



Effect of Critical Thinking on the Performance of Pharmaceutical Manufacturing Firms in Enugu State

Kenneth Ogomegbunam Obodoagu¹, Ogbuke, John Chukwudi PhD², & Nwokeukwu, Chioma Joy PhD³

¹³Department of Business Administration and Management, Enugu State University of Science and Technology

²Department of Marketing, Enugu State University of Science and Technology

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The study evaluated the effect of critical thinking on the performance of pharmaceutical manufacturing firms in Enugu state. The specific objectives were to: Examine the effect of open-minded on the output; and evaluate the effect of gathering relevant information on the reduce waste of pharmaceutical manufacturing firm in Enugu State. The area of the study was selected pharmaceutical manufacturing firms in Enugu state, Nigeria. The study used the descriptive survey design approach. The primary source of data was the administration of questionnaire. The population of the study consisted of three hundred and twenty-five (325) management and senior staff. The whole population was used due to small number. Two hundred and forty-nine (249) staff returned the questionnaire and accurately filled. Data was presented and analyzed by mean score and standard deviation using Sprint Likert Scale. The hypotheses were analyzed using Z - test statistic tool. The findings indicated that Open-minded had significance positive effect on the output; Z (95, n = 249), 5.704 < 9.189, P. < .05 and gathering relevant information had significance positive effect on the reduce waste of pharmaceutical manufacturing firm in Enugu State, Z (95, n = 249), 6.591 < 9.237, P. < .05. The study concluded that Open-minded and Gathering relevant information had significance positive effect on the output and reduces waste of pharmaceutical manufacturing firm in Enugu State. The study recommendation among others. The management of pharmaceutical firms should have open-minded spirit to help put differences aside and cooperate to progress as individuals, and as a society.

ABSTRACT

Keywords: Critical Thinking; Pharmaceutical Manufacturing Firms; Enugu State

Background

While most of everyday brainpower is dedicated to automatic and routine tasks, employees with sharp critical thinking skills are an essential. Critical thinking skills are an essential aspect of an employee's evaluation: the ability to solve problems, analyze situations, and make informed decisions is crucial for the success of any organization. Improving an employee's ability to think critically involves more than their scoring well on job-specific hard skills such as software knowledge, writing ability or mathematical aptitude (Braun, Shavelson, Zlatkin-Troitschanskaia & Borowiec, 2020). By impartially evaluating the facts related to a matter, employees draw realistic conclusions that will help make better decisions in the organisation. In view of the importance of CT, as well as evidence of substantial variation in its development during college, its proper measurement is essential to tracking progress in skill development and to providing useful feedback to both teachers and learners. With so many changes in the workplace, almost everyone needs to be a critical thinker. Possessing critical thinking skills will help pave the way to retention and upward mobility for your workforce (Monych, 2023).

Critical thinking skills are valuable asset for an employee, as employers typically appreciate candidates who can correctly assess a situation and come up with a logical resolution. (Monych, 2023) opined that critical thinking is the ability to organize information logically to make a reasoned judgment. It involves the evaluation of data sources, facts and other research to make a reasonable conclusion by "connecting the dots." Critical thinking in the workplace means sorting among useful and arbitrary details to come up with a big-picture perspective that leads to an impactful decision or solution to a problem. Employees with outstanding critical thinking skills are exceptional at identifying patterns, making connections, and using past experiences to inform their decisions. Critical thinking is the ability to organize information logically to make a reasoned judgment. It involves the evaluation of data sources, facts and other research to make a reasonable conclusion by "connecting the dots." Primarily, it is a process that involves interpreting information in a logical and systematic manner. Using critical thinking, in other words, allows individuals to engage with ideas, consider different perspectives, and arrive at reasonable conclusions (Sharma, 2022).

Critical thinking skill is one of the skills needed in every profession and at every level. In the rapidly evolving business landscape, organizations face complex challenges that require innovative solutions and strategic decision-making. To navigate this complexity and drive sustainable success, the cultivation of critical thinking skills has become essential (Kaizen, 2023). The ability to think critically occurs when individuals understand the material given while performance-based assessment can be done on the process and learning outcomes. Employees exceeding expectations in critical thinking skills are adept at analyzing information, making sound decisions, and providing thoughtful recommendations. They are also effective at adapting their knowledge to novel situations and displaying confidence in their abilities. To engage in Critical Reflection, one needs not only apply analytic reasoning, but also adopt a reflective stance toward the political, social, and other consequences of choosing a course of action (Braun *et. al.*, 2020). By conceptualizing outcomes, critical thinkers tend to be better at solving problems than people who simply memorize information and as such help to boost organizational performance.

Applying critical thinking helps organizations make decisions that require a lot of thought and strategy that will to boost performance.

Statement of the Problem

Critical thinking is a valuable skill that can help you analyze information, solve problems, and make decisions. However, most employees lack this skill and as such it poses a great threat to the growth of the organization. By cultivating critical thinking abilities, organizations enhance problem-solving capabilities, make informed decisions, develop effective strategies, foster collaboration, adapt to change, and foster a culture of continuous learning.

