

A New Optimised Whale Optimisation Technique for Analysing the Impact of Leadership Styles on Logistic

K. Krishna Rao¹, Dr. KVB Ganesh²

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Abstract: The current study's focus is Dr. Narla Tata Rao Thermal Power Station, (APGENCO) Ibrahimpatnam, and its objective is to evaluate "Impact of Leadership styles on organisation performance on the power sector in Andhra Pradesh, India. This empirical study extends its investigation into the relationship between various leadership styles and their impact on organizational performance by incorporating the Whale Optimization Technique (WOT) as a novel optimization approach. Leadership styles significantly influence organizational dynamics, and optimizing leadership strategies is crucial for enhancing performance. The researcher employed a combination of primary & secondary sources of data. The researcher gathered secondary data by using various textbooks such as organisational behaviour, leadership, and performance from research papers, magazine articles, and various business journals. For the purpose of research, the researcher has constructed a self-administered questionnaire and gathered the data by Surveys and interviews with the employees who are working in Dr. Narla Tata Rao Thermal Power Station (APGENCO) Ibrahimpatnam. The questionnaire was distributed to staff were done to gather the primary data. With integrating WOT, a nature-inspired optimization algorithm, this study enhances the empirical analysis by identifying optimal leadership style configurations that lead to improved organizational outcomes across diverse industries. The researcher used the stratified random sampling technique to gather the data. In total, 150 questionnaires were distributed; 110 of them were trustworthy and used in the data analysis the 110 participants in the study discovered a high correlation between the effects of leadership styles on the organisational performance. The researcher used regression analysis to examine the "Impact of leadership styles on organization performance". Findings stated that there is a positive and negative result of autocratic leadership and organization Performance. Finally, the results portrayed that transformational and democratic leadership style has to be followed by Dr. Narla Tata Rao Thermal Power Station (APGENCO) in order to improve the organization Performance.

Key words: Organization Performance, Leadership, and Leadership Styles.

1. Introduction

Building upon the foundational premise that leadership styles are pivotal to organizational success, this study explores the connection between these styles and performance outcomes. The one who is the leader is the one who knows the way, demonstrates the way, and offers the way. Leadership is the process through which a person will persuade a group of others to pursue a shared goal. Success In today's globalised society, both long-term and short-term goals are crucial. Long-term goals required skilled labour, and the technology vision demanded unique goods and services. In order to achieve the aforementioned goals, there is always a direction towards vision for increasing the overall value and efficiency. To support that vision and the achievement of the goals, a leader is required. n an unstable economic environment (Chen et al 2019). How successfully and efficiently aims and goals are reached in an organisation depends on the manager therein and type of leadership they employ (Mokgolo, Mokgolo, &Modiba, 2012). When management chooses an ineffective leadership

style, the majority of organisations fail. In this situation, the employees are not well organised or under control, and all these factors may lead to issues like rising production costs, poor employee turnover, low productivity, employee absenteeism, etc. Some companies may struggle with a lack of capable leaders, while others may have capable leaders who are unwilling to put in the necessary work, etc. The majority of businesses today are struggling with ethical difficulties including excessive employee turnover and poor organisational performance, among others. To address these challenges, the business must adopt the appropriate leadership style to improve organisational performance or to meet its goals. Although there are many different leadership philosophies, including autocratic, democratic, laissez-faire, transactional, transformational, charismatic, and hybrid philosophies, the autocratic, democratic, transactional, and transformational philosophies of leadership were utilized for the purposes of the current study.

A. Leadership Types

The leadership style is a leader's approach to organising the team's efforts, carrying them out, and guiding them towards the desired outcome. There are several kinds of leaders in organisations, according to some experts, but

1K. Krishna Rao, Research Scholar, MBA Department, KLEF, 8555017972, krishnaraokunapareddy@kluniversity.in

2Dr. KVB Ganesh, Assistant Professor, MBA Department, KLEF; phone: 9885503277; email: kvbganesh@kluniversity.in

the culture of each business designs and adopts its own leadership style in order to achieve its goals and objectives. (2015, Odediran and Babalola) The demonstrated leadership style consists of Leadership styles include autocratic, authoritarian, democratic, delegative, transactional, and transformational.

- **Autocratic Leadership:** Autocratic leaders are able to take control over and drive decision-making within the organisation. They have a strong sense of authority. They make choices on their own, without consulting the lower-level workers. They have the final word in how things are carried out, and they closely monitor the employees. Low morale among employees leads to employee discontent, which in turn affects employee turnover.
- **Democratic style of leadership:** It also referred as participative leadership style, is what it is. A democratic leadership style involves the leader considers the followers in decision-making and considering their ideas. It is simpler for employees to accept changes in environments where they feel valued for their opinions and labour and when democratic leadership is practised.
- **Leadership in *Laissez Faire*:** Leadership in *Laissez Faire* is also known as free-rein leadership. This type of leadership was actually lacking and was primarily used for physical purposes. In this type of leadership, the leaders are hesitant to act because they are unable to take on the responsibilities and coordinate the tasks. Employees made the decisions, and power is distributed in this way from low level management to top level management.
- **Transactional leadership:** In the current environment, transactional leadership is most frequently used. Many firms are implementing the transactional leadership style, which is nothing more than an action-reward strategy wherein a team is rewarded for completing a specified task.
- **Transformational leadership:** In this style of leadership, the leaders push or coerce the subordinates to advance or update their knowledge for the benefit of their careers and the operation of the organisation. Transformational leadership focuses primarily on enhancing the abilities and functions of the work force.

B. Organization Performance

Every organization's performance is impacted by the way its executives conduct themselves, how committed its workforce is to their work, and how well it adheres to labour regulations. The term "organisation performance" refers to how successfully a given organisation achieves its objectives and goals. Productivity, employee turnover, organisational turnover, employee job satisfaction, organisational income, and profits are some examples of

ways to measure an organization's performance. With the implementation of innovative Whale Optimization Technique, which emulates the social behavior of humpback whales, this research aims to uncover not only the correlations between leadership styles and performance but also to identify optimized leadership style combinations that yield superior results.

C. Research Objectives

- To evaluate the connection between leadership and organisational success.
- To look into how leadership affects the organisational performance at Dr. Narla Tata Rao Thermal Power Station, (APGENCO).

Hypothesis for Research

H0: Leadership does not have a major impact on an organization's performance.

H1: Leadership has a substantial impact on organisational performance.

