

Exploration of Artificial Intelligence Assisted Health Risk Prediction

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Abstract: AI Assisted Health Risk Prediction uses personalized knowledge and information gathered from the responses it creates to solve both simple and difficult problems. Amazing improvements in computing power and AI technologies may revolutionize the process of creating new medications. Due to increasing R&D costs and decreased efficiency, the pharmaceutical industry is currently experiencing difficulties with medication development. The key causes of the high attrition rates in drug approval will be covered in this overview, along with potential methods "The procedure involves gathering data, establishing rules for its utilization, reaching approximate or definitive conclusions, and self-correction. The development of AI can be seen as having two contrasting effects: on one hand, many individuals are concerned about job security, while on the other hand, each advancement is celebrated as a significant stride for civilization. Numerous industries, such as education and business process automation, employ AI. The idea of integrating AI into the drug development process has shifted from hype to optimism. The potential applications of AI in this field are vast." to drug development pipeline, drug development techniques and procedures, pharmaceutical R&D are discussed in this paper. Artificial intelligence (AI)-assisted health risk prediction refers to the use of AI algorithms and techniques to analyze health data and predict the risk of developing certain health conditions or diseases. The weighted product method is a multi-criteria decision-making process is there are many alternatives, and based on several criteria we must determine the best alternative. RPM1, RPM2, RPM3, RPM4, RPM5. Usefulness, Social factors, Ease of use, Quality of technological service, Compatibility "While no pharmaceuticals have been created using AI methods to date, according to the developments discussed in this study, it is anticipated that it will take another 2-3 years before a drug is developed. It is interesting to note that specialists firmly believe AI will fundamentally alter the pharmaceutical sector and the process of medication development." "However, domain expertise is crucial for training algorithms, which is essential for efficient AI-assisted drug development. While domain expertise allows individuals to process vast datasets, AI algorithms can be trained, algorithms can be defined, and the examined data can be improved to facilitate a faster and more accurate drug development process." "This creates an ideal environment for collaboration between AI and medicinal chemists. Despite the potential of AI to accelerate medication discovery, real studies still need to be conducted. Furthermore, AI can also assist in areas such as gene therapy and other therapies that are not yet widely available in healthcare." AI opens up the prospect of merging gene therapy, pharmacology, and regenerative medicine.

Keywords: Artificial intelligence, medication development, pharmaceutical R&D effectiveness, attrition rates for new drug approvals, drug repurposing, and polypharmacology.

INTRODUCTION

"The development of robots is often considered the inception of artificial intelligence (AI). In his 1921 drama "R.U.R" (Rossum's Universal Robots), author Karel Capek popularized the word "robot," spelled as "robota" in Czech, representing a factory that utilizes bio-engineered machines for forced labor. In the mid-20th century, Isaac Asimov immortalized the term "robot" in a collection of short works of contemporary science fiction." "In the third century in China, a mechanical engineer named Yan Shi presented Emperor Mu of Zhou with a humanoid automaton crafted from leather, wood, and artificial organs. This marked the earliest recorded instance of a human-shaped automaton. During the Renaissance, Leonardo da Vinci conducted an extensive study of human anatomy, which later influenced his creation of a humanoid robot. Although his drawings from 1495 remained undiscovered until the 1950s, they revealed a knight robot capable of standing up, sitting down, waving its arms, and moving its