Different disciplines, fields, and contexts may have different criteria, standards, and methods for critical thinking. Employees with unacceptable critical thinking skills lack the ability to analyze information effectively, struggle with decision-making, and fail to solve problems without extensive support from others. Challenges of critical thinking often arise as a result of lack of open-minded individuals and gathering of irrelevant information by the employees which are often out of alignment with the objective of the firm.

Critical thinking is a skill that allows individual to make logical and informed decisions to the best of their ability. While there's no universal standard for what skills is included in the critical thinking process, organizations leaders should not neglect the assessment of these skills in their employees as it will lead to meager output and low rate of waste reduction. The absence of critical thinkers in the organization will not only hinder the productivity of the organization but will stagnate the growth and development of the organisation and its employees. Hence the need to assess the effect of critical thinking on the performance of pharmaceutical manufacturing firms in Enugu States

Objectives of the Study

The main objective of the study was to examine the effect of critical thinking on the performance of pharmaceutical manufacturing firms in Enugu state. The specific objectives were to:

- i. Examine the effect of open-minded on the output of pharmaceutical manufacturing firm in Enugu State.
- ii. Evaluate the effect of gathering relevant information on the reduce waste of pharmaceutical manufacturing firm in Enugu State.

Research Questions

The following Research questions guided the study

- i. What is the effect of open-minded on the output of pharmaceutical manufacturing firm in Enugu State?
- ii. What is the effect of gathering relevant information on the reduce waste of pharmaceutical manufacturing firm in Enugu State?

Statement of Hypotheses

The following Hypotheses guided the study

- i. Open-minded has significance effect on the output of pharmaceutical manufacturing firm in Enugu State.
- ii. Gathering relevant information has significance effect on the reduce waste of pharmaceutical manufacturing firm in Enugu State.

Significance of the Study

The study will be of great benefit to organizational leaders, employees and future researchers.

The study will help leaders to know the importance of critical thinking the organization both in organizing, planning and in decision making. The study will help the leaders to align their recruitment processes towards employing individuals with critical thinking skills. It will also help them to understand that employees without critical thinking skills but posses other required skills in the organization can be nurtured to develop critical thinking ability.

The study will help employees to understand that for their efficiency and proficiency in the organization, critical thinking skill is required. The study will as well serve as a reference material to future studies.

Scope of the Study

The study was based on examining the effect of critical thinking on the performance of pharmaceutical manufacturing firms in Enugu state. The key variables of the study were open-minded and gathering relevant information were the components of independent variables while the components of the dependent variables were output and reduce waste. The geographical location of the study was Enugu State. The time scope of the study was 2021-2023.

Literature Review

Conceptual Review

Critical Thinking

Critical thinking is the ability to objectively analyze information and draw a rational conclusion. It also involves gathering information on a subject and determining which pieces of information apply to the subject and which do not, based on deductive reasoning. The ability to think critically helps people in both their personal and professional lives and is valued by most employers. Critical thinking skills are a valuable asset for an employee, as employers typically appreciate candidates who can correctly assess a situation and come up with a logical resolution (Jamie, 2023). Critical thinking is the ability to analyze facts objectively and form a judgment. It is a form of emotional intelligence. Someone with critical thinking skills can think clearly and rationally when the situation demands it. Critical thinking also requires being able to understand the logical connection between two or more ideas or concepts. Both the marketing and sales teams must

work together. They need to analyze how to maximize sales (Wooll, 2022). Critical thinking refers to the ability to analyze information objectively and make a reasoned judgment. Hiring a critical thinker means that micromanaging won't be required. Critical thinking abilities are among the most sought-after skills in almost every industry and workplace. If critical thinking is a key phrase in the job listings you are applying for, be sure to emphasize your critical thinking skills throughout your job search (Doyle, 2022).

Components of Critical Thinking used in the Study

Open-Minded

Open-mindedness is a characteristic of a mature and curious person who tries to understand things beyond his belief systems. It is the exact opposite of someone who does not entertain any idea than his own. Being open-minded allows you to explore new frontiers, discover new perspectives, and understand other people's cultures and beliefs. Many people have a fanatical devotion to their political choices. As an open-minded person, you would listen as to why someone would support the other camp the goal is not to ready your counterargument but to let the other person be heard. Their default position is that they are right, and the other party is wrong. Open-mindedness is also a relationship saver. For example, you may want a new car, but your spouse says it is not an excellent financial move (Drew, 2023). Being open-minded means, you are willing to look for and think about other perspectives. An open mindset is a belief that other people should be free to express their beliefs and arguments even if you do not agree with those views. Open-minded people can fairly value experiences, beliefs, emotions, goals or arguments that may not align with their own. Open-minded people tend to be good listeners who strive to understand how other people perceive situations. Biases affect how we interpret information and can cause judgment or stereotypes (Jamie, 2022).