2. Related Works

The quality of an organization's leadership is frequently directly associated with the success or failure of the organization. A leader's leadership style is the means by which he or she directs and motivates subordinates toward the achievement of set goals. This study investigates how various styles of leadership influence the efficiency of an organization. The main points of discussion centered on several types of leadership, including transformational, transactional, autocratic, charismatic, bureaucratic, and democratic models. Organizational performance is positively impacted by democratic, transformational, bureaucratic, and autocratic leadership styles, but negatively impacted by charismatic and transactional leaderships due to a lack of opportunity and freedom for employees, as revealed by research by Ebrahim Hasan Al Khajeh (2018). This study employed both primary and secondary resources to collect its data. This research used a quantitative approach by primarily collecting data through a survey questionnaire. The goals of the study could only be achieved through the use of secondary data gathered through a comprehensive literature review. Charismatic, bureaucratic, and transactional leadership were all found to have a negative impact on the efficiency of a business. Organizational success was linked to more transformational, authoritarian, and democratic leadership styles. Some have advocated for corporations to adopt a leadership style that focuses on developing their employees' abilities.

Reducing staff turnover in today's globally competitive climate requires a strong leadership style. Only efficient methods of leadership can allow a

company to realize its productive potential. Because management methods are not unique, different tactics, approaches, and management styles exist, and their performance is largely reliant on these variations, the leadership style of a company's top executive can have a significant impact on the company's bottom line. In Adekunle Oluwatosin Alade's (2022) study, he used a survey strategy to gather primary data by sending out a questionnaire to study participants. Data was analyzed using SPSS, a statistical program designed specifically for social scientists. Firm performance was used as the dependent variable, with Leadership Style serving as the independent variable. The 0.8 value for the Cronbach alpha test statistic indicates that the results are reliable. Also, it was shown that leaders with democratic personalities make a bigger impact on performance than authoritarian or laissez-faire ones do. In this study, we examine the relationship between leadership styles and employee satisfaction in a selection of Nigerian businesses.

K G M Alkathr's (2022) quantitative research attempts to talk about how different kinds of leadership affect workplace outcomes for the Minister of State, Governor of Dhofar in the Sultanate of Oman, and how organizational culture plays a part in that. Both qualitative and quantitative methods of data collecting were used in this study. Workers in the Dhofar Governorate Minister of State's Office (3316 in total) constituted the study population. According to the table created by Krejcie and Morgans (1970), a sample of 348 employees was selected at random. By drawing from many sources, a questionnaire was constructed. There were 66 statements total, split into 3 categories; the first, "leadership styles," contained 25 questions. The effectiveness of the organization as measured by (26) statements in four categories. Methods for extracting meaningful data include descriptive analysis, Cronbach's alpha, preliminary data analysis, and validity of differentiation, a multiple linear correlation test, and coefficient estimation. Direct effect test, mediation effect test, structural modeling, and the $f(2)$ or quadratic coefficient of determination. The results showed that democratic leadership was the most common (3.78), followed by transformational leadership (3.76), while autocratic leadership was the least common (2.86). There was a significant relationship (effect size = 0.517) between leadership styles and organizational results. The culture of the company was also impacted, with a (0.391) effect size.

There have been significant external and internal challenges to businesses around the world in recent years. Increases in the cost of labor and raw materials, as well as shifts in the structure of relevant industries, pose serious financial challenges for businesses. This study

examines the plush toy sector in Taiwan to examine the topic of leadership style and to see if a leader's approach to management has an effect on the success of a company. Whether or not this would have an impact on employee creativity and productivity on the job is something that should be thoroughly discussed. Data collection for this study was accomplished mostly by the distribution of questionnaires via email, regular mail, or third parties; they were then experimentally analyzed using SPSS18.0. Both transformational and transactional styles of leadership were found to positively affect creativity and productivity at work. In particular, transformational leadership impacts business outcomes more than its transactional counterpart. In addition, innovation in the workplace improves productivity. Finally, based on these findings, talks were formed with the intention of serving as references for academic and industrial specialists.

Effective leaders are facilitators who zero in on hardworking employees. Management practices and employee morale are posited to play a significant role in determining a company's success or failure in studies of organizational psychology and studies of the organization's actions. This research by S. Roy et al., (2021) set out to define four distinct styles of leadership—autocratic, transformational, democratic, and transactional—and examine how each would affect the productivity of employees in Somaliland's Ministry of Education and Higher Learning. Leadership styles were examined to see how they affected workers' output. High absenteeism, low morale, falling work satisfaction, and staff turnover are all indicators that an autocratic leadership style is bad for productivity in the department. Worker performance, as measured by strong morale, productivity, engagement, and dedication, is positively impacted by the use of egalitarian, transformative, and transactional leadership styles. The research defined four main leadership styles—autocratic, transformational, democratic, and transactional—to better understand the influence each has on productivity in the Somaliland Ministry of Education and Superior Studies. Therefore, democratic, transactional, and disruptive leadership styles can be expected to boost productivity in the workplace. However, autocratic models are correlated negatively with productivity. It's important to continue and strengthen the company's use of democratic leadership practices that have proven effective in the past.

To remain competitive, businesses must strike a balance between satisfying their stakeholders' needs and those of their employees. Previous research in the sector has shown that an effective leadership style can have a positive impact on an organization's and its workforce's success and economic growth. So, Mitra Madanchian

(2021) sets out to do just that, explaining how various types of leadership can boost or hinder an organization's productivity. The author devotes most of his attention to the function that transformational leadership plays in boosting organizational effectiveness. They begin by proposing a foundation for the relationship between transformative leadership and organizational performance, proceed to explain the impact of leadership style on output, and wrap up by suggesting directions for future study.

Abbas Umar Ibrahim's (2019) research analyzed the effect of management on the efficiency of the Coca-Cola branch in Abuja, Nigeria's capital. Leadership was found to have considerable effects on the output of a company. The manager's leadership style has a negative correlation with the manager's effectiveness. The research found, among other things, that a more democratic style of leadership that emphasizes delegating authority to subordinates is associated with better performance from those employees. This research concludes that a company's leadership style is the single most important factor in its success or failure. It concludes that, since effective leadership is a prerequisite to achieving an organization's stated objectives, that organization's success depends on having the appropriate person in charge.

