource management (E-HRM) can affect organisational agility significantly in confidence level of

99%. The finding also affirms the observation of Atallah (2016), who, in a study, examined the Impact of Electronic Human Resource Management (E-HRM) on the Organizational Development of UNRWA in the Gaza Strip and reported that there is a strong positive relationship between the electronic components of human resource management and organisational development for UNRWA. Atallah also added that e-recruitment and e-Selection have a significant impact on UNRWA's organisational development. The finding further aligns with the assertions of Boudreau(2017), who opined that e-recruitment supports creating, registering and managing data from advertisements, application forms, support for classical and online recruitment, and use of social networks. It also affirms the submission of Williamson et al., (2013), who observed that the application of IT in recruiting candidates enables this activity to be performed by advertising the need to fill a job position via an organisation's website or through specialised sites. Also, the finding is in tandem with the report for a recent survey by CedarCrestone (2019), which found that nearly 75 per cent of organisations are using technology to support recruitment, and this number is expected to grow to nearly 85 per cent within the preceding year.

The findings point to the fact that recruitment practices are tedious if not correctly managed and could lead to the employment of a workforce that is not supportive of the attainment of the organisational goals and objectives if done haphazardly. Electronic recruitment practices help human resource management reach out to many potential applicants and access a variety of competent employees. It is pertinent that the human resource managers, through the use of electronic recruitment, improve recruiting efficiency and reduce costs; increase the quality and quantity of applicants; establish, communicate and expand brand identity; Increase the objectiveness of and standardise recruiting practices and; increase applicant convenience which contributes to the general business, social and organisational performance of manufacturing company.

Conclusion

The study comprehensively examined the impact of electronic manpower planning practices on organizational performance in manufacturing companies in Cross River State. The findings established that electronic manpower planning and electronic recruitment practices significantly and positively influence organizational performance. The statistical analyses revealed that electronic manpower planning accounts for 50.4% of the variance in organizational performance, while electronic recruitment accounts for an even higher variance of 68.9%. These results underscore the pivotal role of electronic human resource management systems in shaping operational efficiency and driving competitive advantage in the manufacturing sector.The integration of electronic manpower planning tools has demonstrated significant improvements in workforce efficiency, cost management, and strategic decision-making capabilities. By leveraging real-time data and analytics, manufacturing companies have optimized workforce allocation, reduced operational disruptions, and enhanced overall productivity. Furthermore, the use of electronic recruitment platforms has enabled organizations to access a broader talent pool, enhance the quality of hires, streamline recruitment processes, and significantly reduce hiring costs. Consequently,

the study concluded that manufacturing companies in Cross River State that embrace electronic manpower planning and recruitment systems are better positioned to achieve operational excellence, improve employee satisfaction, and enhance their overall organizational performance.

Recommendations

In light of the findings and conclusion of this study, the following recommendations are made to manufacturing companies, human resource practitioners, and policymakers:

I. Manufacturing companies in Cross River State and beyond should intensify the adoption and utilization of comprehensive electronic manpower planning systems. This will facilitate real-time workforce management, predictive analytics, and proactive decision-making to sustain high organizational performance.

II. To fully harness the benefits of electronic manpower planning and recruitment systems, companies should invest in continuous training and capacity-building programs for their HR personnel. Equipping employees with digital competencies will enhance system utilization and maximize return on investment.

III. Given the sensitive nature of workforce data handled by electronic systems, companies must implement robust cybersecurity frameworks to safeguard employee information and maintain organizational trust and compliance with data protection regulations.

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