Gathering Relevant Information

Information gathering is a systematic and multifaceted process that involves collecting, analyzing, and organizing data from various sources. It is a crucial step in acquiring knowledge, making informed decisions, and solving problems effectively. While the specific methods and techniques may vary depending on the context and purpose, the overall process generally follows a set of key steps. During the data collection phase, researchers should also consider issues of privacy, confidentiality, and informed consent. Ethical guidelines and legal requirements must be followed to protect the rights and privacy of participants and ensure the responsible handling of sensitive information (Harun, 2023). Interviewing is a skill that requires both preparation and adaptability. You need to have a clear goal, a set of relevant questions, and a way to evaluate the answers. Before you start any interview, you should have a clear idea of what you want to achieve and how you will measure it. They invite the person to elaborate, explain, share, or provide examples. Taking notes is a way of recording the key points, facts, or insights that you gather in an interview. The final step in gathering relevant information in an interview is to review and reflect on what you learned. Reviewing and reflecting is important for gathering relevant information in an interview because it helps you evaluate the quality, relevance, and usefulness of the information (Linkedin, 2023).

Performance

Performance can be influenced by ability factors, motivation factors, individual competencies, organizational support, management support, Self-efficacy, Empowerment factors, and coaching (Maharani and Widiyanto, 2017). Organizational performance is the comparison of an organization's goals and objectives with its actual performance in three distinct areas—financial performance, market performance, and shareholder value. Performance is an act of staging or presenting a play, concert, or other form of entertainment. In the work place, job performance is the hypothesized conception or requirements of a role. There are two types of job performances: contextual and task. Task performance is dependent on cognitive ability, while contextual performance is dependent on personality (Ivan and Cary, 2015). Task performance relates to behavioral roles that are recognized in job descriptions and remuneration systems. They are directly related to organizational performance, whereas contextual performances are value-based and add additional behavioral roles that are not recognized in job descriptions and covered by compensation; these are extra roles that are indirectly related to organizational performance (Paul, 2011). Performance should be achieved through items such as piloting, evaluation, efficiency, effectiveness, and quality. However, performance is not a definite concept, and requires some forms of measurement. However, there are many aspects to performance, and in the modern business with the chief focus on profit, financial performance tops it all (Ali and Qun, 2019).

Output

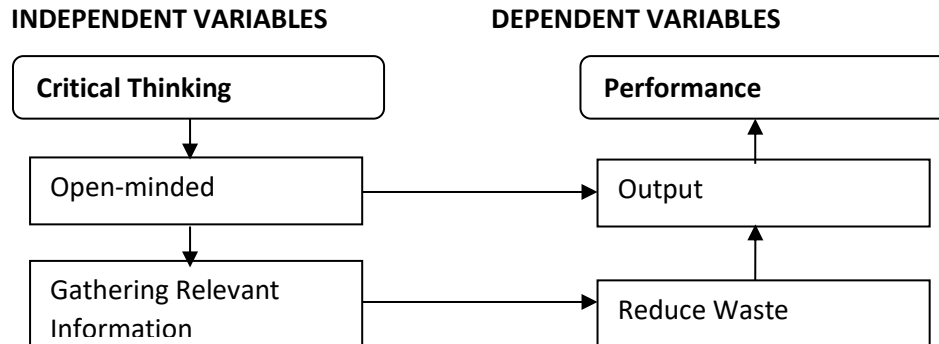
Output refers to the act of turning out; production: the factory's output of food and beverages; the quantity or amount produced, as in a given time: to increase one's daily output. It is the total production of goods and services of a whole country over a given period – its gross domestic product. The term may refer to all the work, energy, goods, or services produced by an individual, company, factory or machine (Market Business News, 2022). Output is the measure of the product of an organization. Output in manufacturing firms is the quantity of goods or services produced by the firm within a specified or given time. For an organization to produce an output to the organization must first have an input. Output is the amount of energy, work, goods, or services produced by a machine, factory, company, or an individual in a period. It could also be referred to as the desired result from a project or contractor as stated in (Business Dictionary, 2019). Outputs often apply to the number of visited customers during a given duration. The organization needs to become accustomed if there is a decline in the output of the organization due to alteration in the external or internal environment (Kotler, 2018).

Reduce Waste

Waste reduction, also known as source reduction, is the practice of using less material and energy to minimize waste generation and preserve natural resources. Waste reduction is broader in scope than recycling and incorporates ways to prevent materials from ending up as waste before they reach the recycling stage. Waste reduction includes reusing products such as plastic and glass containers, purchasing more durable products, and using reusable products, such as dishrags instead of paper towels (Patterson, 2019). Waste reduction is likely to have other

consequences; which may be just as significant. Worker productivity may increase as a result of a particular waste reduction action; while product quality might decrease as a result of another action. There are costs, benefits, and site-specific constraints to waste reduction which cannot be totally predicted. The feasibility of waste reduction is in the entire production system within which it takes place. Waste reduction activities are very open-ended and very difficult to assess comprehensively (Cheremisinoff, 2022).

Conceptual Framework of the Study



Theoretical Framework

The study was anchored on theory of Planned Behaviour

Theory of Planned Behaviour

The Theory of Planned Behaviour (TPB) was propounded by Icek Ajzen (1988-1991). This theory helps to understand how to change the behaviour of people such as lecturers of electronics technology towards effective teaching of the students with the adoption of ICT tools for instructions. The theory of planned behaviour predicts deliberate behaviour, because behaviour can be deliberative and planned. The best predictor of behaviour is intention. Intention is the cognitive representation of a person's readiness to perform a given behaviour, and it is considered to be the immediate antecedent of behaviour. This intention is determined by three things: the attitude of the lecturers toward the specific behaviour during classroom instruction, their subjective norms and their perceived behavioural control in teaching. The theory of planned behaviour holds that only specific attitudes toward the behaviour in question can be expected to predict that behaviour. In addition to measuring attitudes toward the behaviour, there is also need to measure people's subjective norms, their beliefs about how people they care about will view the behaviour in question. To predict someone's intentions, knowing these beliefs can be as important as knowing the person's attitudes. Finally, perceived behavioural control influences intentions. Perceived behavioural control refers to people's perceptions of their ability to perform a given behaviour. These predictors lead to intention. The more favourable the attitude and the subjective norm, and the greater the perceived control the stronger should the person's intention to perform the behaviour in question.