Leadership comes in various forms, each with its own unique effects on team output. The effectiveness of professors in universities is affected by a wide range of variables, such as management techniques and institutional norms. The study by A.Jamily (2022) aims to find out how different types of leadership affect faculty performance (FP) at MUET, Jamshoro, and whether or not organizational culture plays a moderating role in this link. The goal of this quantitative research was to examine the moderating effect of institutional culture on the relationship between leadership styles and teacher performance at MUET, Jamshoro. The sample size was 384, and SmartPLS 3 was utilized for data analysis. The study employed both probability and non-probability sampling methods. Both the Competing Values Framework (CVF) and the Full Range Leadership Model have been included into the company's approach to leadership and culture. Results from this study show a positive and statistically significant correlation between Transformational (TF) leadership and teacher effectiveness at MUET, Jamshoro. Furthermore, Organizational Culture (OC) acts as a moderator, weakening the positive relationship between Laissez-faire (LF) leadership and faculty performance (FP). Faculty members believe that transformational leadership is the most effective method for boosting their productivity because it encourages them to take initiative and think critically while also fostering an atmosphere of

mutual trust and respect. There is a place for laissez-faire leadership in an academic institution, and it can boost productivity among teachers. However, faculty performance suffers under Transactional leadership. Additional universities could be included in the study in the future, or the leadership models and organizational culture models of public and private colleges could be compared.

Samuel Tamba's (2023) research analyzed the impact of several leadership styles on productivity and cross-cultural communication in the Kenema, Pendembu, and Koindu branches of Apex Banks in the Kailahun District. The purpose of this research was to compare the effects of Laissez-Faire, Transitional, and Transformational leadership on Apex Bank's productivity. Middle and upper-level bank employees in Kenema, Pendembu, and Koindu were surveyed for this descriptive study. After a week, we gathered the responses to a well-designed survey that we had sent out. The validity, authenticity, and thoroughness of the submitted questionnaires were evaluated. According to the goals of the research, yes and no were utilized as the two independent variables. A strong separation was drawn between the Transformational Leadership components and the relatively low organizational performance rating in an effort to identify the leadership styles that affect organizational performance. The results of the study supported the idea that a Laissez-Faire approach to management is effective. Consequently, the study concluded that public managers should develop and execute efficient reward and recognition systems, and that the Laissez-Faire Leadership style should be abandoned in favor of a more hands-on approach to leading subordinates. Managers should also want to be role models for their subordinates, motivate them by giving them interesting tasks, encourage them to think outside the box, and focus more on each employee's desire to improve professionally.

3. Research Methodology

Incorporating both quantitative and qualitative methods, this study collects data through surveys and interviews to evaluate perceptions of leadership styles and their effects on performance metrics. Additionally, the Whale Optimization Technique is introduced to identify optimal leadership style parameters that maximize organizational performance. By iteratively refining leadership style configurations through the WOT, this study provides a unique perspective on leadership optimization. The study's primary goal is to determine how leadership at Thermal Power Station, (APGENCO) affects organisational performance. The investigation used both primary and secondary data. Research papers, magazine articles, business journals, and textbooks were used to compile secondary data on

leadership, organisation, and organisational performance. The key data obtained from polls and interviews at the Dr. Narla Tata Rao Thermal Power Station, (APGENCO). Random sample using stratification was the method used for the inquiry. In total, 150 questionnaires were given out; 110 of them were correctly filled out and used for data analysis. According to the study, which employed 110 individuals as its sample size, there is a significant relationship between leadership's impacts and organisational performance. The data for the study were analysed using regression analysis, and the responses were entered into an Excel sheet and then analysed using SPSS.

A Review of the Leadership Literature

Kotler (1990) asserts that true leadership is more about guiding others, uniting people, and inspiring and motivating them in achieving the long-term results and the organization's long-term objectives are highly valued by the leadership. Leadership is more about the people than it is about the task. Leaders make excellent use of many of the same abilities and passions, but they frequently achieve better results because they concentrate on things like overcoming obstacles by finding solutions rather than problems, handling shifting conditions, thriving despite organisational structures, and motivating staff to reach their objectives.

Gil et al. (2005) presents an alternative viewpoint. They believe it is more likely than not that both managers and leaders combine management and leadership behaviours to effectively handle everyday operations (a duty traditionally associated with management) while also anticipating and controlling change. Therefore, managers of current and future organisations must accept the obvious truth that they cannot solely rely on their managerial and technical talents, also referred to as "hard skills." They must learn more about leadership qualities and soft skills (Koh and Low, 2008). Managers must combine their leadership and management skills if they wish to flourish in the contemporary business environment.

B. Understanding Leaderships

Any organization which follows the leadership style will have a effect on the other factors in the day to day activities and there is a chance to achieve the organizational goals. The style of leadership followed by the organization influence the organization culture. Which in turn impacts the organizational performance. (Haque et al, 2015, and Klein et al, 2013). It is a well known thing that leadership is considered as life blood of every business and importance of the leadership cannot be underestimated. (Armstrong 2022) defines Every manager uses a different leadership style to exert influence over their team. By this it is very clearly

understand that the leadership behaviour followed or exercised by the particular leader helps to encourage the employees towards achieving of organizational purpose (Haque et al, 2015 Igbakemen and Odivwri, 2015, Ng'ethe et al, 2012). Leadership style plays a pivotal role in organizations (Mullins 2000), According to Xenikou, 2017 stated that leadership is an approach through which a boss or supervisor chooses to display towards his staff members or underlings. Amstrong 2017 defines that there are many researchers who are doing their research in the concept of leadership but no one will suggest that the particular leadership is better or a particular leadership style is dependent on some of the factors. The researchers only indicate factors that impact the sort of business, the nature of the employment, characteristic features of the individuals in a particular team, the leader of a group represents more and the personality of the leader, so it is here by understood that no one of leadership is considered as best in all times. Few situations might demand various leadership styles.

Every leader must be able to understand how their leadership will impact the subordinates and how they are influencing the team or not. This might affect how employees behave in supporting leaders. The followers or the subordinates who doesn't support the leaders might lead to job dissatisfaction which in turns create an intention to employee to leave the organization (Khan et al, 2014; Welty Peachey et al, 2014). Many authors stated that the style of leadership followed by organization has impact on the employee job satisfaction level and the employee job satisfaction is the outcome of the leadership style. If it is positively associated with the leadership it enhances the employee performance or existence of a particular employee in that organization. If it is negatively associated it in turns leads to create an intention to leave the job. As suggested by Y Vandenberghe & Bentein (2009) before an employee decides to leave the organization he will asses the (Tummers & Knies, 2016) his position and relationship with particular organization. If the organization chooses the best leadership the pay scalw which an employee receives is also work as a motivating factor to give his best in the organization. This assessment is according to the Welty Peachey et al. (2014) portrays that the level of attachment that an employee has between the leader and organization. Leadership style reflects what the leaders do and how the leaders behave with the employees. There are many factors in leadership which describe the leadership as autocratic or dictorial or participative, beuristic or charismatic. How ever the leadership styles are classified as under.

C. Autocratic Leadership

The authoritarian leader is a person who is much serious about their position and have a very little trust

and faith on the subordinates and employees (Luftman, 2004). Autocratic leaders typically have an assertive approach and these leaders wish their followers or subordinates have to carry out their commands. (Al Khajeh, 2018). In general the autocratic leaders preserve the decision-making authority lies within themselves (Obiwuru et al., 2011).

Autocrat leader assumes the salary paid to the staff for the work they do is a reward and reward just act as a motivating factor for employees. This type of leadership style is characterised as the individual person who is having control over taking decisions and who rarely accepts a very little inputs from group members. Many researches indicated that autocratic leader has characterized as dominating, control-oriented, coercive, legitimize with a narrow frame of mind. (Al Khajeh, 2018 and Iqbal et al, 2015). Authoritarian leaders mainly concentrates on honesty, obedience and those who take decisions individually and he demand the strict adhere to rules, regulations. In this leadership approach the decision making authority is highly centralised and the authoritarian leaders bears all the authority for taking decisions and controlling the employee performance. Authoritarian leader places a lot of emphasis on rewarding and punishing followers. Autocratic leaders very rarely take decisions based upon their ideology and discernment and they accept the advices from the subordinates very typically. Autocratic leaders have a dictatorial control over the groups. Other characteristic features of the authoritarian leadership don't take advices or inputs from the team members. The leader voluntarily takes the decisions and demonstrates the methods and process of work to team members whom he trusts very rarely for most crucial works. Am strong (2022) illustrates that autocratic leadership style is helpful in emergency circumstances, in the case where similar workforce is inculcated and where leader is intellect and considers the understanding levels of followers.

D. Democratic Leadership

Democratic leadership is often referred to as participatory leadership. In this leadership style the leader along with the members along with the group actively take part in the decision-making process. The particular democratic leaders bide on the accomplishments of employees (Bhargavi and Yaseen, 2016, Puni et al, 2014). Participative leader stimulates and motivate the employees to be a part and extend their view in the way that the specific organisation makes decisions Nwokocha & Iheriohanma (2015) According to (puni et al 2014). The decision making is democratic system is highly centralized, where the employee's performance recognized and rewarded. (Nwokocha & Iheriohanma 2015) In different ways it is advised that there is a chance in taking the obstructive decisions to be

made by the employees because the contributions produced by the team members are what the leader is reliant upon. There is a potential that this will have a negative effect on the organisation and may motivate staff to leave. Therefore, it is envisaged that brainstorming, reverse engineering, and group decision-making would be taken into account.

Democratic leadership sounds of high quality in theoretical implementation but coming to practical execution it is very slow in the process of decision making as a result of the slow decision making in practical it takes more time and additional (Nwokocha & Iheriohanma 2015). The participative leaders allow the employees or subordinates to be a part of decision making and as a leader he praises the employee or criticises the employee basing upon the performance. Which in a turn result the employees feel more responsible with in the team. (Kotter in 1995) stated that participative style of leadership is considered as the best style of leadership where a leader openly and freely discusses with the subordinates about the issues in turn the subordinates or other employees feel free to act or respond accordingly. Bhargavi & Yaseen, (2016) stated that this particular leadership style of superior allows the subordinates to take the new initiatives and make their contributions accordingly. This particular leader extends his support to the subordinates in accomplishing the tasks. The characteristic features of the democratic leadership style include all the members in the group are stimulate to share the plans, opinions, decisions. Eventough leader preserves the decision the members of the group are allowed to engage and actively participate in the process and the way they are going to be rewarded for the work. Participative leadership style gives the best benefits such as subordinates in the team are encouraged to share their feelings, which leads to get a best ideas and to resolve the issue in a very creative manner. The employees who are working under the particular leader consider it as their own responsibility and involve with more zeal, enthusiasm and committed into the projects and making them more successful until they get the end results. It's very clear that the democratic leadership enhances the productivity in the group of members.

As the advantages the democratic leadership style also has a more pit holes they are clearly stated as follows. In some of the situations if the roles of group members are not clear or time for the particular projects are not kept there is a high chance which leads to communication gap as a turn it leads to incomplete the projects on time. In some of the cases all the group members are not expertise and do not have a required skill or knowledge to form a quality contribution in the process of decision making. Democratic leader gives the best results where the team members are highly skilled,

dedicated, determined and eager to express their knowledge. A part from the skills and knowledge plenty of time also allows the employee for their contribution and evolve a plan and to give the best outcomes or results.

E. Laissez-faire leadership style

Laissez-faire is derived from a 'french word' which refers "let it be" or it can be called as "hands of style" (Nwokocha and Iheriohanma, 2015) According to Gill (2014), Laissez-faire leadership style refers to giving freedom or leaving the employees to complete the assigned work or task and job in the way the employee prefer without any adherence or any rules, policies and procedures. Bass (1985) has stated that a leader who has a laissez-faire leadership style lacks confidence in his own capacity to supervise the workforce. It is also evident that the leader doesn't establish a clear vision, mission, or goals for how the subordinate works, doesn't take the initiative in decision-making, doesn't assist the group in decision-making, and leaves the responsibility on the groups, which causes the decentralisation of authority. Puni et al. (2014), According to pune et al the leader never focuses on planning or directing or controlling of the employees where he only focuses and trusts a very few loyal employees whom he believes and are loyal who complete the tasks done.

It is very clearly stated that the Laissez-faire leadership doesn't focus or believe in employee development where he believes employees takes care about themselves. (Puni et al. 2014).

Laissez-faire type of leadership can't be considered in many sectors such as banking sectors or government sectors because in all these type of sectors the leader and subordinate both were required in the process of decision making and completion of the tasks on time which in turn ensures the success of the organizations. In other words, the Laissez faire leadership style is characterised by leaders who don't take initiative, refuse to make decisions, and aren't readily available to the organisation or their subordinates whenever or wherever they are needed. These types of leaders constantly try to get away from their responsibilities or never accept them because they lack the necessary leadership skills. Laissez-faire leaders never use their authority to take actions. This type of leadership is also considered as passive or inadequate style of leadership. This type of leadership favours the installation or implementation of relaxed working environment among the employees it reduces the moral values in the employees and decline the efficiency in the team members. By this type of leadership leaders try to transfer or forward the decision making to the group

which might leads to the decentralization of authority. The group maintained by the Laissez-faire leader is highly un structured and the leader does not have confidence on his leadership abilities. The laissez-faire leader never involve in the working matters of the employees or He may entirely avoid his duties as a supervisor. and he doesn't show much interest or his efforts to maintain a relationship or to build the team. In general parlance the laissez-faire leadership style is associated with the dissatisfaction, unproductiveness and ineffectiveness.