The TPB, an extension of the Theory of Reasoned Action (2002a), provides a theoretical model that links beliefs regarding an attitude object to the enactment of volitional behaviour. The TPB posits three antecedents: behavioural beliefs and attitudes towards the behaviour, normative beliefs and subjective norms, and control beliefs and perceived behavioural beliefs (figure1). Importantly, the TPB holds that cognitive antecedents of behaviour are mediated by behavioural intent in that specific behaviours are more strongly related to behavioural intent than non-specific behaviours.(Ajzen, 1991; Ajzen, 2002b).

The TPB is typically used to describe factors that lead to the volitional enactment of behaviours, for example interventions have been developed to help people lose weight, promote healthy eating (Conner, Norman, and Bell, 2002), stop or prevent smoking (Harakeh, Scholte, Vermulst, de Vries, and Engels, 2004) and promote health behaviours.

Empirical Review

The effect of open-minded on the output of pharmaceutical manufacturing firm in Enugu State

Olaniyi and Nzewi (2020) conducted a study on Working Capital Management and the Financial Performance of Basic Materials Manufacturing Companies in Nigeria. The management of working capital involves managing inventories, accounts receivable and payable, and cash. Based on this assertion, this dissertation is to examine working capital management and the financial performance of basic materials manufacturing companies in Nigeria. The objective of the study is to examine the relationship between working capital management and financial performance of basic material manufacturing companies in Nigeria, the study is anchored with Fisher's separation theory. The study used ex-post facto research design which also known as after-the-effect research, data analyses of financial information were extracted from the manufacturing companies Financial Statements for the years 2001 to 2015. These statements used to examine how an independent variable, present prior to the study, affects a dependent variable. In order to arrive at the testable conclusion, stratified random sampling techniques were adopted. Ordinary Least Square (OLS) regression model were used in this research work with the model findings, which revealed that debtors, creditors and inventory has no significant relationship with return on investment of manufacturing companies in Nigeria.

Ozoko and Ede (2020) conducted a study on the Effect of Learning on the Product Quality of Chemical and Pharmaceutical Firms in Enugu State, Nigeria. The study evaluated the effect of learning on the product quality of chemical and pharmaceutical firms in Enugu State, Nigeria. The specific objectives were to: examine the effect of employee absorbed knowledge on the standard product of manufacturing firms in Enugu State, ascertain the effect of employee undergoing a process on the features of manufacturing firms in Enugu State, Nigeria and determine the effect of employee retention of knowledge on the reliability of the product of manufacturing firms in Enugu State. The study used the survey approach. The primary sources were personal interview and the administration of questionnaire. A population of 3,418 staff was used. The population of the study was drawn from the staff of these organizations under study using a stratified sampling method. To determine the adequate sample size of 346, using Freund and William's statistic formula. A 326 staff returned the questionnaire and accurately filled. That gave 94 percent

response rate. The validity of the instrument was tested using content analysis and the result was good. The reliability was tested using the Pearson correlation coefficient (r). It gave a reliability co-efficient of 0.77 which was also good. The hypotheses were analyzed using Z- test statistics tool. The findings indicated that employee absorbed knowledge has positive effect on standard product of manufacturing firms in Enugu State $Z(95, n = 346) = 5.635, p > 0.05$, Employee undergoing a process has positive effect on the features of manufacturing firms in Enugu State, $Z(95, n = 346) = 5.819, p > 0.05$, employee retention of knowledge has positive effect on the reliability of products of manufacturing firms in Enugu State. $Z(95, n = 346) = 5.984, p > 0.05$. The study concluded that learning was one of the organizational values, systems and practices that supports and encourages both individuals, and the organization to increase knowledge, competence and performance levels on an ongoing basis.

Ezeh, Onah and Ugochukwu (2022) conducted a study on the Performance Recognition and Employee Output of Pharmaceutical Manufacturing Firms in Enugu State, Nigeria. The study evaluated the Performance Recognition and Employee Output of Pharmaceutical Manufacturing Firms in Enugu state, Nigeria. The specific objectives were to; examine the relationship between desirable awards and employee quality of work; the relationship between peer recognition and productivity and the relationship between immediate gratification and employee efficiency of Pharmaceutical Manufacturing Firms in Enugu state, Nigeria. The area of the study comprised of staff of T.U Woods Pharmaceuticals, Michelle Laboratories, and Juhel pharmaceuticals in Enugu State. The study used the descriptive survey design approach. The primary source of data was the administration of questionnaire. A total population of 1530 staff was used. The adequate sample size of 307, using Freund and William's statistic formula at 5 percent margin of error. 238 staff returned the questionnaire and accurately filled. Data was presented and analyzed by mean score and standard deviation using Sprint Likert Scale and hypotheses were analyzed using Pearson correlation coefficient (r) statistics tool. The findings observed positive significant relationship between desirable awards and employee quality of work ($r = .221 < .865$); positive significant relationship between peer recognition and productivity ($r = .729 < .868$) and there was positive significant between immediate gratification and employee efficiency of Pharmaceutical Manufacturing Firms in South-East, Nigeria, ($r = .364 < .809$). The study concluded that Performance Recognition and Employee Output of Pharmaceutical Manufacturing Firms.