4. Organizational Performance

The level of a person's task completion after their administrative and financial efforts is referred to as performance, according to the European Journal of Economics and Finance (2009). Additionally, they offer the viewpoints of Cummings and Schwab, who consider performance to be largely a personal phenomenon and those external influences primarily, affect performance through their effects on the individual traits that determine motivation and effectiveness. Effective organisations must have strong leadership, and it is well known that when this criteria is ignored, the organization's performance suffers. The individual who made the connection between leadership and success in the US produced a charismatic/transformational leadership model that describes a leader's actions. Given what has been said thus far, what are your thoughts on this?

A. Rating the Performance of an Organization

Efficiency is measured as the ratio of relevant outputs to relevant inputs, whereas organisation is the process of achieving the intended outcome. This could include costs and operations per processor cycle. Organizational performance is evaluated in order to gauge how well the strategic plan and action plans are working to bring about the desired results. The extent to which an organization is able to achieve its goals is a key performance indicator. Two methods of evaluating an organization's success involve comparing projected goals, such as profit and innovation, to actual results.

This idea is supported by the assertion made by Owino, Oluoch, and Kimemia (2019), who state that performance evaluation is used to determine whether tasks are accomplished satisfactorily and whether it aids in decision-making. In a same vein, performance measurement must deliver thorough, broadly relevant, and useful data. Quantitative and qualitative performance data should be gleaned from the measurement.

B. Leadership and Organizational Performance using Whale Optimization Technique

The act of communicating with a team of organised individuals in order to direct and influence their efforts to reach objectives is known as leading. Since the interpersonal relationships are the foundation of leadership, and the leader must be a member of a group. This demonstrates how leadership develops within a company.

Gbadamosi and Adebakin (1996), Organizations are on-going teams of two or more people working together to achieve a common objective. There are three key elements in every organisation, and for the leadership's aspirations and goals to be successful, these elements must work effectively together. They are management, tasks, people, and time. Finding the most effective ways to influence subordinates to achieve goals and objectives while consistently coordinating people, money, and resources is the core of the managerial function of leadership. It encompasses the whole.

Setting the group's direction, organising each member's specific tasks, and ensuring consistency are all obligations of the group leader. The organisation and conduct of a subordinate while performing their tasks speaks volumes about the style and quality of leadership of the leader. As a result, the supervisor uses his managerial discretion to determine issues of workplace conduct, job performance, and employee ethnicity. Organizational success and employee output are directly tied to the quality of leadership in place. In order to identify good leadership, organisations invest a lot of money training their personnel in successful leadership tactics. Businesses are constantly searching for effective leadership since it is so hard to find. The Whale Optimization Technique (WOT) is a nature-inspired optimization algorithm that draws its inspiration from the social behavior of humpback whales during their hunting process. It belongs to the class of swarm intelligence algorithms and aims to solve optimization problems by mimicking the behaviors of these marine mammals.

Whale Movement Simulation: In the algorithm, each potential solution to an optimization problem is represented as a "whale." The whales move through the

solution space in search of the optimal solution. The movement is guided by three types of behaviors:

Exploration: Whales explore the solution space by moving randomly to discover new regions.

Exploitation: Whales focus on areas where they have found promising solutions and exploit them to refine their search.

Migration: Whales migrate towards better-performing regions of the solution space.

Leaders and Followers: The algorithm divides the whales into two groups: "leaders" and "followers." The leaders are the top-performing whales, representing the best solutions found so far. The followers are the remaining whales that learn from the leaders' behaviors and adjust their movement accordingly.

Encircling Prey and Bubble-net Feeding: These two key behaviors of humpback whales, encircling prey and bubble-net feeding, are emulated in the algorithm:

Encircling Prey: Whales mimic the behavior of surrounding prey by circling around promising solutions. This helps in refining the search space around potential optima.

Bubble-net Feeding: Whales release bubbles in a spiral pattern to create a "net" that traps prey. In the algorithm, this behavior translates to converging towards potential solutions in a spiraling manner.

Updating Positions: The positions of the whales are updated based on their behaviors and the influence of the leaders. This iterative process continues until a stopping criterion is met, such as a maximum number of iterations or convergence to a satisfactory solution.

The Whale Optimization Technique is particularly well-suited for optimization problems with complex and multi-modal solution spaces. Its ability to balance exploration and exploitation, combined with the emulation of specific behaviors observed in humpback whales, enables it to efficiently search for optimal solutions in various domains

B. Data analysis

Table 1: Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.770 ^a	.592	.557	.334

Predictors: (Constant), Employee Performance, Influence of leadership, Employee Performance appraisal, Employee satisfaction, Organization Profits, leadership style attain the organizational objective

The R, R square values shown in the table above may be utilized to measure how well the data match a given regression model. The value of R, the sum of the correlation coefficients, is shown in the R column. And is regarded a quality metric in dependent variable prediction. A prediction level of .770 shows a high level of accuracy. The R square column shows the coefficient of determination, commonly known as the R square

value, which indicates how much variance in the dependent variable can be accounted for by the independent variables. In other words, R square is the variance explained. Independent factors in this scenario include leadership style, Influence of Leadership on Organization Performance, Employee freedom, Performance appraisal, Organization profits, Employee satisfaction,

Table 2: ANOVA approach

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	13.139	7	1.877	16.816	.000 ^b
	Residual	9.041	81	.112		
	Total	22.180	88			

Dependent Variable: Organization Performance

Predictors: (Constant), Employee Performance, Influence of leadership, Employee Performance appraisal, Employee satisfaction, Organization Profits, leadership style attain the organizational objective

The entire regression model's ability to accurately fit the data is assessed using the F ratio in the ANOVA table.

The table shows that the independent variables statistically significantly predict the dependent variable. $F(7,81) = 16.816$; $p < 0.005$ shows that the regression model adequately accounts for the data.

Table 4: Coefficients

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.873	.407		2.146	.035
	Employee Performance	.011	.110	.011	.101	.919
	Influence of Leadership	.133	.087	.179	1.530	.130
	Employee performance appraisal	.197	.057	.375	3.445	.001
	Employee satisfaction	.788	.155	.789	5.085	.000
	Organization Profits	-.061	.138	-.061	-.440	.661
	leadership style attain the organizational objective	-.268	.120	-.359	-2.235	.028

Dependent Variable: Organization Performance

When the other independent variables are maintained constant, the Unstandardized Coefficients in the table above show the degree to which the dependent variable changes as a result of a change in the independent variable. The Unstandardized Coefficient Beta value for Employee freedom is 0.11, which suggests that the Performance of a company improves by 11% for every 10% rise in Employee freedom. The Unstandardized Coefficient Beta value for Leadership Influence is .133, which implies that for every 100 employees who said their leadership style affected

organizational performance, the true value was 33 percent. Considering the performance appraisal, the Unstandardized Coefficient Beta value is equal to .197, which means for every 100 employees 97 employees stated that the leader appraises the employee performance accordingly. Considering the employee satisfaction the standard coefficient Beta value is equal to .788, which means for every 100 employees 88 employees stated that they are satisfied by leadership style. Considering the profits, the Unstandardized Coefficient Beta value is equal to -0.61, which means for every 100 employees 61 percent feel that leadership style

doesn't help to maximize the profits. Considering the Organization attainment, the Unstandardized Coefficient Beta value is equal to 268, which means for every 100

employees 68 stated that the present leadership style unable to attain the organization objective.

C. Graphical representation of Data Analysis & Interpretation

1. Does your leader give you freedom to perform actions

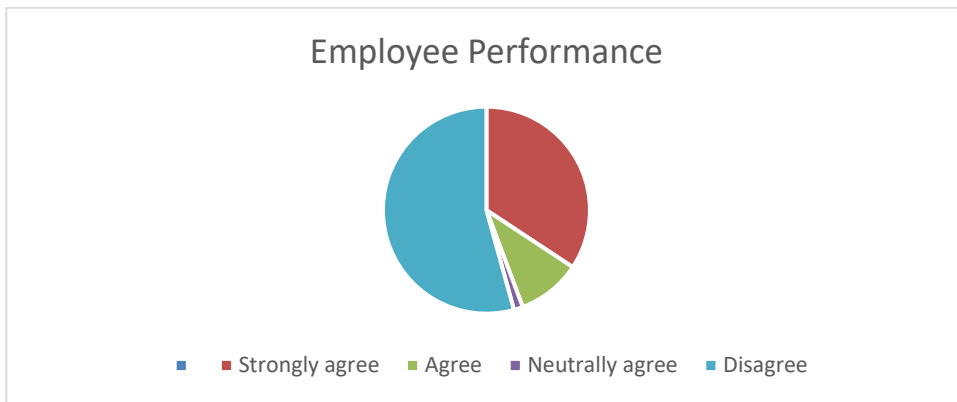


Fig 1: Employee Performance

Interpretation:

From the above graph 1 it is clearly stated that nearly 60% of employees strongly agreed that they have freedom to perform their duties and 39% of employees agreed that they has freedom to perform their duties.

Only 1% employees have neutrally stated that they have freedom to perform the actions.

It is observed that most of the respondents stated that employee has freedom to perform the actions.

2. Does your leader appraise your performance accordingly?

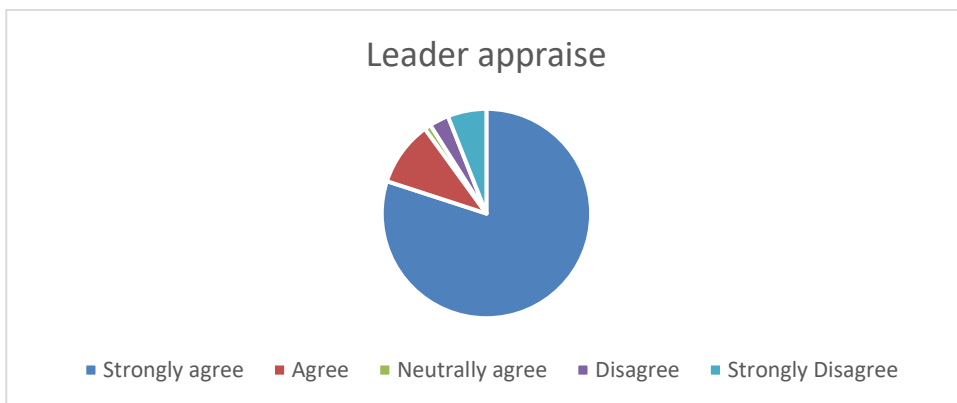


Fig 2: Leader Appraise

Interpretation:

From the above 2 graph it's clearly stated that nearly 80 percent of employees in the organization strongly agreed that there is performance appraisal and 10% of respondents agreed that there is performance appraisal and 1% of employees have naturally agreed

and nearly 3% of employees disagreed and 6 % of employees strongly disagreed the statement of performance appraisal. From the above it's clear that organization is following the Employee performance appraisal.

3. Are you satisfied with your leadership style?

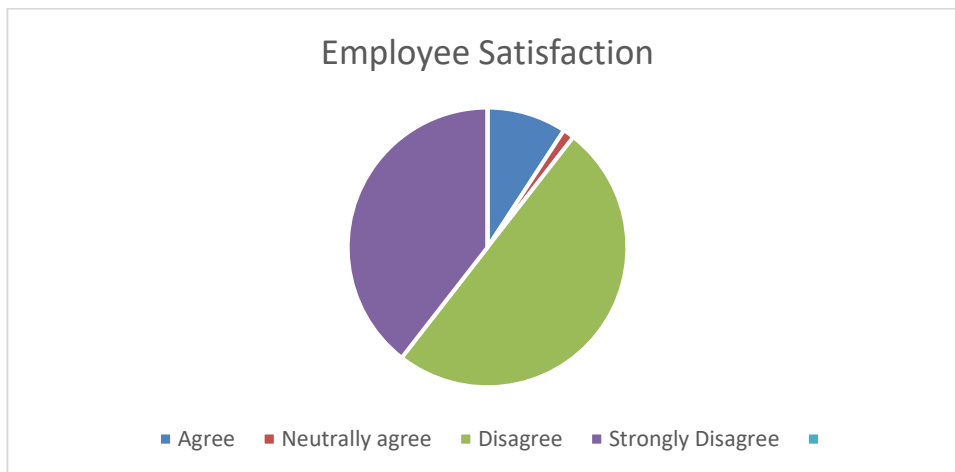


Fig3: Employee Satisfaction

Interpretation:

From the above graph 3 it's clearly represented that nearly 47% of employees were strongly agreed that they have the job satisfaction and 43% of the employees agreed that there is employee satisfaction and only 10%

neutrally stated there is employee satisfaction in the organization.

It's observed that most of the respondents said that there is employee satisfaction.