Eneh (2022) carried out a study on the Effect of Employees Involvement in Management Decision Making on Organizational Efficiency of Pharmaceutical manufacturing Firms in Enugu State. The study examine the effect of employees involvement in management decision making on organizational efficiency of pharmaceutical manufacturing firms in Enugu State. The specific objectives of the study were to: Ascertain the effect of employee feedback on organizational efficiency of pharmaceutical manufacturing firms in Enugu State and determine the effect of employee commitment on organizational efficiency of pharmaceutical manufacturing firms in Enugu State. The study used the survey approach. The primary source was administration of questionnaire to the senior and junior staff of the selected firms. Out of a population of two thousand nine hundred and eighty nine (2989), 400 staff was sampled. The sample size of 400 was chosen after applying the Freund and William's formula for the determination of adequate sample size. Out of 400 staff sampled, 375 returned the questionnaire and accurately filled. The

questionnaire responses were grouped into various categories and entered in the SPSS software to facilitate analysis using descriptive statistics. Data was collected, coded, grouped into frequencies, and arranged into tables for ease of reference. For the test of the hypotheses, the data were analyzed using Z –test. The findings indicated that employee feedback had positive significant effect on organizational efficiency of pharmaceutical manufacturing firms in Enugu State $Z(95, n = 400) = 4.2895, P < 0.05$. Employee commitment had positive significant effect on organizational efficiency of pharmaceutical manufacturing firms in Enugu State. $Z(95, n = 400) = 4.1025, P < 0.05$. The study concluded that employee feedback and commitment are managerial practices whose effects widely impact the organizational efficiency. Employee feedback and commitment is necessary for every organization in order to have extraordinary performance for long term basis.

Oyebanjo, Ayotamuno, Obiora and Udeh (2023) carried out a study on the Effect of Conflict Management Strategy on the Productivity of Manufacturing Firms in Enugu State. The study evaluated the effect of conflict management strategy on the productivity of Bakery manufacturing firms in Enugu state. The specific objectives were to: evaluate the effect of collaboration on the Employee experience; and ascertain the effect of compromise on the ability to plan by the manufacturing firms in Enugu state. The study used the descriptive survey design approach. The primary source of data was the administration of questionnaire. A total population of 1261 selected staff of the study organizations. The sample size of 295 was drawn using Freund and William's formula at 5 percent error margin. Two hundred and seventy (270) staff returned the questionnaire and accurately filled. Data was presented and analyzed using Likert Scale and the hypotheses using Z-test. The findings indicated Collaboration had significant positive effect on the employee experience of the Bakery manufacturing firms in Enugu state, $Z(95, n = 292) 7.315$ to $8.661 p < 0.05$. Compromise had significant positive effect on the ability to plan of the Bakery manufacturing firms in Enugu state $Z(95, n = 292) 7.432$ to $8.720, p > 0.05$. The study concluded that collaboration and compromise had significant positive effect on the employee experience of the Bakery manufacturing firms in Enugu state.

The Effect of Gathering Relevant Information on the Reduce Waste of Pharmaceutical Manufacturing Firm in Enugu State

Okafor, Kalu and Ozioma (2017) carried out a study on the Effect of Organizational Structure on Performance of Selected Manufacturing Companies in Enugu State Nigeria. The relevance of structure to manufacturing firms especially in the pharmaceutical industry in Nigeria has not attracted much attention, especially empirical evidence. Thus, this study examined the effect of organisational structure on the performance of selected manufacturing companies in Enugu State, Nigeria with a focus on pharmaceutical manufacturing firms. The study adopted a Survey design. Three organisations were studied namely: A.C. Drugs Ltd, NEMEL Pharmaceutical Limited and Juhel Pharmaceutical Company Ltd with a population of four hundred and sixty-eight (468). The sample size was determined using Cochram (1963) formula which gave a sample size of 297. The study relied on both primary and secondary data. Materials and information were sourced from the Human Resource Departments of the firms and journal articles including textbooks and

students project reports. The questionnaire was the instrument for primary data collection. The methods used in analysing the data are descriptive statistics (frequencies, mean, standard deviation, variance, etc.), simple linear regression and correlation (bivariate) to examine the effect of organisational structure (Independent Variable) on organisational performance (dependent variables). The study found that structure significantly affects organisational performance. The study concludes that organisational structure in pharmaceutical manufacturing firms affects performance except in its growth objective.