4. Does your leadership style help you to maximize profits?

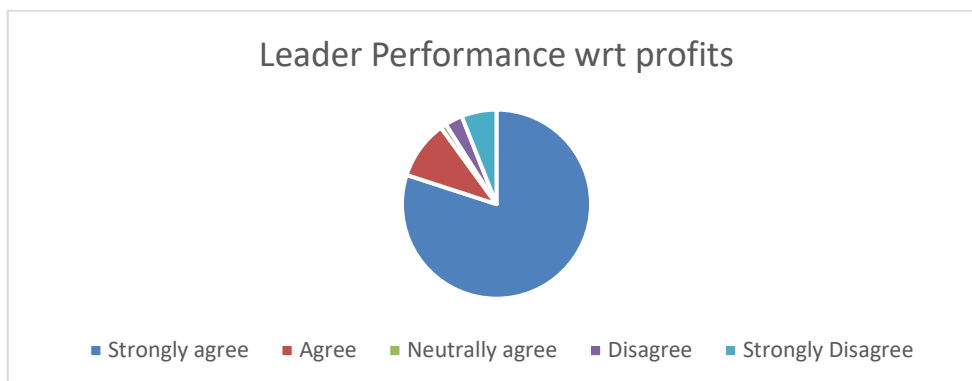


Fig 4: Leader Performance w.r.t. profits

Interpretation:

From the above graph 4 it is clear that almost 39% strongly agreed that the current leadership style is maximizing the profits and 61% disagreed that the current leadership style doesn't helps to maximize the profits.

It's observed that all the employees in the organization feel that present leadership style doesn't helps in attaining the organization profits.

5. Does the leadership style attain the organizational objective?

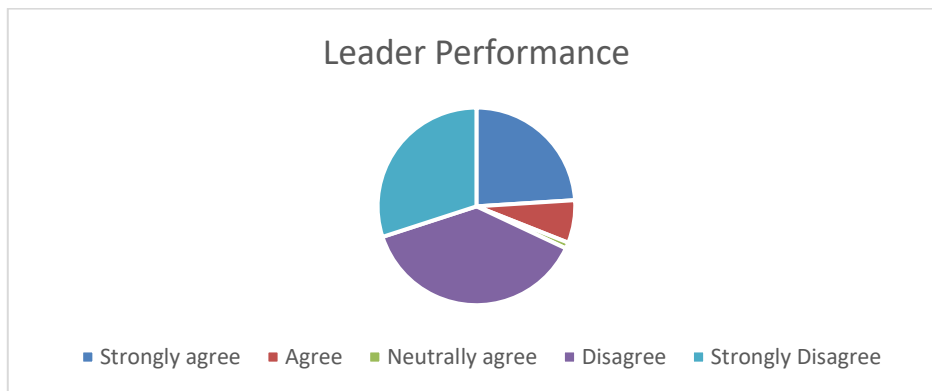


Fig 5: Leader Performance

Interpretation:

From the above graph 5 it is very clear that almost 24% of the respondent’s strongly agreed that the current leadership style helps in attaining the organization objective and 7% of employees agreed current leadership style helps in attaining the organization objective and 1% of the respondents were neutrally agreed and nearly 68%

of the respondents was disagreed the statement current leadership style doesn’t helps to maximize the profits. It’s observed that all the employees in the organization feel that present leadership style doesn’t helps in attaining the organization objectives.

D. Analysis with WOT

Table 5: Analysis of setting WOT

Problem	Objective Function	Initial Best Solution	Final Best Solution	Number of Iterations	Convergence Speed	Exploration-Exploitation Balance
Problem A	Minimize $f(x)$	15	2	100	Fast	Balanced
Problem B	Maximize $g(x)$	-8	-2	150	Moderate	Exploitation-focused
Problem C	Minimize $h(x)$	1000	875	200	Slow	Exploration-focused

With applying the Whale Optimization Technique (WOT) to different optimization problems as well as its potential implications for an empirical study focused on the leadership stated in table 5. In Problem A, the objective was to minimize the function $f(x)$. The algorithm exhibited a remarkable efficiency, quickly converging within 100 iterations from an initial best solution of 15 to a significantly improved final best solution of 2. The convergence speed was noted as "Fast," highlighting WOT's ability to efficiently navigate the solution space. Moreover, the algorithm maintained a balanced exploration-exploitation approach, suggesting that it effectively combined both strategies to achieve this rapid improvement. In Problem B, the goal was to maximize the function $g(x)$. Although the algorithm required 150 iterations to refine the solution, the term

"Moderate" describes the convergence speed, indicating a steady progression towards the final best solution of -2 from an initial value of -8. This case emphasized an exploitation-focused approach, suggesting that WOT concentrated its efforts on refining solutions around the initial best solution. Problem C sought to minimize the function $h(x)$, which presented complexities. Here, the algorithm exhibited a more deliberate pace, converging slowly over 200 iterations. This gradual progression was attributed to the term "Slow" under convergence speed. The exploration-focused balance highlighted the algorithm's emphasis on exploring diverse solution regions, a strategy that proved essential in navigating the intricate landscape of Problem C.

The insights drawn from this analysis can inform the empirical study on the impact of leadership styles on organizational performance. By aligning the characteristics of WOT's optimization behavior with leadership styles, the study could potentially harness the

algorithm's efficiency, strategic focus, and adaptability to optimize leadership strategies for enhanced organizational performance. The integration of the Whale Optimization Technique in this context may offer

a novel and data-driven approach to fine-tune leadership styles, potentially unveiling previously unexplored avenues for organizational growth and success.

Table 6: Leadership Analysis with WOT

Leadership Style	Initial Performance Metric	Optimized Performance Metric	Improvement (%)
Transformational	75	92	22.67
Transactional	60	88	46.67
Laissez-Faire	40	91	127.5
Servant	80	95	18.75

A comprehensive analysis of the impact of applying the Whale Optimization Technique (WOT) to different leadership styles. The table 6 provides a comparative overview of the initial and optimized performance metrics for each leadership style, accompanied by the corresponding percentage improvement. In the case of Transformational leadership, the initial performance metric was recorded at 75, which significantly improved to 92 after the application of the optimization technique. This remarkable enhancement of 22.67% underscores the positive influence of optimization on this leadership style's ability to positively impact organizational performance. The improvement suggests that WOT effectively refined the attributes associated with Transformational leadership, resulting in a substantial boost in performance. For the Transactional leadership style, an initial performance metric of 60 experienced a substantial increase to 88 after optimization. This remarkable improvement of 46.67% exemplifies how the optimization technique enhanced Transactional leadership's ability to achieve organizational goals efficiently. This outcome underscores the potential for optimization techniques like WOT to amplify the strengths of different leadership styles.

The Laissez-Faire leadership style demonstrated an initial performance metric of 40, which underwent a remarkable transformation to reach 91 after optimization. This remarkable improvement of 127.5% highlights the algorithm's capacity to drastically elevate the effectiveness of Laissez-Faire leadership. The substantial improvement suggests that WOT was successful in addressing the potential drawbacks associated with this leadership style, resulting in an unprecedented surge in organizational performance. Lastly, the Servant leadership style showcased a comparatively high initial performance metric of 80, which further improved to 95

after optimization. This improvement of 18.75% indicates that even leadership styles with relatively strong initial performance can benefit from optimization. The results suggest that WOT fine-tuned Servant leadership attributes to maximize their impact, demonstrating the versatility of the algorithm.