Afeltra, Alerasoul, Minelli, Vecchio and Montalvo (2022) carried out a study on Assessing the Integrated Impact of Sustainable Innovation on Organisational Performance: An Empirical Evidence From Manufacturing Firms. Sustainable Development Goals (SDGs) have gained importance and the world is moving on a sustainability trajectory, which requires organisations to balance financial, environmental, and social dimensions of management. Companies are encouraged to adopt sustainable innovations that include resource efficiency, waste reduction, energy use, responsible behavior etc., to overcome environmental issues and incorporate societal aspects. However, the types of innovations that embrace the so-called triple bottom line philosophy have been tenuously investigated in relation to organisational performance of firms. Through an empirical study, this work investigates the relationship between sustainable innovation in its three dimensions and organisational performance, including stakeholder management, human resource management and process measures, in the context of Italian manufacturing companies. The results show that a greater emphasis on sustainable innovations has a positive impact on the organisational performance and competitive advantage of firms, revealing the key role of human capital and portraying important avenues for future research.

Muddasir, Chandan, Parkash, Fahad and Abbas (2022) carried out a Study on Waste Disposal Management in Textile Industry: A Case Study of Gul Ahmed. The objective is to determine how the disposal of Waste, GSCP, and WR affected the company's productivity. The study used a correlational design to examine the relationships between variables. Furthermore, the study was descriptive, and data were acquired using various methods (qualitative and quantitative). In addition, the study's quantitative component was a questionnaire-based survey, and its qualitative component was a series of in-depth interviews with key individuals. A Likert scale questionnaire was used to gather the research's primary data, while the secondary data was gathered through reviewing previous articles. The data gathered was then measured using a statistical technique and the SPSS software. The study concluded that Waste and WR disposal is significant, but GSCP has an insignificant impact on the company's productivity. Furthermore, waste directly impacts human development, both socially and technologically. Waste management is distinct from resource recovery, which is concerned with lowering the pace at which natural resources are used. All waste materials, whether solid, liquid, gaseous, or radioactive, are included in WM. WM practices might differ across developed and emerging countries, urban and rural areas, industrial producers, and residential areas.

Okale and Nnadi (2022) conducted a study on the Impact of Solid Waste Management on Green House Gases in Nigeria. Consumption and production activities often lead to the generation of by-products and in some cases end products that can be termed waste. This waste can be

gaseous, liquid or solid in nature and they need to be properly and safely discarded and managed in order to ensure protection of man and the environment. This work concerns itself with solid waste, its management and how it is impacting greenhouse gases. The study is qualitative and does not attempt to measure the amount of emission from this region of the state. Data for this study was gotten from Primary and secondary sources; Primary data from on-site visits to various waste disposal location within the study area and Secondary data from a wide range of literature and research findings on Municipal Solid Waste and Solid Waste Management systems. The findings however show that the dire effect of the poor management of solid waste through its entire life cycle leaves a lot to be desired. The system of open disposal, burning and decomposition obtainable in Port Harcourt is greatly increasing the level of GHG emissions in the country Nigeria.

Edeh, Nnamani and Mbah (2023) conducted a study on Total Quality Management Practices and Performance of Pharmaceutical Firms in Enugu State. The study evaluated the Total quality management practices and performance of pharmaceutical firms in Enugu State. The specific objectives were to; examine the relationship between customer focus and profitability and evaluate the relationship between continual improvement and the volume of sales of pharmaceutical firms in Enugu State. The population of the study consists of five (5) selected three hundred and seventy-two (372) staff of pharmaceutical manufacturing companies in Enugu state, Nigeria. The whole population was used due to small number. The study used the descriptive survey design approach. The primary source of data was the administration of questionnaire. 288 staff returned the questionnaire and accurately filled. Data from the questionnaire was administered and analyzed using simple percentages, mean and standard deviation, and the hypotheses were tested using Pearson correlation (r) The findings indicated that Customer focus had significant positive relationship with profitability of pharmaceutical firms in Enugu State, ($r=.412 <.982$, $p<.05$). Continual improvement had significant positive relationship with volume of sales of pharmaceutical firms in Enugu State, ($r=.367<.835$, $p<.05$).

Gap in Empirical Review

The few studies done were carried outside effect of critical thinking on the performance of pharmaceutical manufacturing firms in Enugu state and did not focus to best of my knowledge on the open-minded on the output and gathering relevant information on the reduce waste of pharmaceutical manufacturing firm in Enugu State. Most of the studies reviewed analysed their data through Descriptive statistics (frequencies, mean, standard deviation, variance, etc.), simple linear regression and correlation (bivariate), Ordinary Least Square (OLS) regression model, Statistical technique and the SPSS software, Pearson correlation (r) and Descriptive survey design approach while the present study made use of Z test to test the hypotheses. Therefore, the study aimed at filling this research gap by evaluating the effect of critical thinking on the performance of pharmaceutical manufacturing firms in Enugu state.

Methodology

The area of the study was selected Pharmaceutical manufacturing firms in Enugu state, Nigeria. The study used the descriptive survey design approach. The primary source of data was the administration of questionnaire. The population of the study consisted of three hundred and twenty five (325) management and senior staff. The whole population was used due to small number. Two hundred and forty nine (249) staff returned the questionnaire and accurately filled. That gave 77 percent response rate. The validity of the instrument was tested using content analysis and the result was good. The reliability was tested using the Pearson correlation coefficient (r). It gave a reliability co-efficient of 0.820 which was also good. Data was presented and analyzed by mean score and standard deviation using Sprint Likert Scale. The hypotheses were analyzed using Z - test statistic tool.

Data presentation and Analyses

The effect of open-minded on the output of pharmaceutical manufacturing firm in Enugu State

Table 1: The effect of open-minded on the output of pharmaceutical manufacturing firm in Enugu State

		5 SA	4 A	3 N	2 DA	1 SD	ΣFX	- X	SD	Decision
1	Gaining insight brings in new ideas and improves productivity.	450 90 36.1	80 20 8.0	243 81 32.5	74 37 14.9	21 21 8.4	868 249 100%	3.49	1.335	Agree
2	Having new experiences help promote clarity of purpose in the firm.	665 133 53.4	80 20 8.0	117 39 15.7	70 35 14.1	22 22 8.8	954 249 100%	3.83	1.424	Agree
3	Become mentally strong provide measurable target for teams in the firm.	540 108 43.4	80 20 8.0	198 66 26.5	50 25 10.0	30 30 12.0	898 249 100%	3.61	1.428	Agree
4	Feeling more optimistic enhances service produced in a given period.	600 120 48.2	196 49 19.7	99 33 13.3	46 23 9.2	24 24 9.6	932 249 100%	3.88	1.358	Agree
5	The achievement of personal growth has aided meeting customers need.	725 145 58.2	148 37 14.9	66 22 8.8	52 26 10.4	19 19 7.6	1010 249 100%	4.06	1.334	Agree
Total Grand mean and standard deviation								3.77 4	1.375 8	

Source: Field Survey, 2023

Table 1, 110 respondents out of 249 representing 44.1 percent agreed that the Gaining insight brings in new ideas and improves productivity with mean score 3.49 and standard deviation of 1.335. Having new experiences help promote clarity of purpose in the firm 153 respondents representing 60.4 percent agreed with mean score of 3.83 and standard deviation of 1.424. Become mentally strong provide measurable target for teams in the firm 128 respondents representing 51.4 percent agreed with mean score of 3.61 and standard deviation of 1.428. Feeling more optimistic enhances service produced in a

given period 169 respondents representing 67.9 percent agreed with mean score of 3.88 and 1.358. The achievement of personal growth has aided meeting customers need 182 respondents representing 73.1 percent agreed with a mean score of 4.06 and standard deviation 1.334.

The effect of Gathering Relevant Information on the reduce waste of pharmaceutical manufacturing firm in Enugu State

Table 2 The effect of gathering relevant information on the reduce waste of pharmaceutical manufacturing firm in Enugu State.

		5 SA	4 A	3 N	2 DA	1 SD	ΣFX	- X	SD	Decision
1	Gathering information better understand the environment they operate and in turn reduce expenses.	520 104 41.8	240 60 24.1	54 18 7.2	86 43 17.3	24 24 9.6	924 249 100%	3.71	1.404	Agree
2	Information helps identify potential risks and reduce loss.	580 116 46.6	276 69 27.7	57 19 7.6	30 15 6.0	33 33 12.0	976 249 100%	3.91	1.366	Agree
3	The development of strategies was as a result of proper information.	705 141 56.6	268 67 26.9	54 18 7.2	12 6 2.4	17 17 6.8	1056 249 100%	4.24	1.139	Agree
4	Making of informed decisions comes as due to gathering of information.	620 124 49.8	328 82 32.9	39 13 5.2	36 18 7.2	12 12 4.8	1035 249 100%	4.16	1.120	Agree
5	Varieties of sources can diminish the effect of bias.	415 83 33.3	356 89 35.7	39 13 5.2	86 43 17.3	21 21 8.4	917 249 100%	3.68	1.320	Agree
Total Grand mean and standard deviation								3.832	1.2698	

Source: Field Survey, 2023

Table 2, 164 respondents out of 249 representing 65.9 percent agreed that the Gathering information better understand the environment they operate and in turn reduce expenses with mean score 3.71 and standard deviation of 1.404. Information helps identify potential risks and reduce loss 185 respondents representing 74.3 percent agreed with mean score of 3.91 and standard deviation of 1.366. The development of strategies was as a result of proper information 208 respondents representing 83.5 percent agreed with mean score of 4.24 and standard deviation of 1.139. Making of informed decisions comes as due to gathering of information 206 respondents representing 82.7 percent agreed with mean score of 4.16 and 1.120. Varieties of sources can diminish the effect of bias 172 respondents representing 69.0 percent agreed with a mean score of 3.64 and standard deviation 1.320.

Test of Hypotheses

Hypothesis One: Open-minded has significance effect on the output of pharmaceutical manufacturing firm in Enugu State

Table 3: One-Sample Kolmogorov-Smirnov Test						
		Gaining insight brings in new ideas and improves productivity.	Having new experiences help promote clarity of purpose in the firm.	Become mentally strong provide measurable target for teams in the firm.	Feeling more optimistic enhances service produced in a given period.	The achievement of personal growth has aided meeting customers need.
N		249	249	249	249	249
Uniform Parameters ^{a,b}	Minimum	1	1	1	1	1
	Maximum	5	5	5	5	5
Most Extreme Differences	Absolute	.361	.534	.434	.482	.582
	Positive	.084	.088	.120	.096	.076
	Negative	-.361	-.534	-.434	-.482	-.582
Kolmogorov-Smirnov Z		5.704	8.429	6.844	7.605	9.189
Asymp. Sig. (2-tailed)		.000	.000	.000	.000	.000
a. Test distribution is Uniform.						
b. Calculated from data.						