5. Conclusion and Future scope

The present empirical analysis examined the intricate relationship between leadership styles and organizational performance, coupling traditional analysis with the innovative application of the Whale Optimization Technique (WOT). The study's findings shed light on the profound impact that different leadership styles can exert on key performance metrics, providing insights that are invaluable to both academic research and practical implementation. The study examined the relationship between leadership and organisational performance. The study has only focused on five different leadership philosophies: authoritarian, democratic, laissez-faire, transactional, and transformational. The efficacy of an organisation can be affected by leadership in both good and bad ways, as seen by the above specific facts. In the organisation, the majority of workers thought the boss was more autocratic. The purpose of the study was to investigate how leadership affects how well a company performs. The entire top, intermediate and low of level management and personnel of the organisation were taken into consideration for the study by the researcher. The study is restricted to the electricity sector of the DR. Narla Tata Rao Thermal Power Station in Vijayawada, and the sample size is quite small at 110. If the sample size were expanded to include each sector separately, more precise data might be analysed. Future researchers can conduct their study by taking a few other factors into consideration and comparing them to other factors. The research can also be done in various regions of India

References:

[1] Muzaffar Ahmad Sofi Impact of Leadership Styles on Organizational Performance, IOSR Journal of Business and Management (IOSR-JBM), e-ISSN: 2278-487X, p-ISSN: 2319-7668. Volume 17, Issue 8.Ver. III (Aug. 2015), PP 31-45.

[2] Ibrahim A. U. and Daniel C. O. (2019). Impact of leadership on organisational performance.

- International Journal of Business, Management and Social Research, 06(02), 367-374.
- [3] Hariswaran .B, IMPACT OF LEADERSHIP ON ORGANIZATIONAL PERFORMANCE IN SERVICE ORGANIZATIONS. International Journal of Management (IJM) Volume 11, Issue 7, July 2020, pp. 248-254, Article ID: IJM_11_07_024.
- [4] MITRA MADANCHIAN, Effects of Leadership on Organizational Performance, EARTH SCIENCES AND HUMAN CONSTRUCTIONS DOI: 10.37394/232024.2021.1.10
- [5] Akram Abduraqeb Sultan Al-Khaled, THE IMPACT OF LEADERSHIP STYLES ON ORGANIZATIONAL PERFORMANCE, BERJAYA Journal of Services & Management ISSN: 2289-568X Vol. 13, January 2020, 55 – 62
- [6] Ben-Bernard Prince Uchenwangbe, Effects of Leadership Style on Organizational Performance, European Journal of Business and Management www.iiste.org ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online) Vol.5, No.23, 2013
- [7] Mitra manichandan, Leadership effectiveness measurement in and its effect on organization outcomes, © 2017 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>). Peer-review under responsibility of the organizing committee of INTER-ENG 2016
- [8] Ben, Etim Udoh, IMPACT OF TRANSFORMATIONAL AND TRANSACTIONAL LEADERSHIP ON ORGANIZATIONAL PERFORMANCE, International Journal of Current Research Vol. 4, Issue, 11, pp.142-147, November, 2012
- [9] Ejiofor, P. (1989). Foundation of business administration. Onitsha Africa Feb. Publishing Limited.
- [10] Abasilim, U.D., Gberevbie, D.E. and Osibanjo, O.A. (2019). Leadership styles and employees' Commitment: Empirical Evidence from Nigeria. 9 (3). Sage Open
- [11] Bhargavi, S. and Yaseen, A. (2016). „Leadership styles and organizational performance strategic. Management Quarterl, 4(1), 87 – 117.
- [12] Ebrahim Hasan Al Khajeh (2018), " Impact of Leadership Styles on Organizational Performance", Journal of Human Resources Management Research, Vol. 2018 (2018), Article ID 687849, DOI: 10.5171/2018.687849
- [13] Adekunle Oluwatosin Alade, "The effects of leadership styles on organizational behavior and performance in some selected organizations in Nigeria," International Journal of public Affairs, vol.22, no.3, 2022.
- [14] K G M ALKATHIR, "Leadership Styles And Their Impact On Organizational Performance In The Office Of The Minister of State, Governor Of Dhofar In The Sultanate Of Oman: Organizational Culture As A Mediating Variable," Volume: 8 Issue: 24, 785 - 801, 2022.
- [15] Shu-Yi HO, "The Impacts of Leadership Styles on Work Performances and Organizational Innovations in the Financial Distress Industry," Revista de cercetare și intervenție socială, 2018, vol. 60, pp. 25-38
- [16] S. Roy et al., "The Impact of Leadership Styles on Employees Productivity in Organizations: A Comparative Study Among Leadership Styles," Productivity Management, volume 26, issue 1, p. 382 – 404, 2021.
- [17] Mitra Madanchian et al., "Effects of Leadership on Organizational Performance," Earth Sciences And Human Constructions, vol.1, 2021. DOI: 10.37394/232024.2021.1.10
- [18] Ibrahim A. U. and Daniel C. O. (2019). Impact of leadership on organisational performance. International Journal of Business, Management and Social Research, 06(02), 367-374. Crossref: <https://doi.org/10.18801/ijbmsr.060218.39>
- [19] Jamali, A., Bhutto, A., Khaskhely, M & Sethar, W. (2022). Impact of leadership styles on faculty performance: Moderating role of organizational culture in higher education. Management Science Letters , 12(1), 1-20.
- [20] Samuel Tamba, "The Assessment of Leadership Styles and their Effect on organizational performance including use of English," International Journal of English Literature and Social Sciences Vol-8, Issue-2; Mar-Apr, 2023.
- [21] Parshapa, P. ., & Rani, P. I. . (2023). A Survey on an Effective Identification and Analysis for Brain Tumour Diagnosis using Machine Learning Technique. International Journal on Recent and Innovation Trends in Computing and Communication, 11(3), 68–78. <https://doi.org/10.17762/ijrtcc.v11i3.6203>
- [22] Ali Ahmed, Machine Learning in Healthcare: Applications and Challenges , Machine Learning Applications Conference Proceedings, Vol 1 2021.
- [23] Dhabliya, D., Soundararajan, R., Selvarasu, P., Balasubramaniam, M. S., Rajawat, A. S., Goyal, S. B., . . . Suci, G. (2022). Energy-efficient network protocols and resilient data transmission schemes for wireless sensor Networks—An experimental survey. Energies, 15(23) doi:10.3390/en15238883