Decision Rule

If the calculated Z-value is greater than the critical Z-value (i.e $Z_{cal} > Z_{critical}$), reject the null hypothesis and accept the alternative hypothesis accordingly.

Result

With Kolmogorov-Smirnon Z – value ranges from $5.704 < 9.189$ and on Asymp. Significance of 0.000, the responses from the respondents as display in the table is normally distributed. This affirms the assertion of the most of the respondents that open-minded had significance positive effect on the output of pharmaceutical manufacturing firm in Enugu State

Decision

Furthermore, comparing the calculated Z- value ranges from $5.704 < 9.189$ against the critical Z- value of (2-tailed test at 95 percent level of confidence) the null hypothesis were rejected. Thus the alternative hypothesis was accepted which states that open-minded had significance positive effect on the output of pharmaceutical manufacturing firm in Enugu State.

Hypothesis Two: Gathering relevant information has significance effect on the reduce waste of pharmaceutical manufacturing firm in Enugu State

Table 4: One-Sample Kolmogorov-Smirnov Test

		Gathering information better understand the environment they operate and in turn reduce expenses.	Information helps identify potential risks and reduce loss.	The development of strategies was as a result of proper information.	Making of informed decisions comes as due to gathering of information.	Varieties of sources can diminish the effect of bias.
N		249	249	249	249	249
Uniform Parameters ^{a,b}	Minimum	1	1	1	1	1
	Maximum	5	5	5	5	5
Most Extreme Differences	Absolute	.418	.493	.585	.577	.441
	Positive	.096	.120	.068	.048	.084
	Negative	-.418	-.493	-.585	-.577	-.441
Kolmogorov-Smirnov Z		6.591	7.779	9.237	9.110	6.955
Asymp. Sig. (2-tailed)		.000	.000	.000	.000	.000
a. Test distribution is Uniform.						
b. Calculated from data.						

Decision Rule

If the calculated Z-value is greater than the critical Z-value (i.e $Z_{cal} > Z_{critical}$), reject the null hypothesis and accept the alternative hypothesis accordingly.

Result

With Kolmogorov-Smirnon Z – value ranges from $6.591 < 9.237$ and on Asymp. Significance of 0.000, the responses from the respondents as display in the table is normally distributed. This affirms the assertion of the most of the respondents that gathering relevant information had significance positive effect on the reduce waste of pharmaceutical manufacturing firm in Enugu State.

Decision

Furthermore, comparing the calculated Z- value ranges from $6.591 < 9.237$ against the critical Z-value of 0.000 (2-tailed test at 95 percent level of confidence) the null hypothesis was rejected. Thus, the alternative hypothesis was accepted which states that gathering relevant information had significance positive effect on the reduce waste of pharmaceutical manufacturing firm in Enugu State.

Discussion of Findings

The effect of open-minded on the output of pharmaceutical manufacturing firm in Enugu State

From the result of hypothesis one, the calculated Z- value ranges from $5.704 < 9.189$ against the critical Z- value of 0.000, which states that Open-minded had significance positive effect on the output of pharmaceutical manufacturing firm in Enugu State. In the support of the result, in the related Literature.

The effect of gathering relevant information on the reduce waste of pharmaceutical manufacturing firm in Enugu State.

From the result of hypothesis two, the calculated Z- value ranges from $6.591 < 9.237$ against the critical Z- value of 0.000, which implies that gathering relevant information had significance positive effect on the reduce waste of pharmaceutical manufacturing firm in Enugu State. In the support of the result, in the related Literature,

Summary of the Findings

- i. Open-minded had significance positive effect on the output of pharmaceutical manufacturing firm in Enugu State, $Z (95, n = 249), 5.704 < 9.189, P. < .05$.
- ii. Gathering relevant information had significance positive effect on the reduce waste of pharmaceutical manufacturing firm in Enugu State, $Z (95, n = 249), 6.591 < 9.237, P. < .05$.

Conclusion

The study concluded that Open-minded and Gathering relevant information had significance positive effect on the output and reduces waste of pharmaceutical manufacturing firm in Enugu State. Critical thinking creates the ability to organize information logically to make a reasoned judgment. It involves the evaluation of data sources, facts and other research to make a reasonable conclusion by “connecting the dots.” Primarily, it is a process that involves interpreting information in a logical and systematic manner. Using critical thinking, in other words, allows individuals to engage with ideas, consider different perspectives, and arrive at reasonable conclusions.

Recommendations

The following recommendations were proffered:

- i. The management of pharmaceutical firms should have open-minded spirit to help put differences aside and cooperate to progress as individuals, and as a society. Leaders who are open-minded tend to be more self-aware, trusted by their employees, and interested in developing their skills.
- ii. It should be necessary to seek relevant information, this will enable answer a question or understand the complexity of an issue and develop individual point of view which helps you develop your own point of view.

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