head and mouth."Wires and pulleys were used to operate it. More important than his contributions to this subject are the sketchbooks of Da Vinci, which inspired a whole generation of robotic researchers, several of whom served at NASA. In recognition of his inspirational influence, a surgical system created by the American company Intelligent Surgical got a moniker Da Vinci. More than 5000 units are being used globally as of the time of this writing, after receiving FDA clearance in 2000. The advanced operation is made possible by the minimally invasive Da Vinci surgical equipment, which a surgeon may control from a console. The technique is commonly used in gynecologic and prostatectomy surgeries. Now, heart valves are repaired using it."The trajectory of robot progress took a turn when Jacques de Vaucanson, a French inventor, created the "Flute Player" in the 18th century. This creative automaton, capable of playing the pipe, was recognized as a groundbreaking mechanical marvel. It featured twelve tracks in its music repertoire. Two centuries later, William Grey Walter developed the first electric autonomous robots, aiming to demonstrate how the brain functions. His creation, the *Machina Speculatrix*, gained fame in 1948 and showcased how complex behaviors could emerge from the interactions among a small number of "brain cells." The term "artificial intelligence" (AI) was coined by John McCarthy in 1955, defining it as "the science and engineering of creating intelligent machines." McCarthy played a significant role in the early advancement of AI. Alongside his colleagues, he launched the field of AI during a meeting on artificial intelligence at Dartmouth College in 1956. This gathering paved the way for an interdisciplinary study field and served as a conceptual foundation for subsequent initiatives in computer research and development."The US Department of Defence quickly got interested in the numerous challenging mathematical problems that computers began to tackle in the years that followed. A new golden era then began with the application of logistic data mining and medical diagnostics following a period of slowdowns in the 1980s. Instruments with higher computational capacities were created. On May 11, 1997, Big Blue eventually defeated Gary Kasparov, the world chess champion, thanks to this unique capacity."Today, artificial intelligence (AI) is recognized as an engineering discipline that applies innovative ideas and solutions to tackle challenging problems. With ongoing advancements in software development, technological speed, and capacity, computers have the potential to match human intelligence in the future. The critical role played by modern cybernetics in the progress of AI cannot be overlooked. In the context of combating the spread of diseases like Covid-19, contact tracing becomes a crucial step following diagnosis and confirmation. According to the World Health Organization (WHO) [32], the virus primarily spreads through contact transmission of saliva, droplets, or nasal secretions between individuals."A key public health measure to break the chain of virus transmission and stem the spread of SARS-CoV-2 is contact tracing [33]. touch tracing is the process of identifying and treating people who have recently had touch with an infected patient in order to stop the spread of the Covid-19 virus. Affected individuals are frequently found using this technique 14 days after exposure. Contact tracing, when used correctly, can break the emerging coronavirus's chain of spread, aid in the epidemic's control, and lessen the severity of prior pandemics by boosting the likelihood of successful controls. The Worldwide Positioning System (GPS), the social graph, Graph, contact information, network-based APIs, mobile phone data, card data for transactions, and system mailing addresses are just a few of the gadgets that have been incorporated into mobile programmes that are used by various nations that are impacted to develop electronic tracking of contacts processes. Compared to the non-digital system, the digital contact tracing procedure can operate almost instantly and significantly more quickly. All of these digital tools are intended to gather personal information from users, which ML and AI algorithms will then analyse to identify users who are susceptible. Artificial intelligence (AI) is an examination of the algorithms that give robots the ability to think and perform cognitive activities including problem-solving, object and word recognition, and decision-making. As years of research have produced useful information that has immediately led to real-world applications, AI has increasingly been a topic of both popular and scholarly literature. It was once considered as merely science fiction. Examples include the autopilot from Watson and Tesla in Palo Alto, California, as well as the autopilot from International Business Machines, which is located in Armonk, New York. The legend of John Henry, who struggled till his death in an effort to outperform the steam-powered hammer, is one example of a man vs machine story. [3], show how technology has evolved from being feared to being welcomed and eagerly awaited. The Industrial Revolution that resulted from society's increasing integration of simple machines into human processes saw notable gains in productivity and quality of life. Similar to how AI today offers people a technology that may outperform and outthink those who created it, it inspires both awe and dread in humanity. The Information Age has begun a workflow and efficiency change similar to the Industrial Revolution, and the field of surgery will profit from the present spread of information technology. The roots of artificial intelligence can be found in a number of academic fields, such as figures, linguistics, robotics, philosophy, and sociology [5]. The development of the underlying technologies for AI has been accelerated by significant developments in the field of computer science, such as greater processing speed and power. A \$5 billion investment in venture capital was made in 2016 as a result of the growing acceptance of AI in numerous industries [6]. Recently, there has been a lot of interest in the four core AI subfields indicated here. Machine learning (ML) allows computers to learn and predict the future by spotting patterns. In conventional computer programmers, a desired behaviour is stated explicitly. For instance, a new

programmed can be launched when a user hits an icon. On the other hand, machine learning (ML) allows a computer to use partial labelling of data (supervised learning) or the built-in structure of the data itself (unsupervised learning) to explain or forecast the data (Fig. 1). While supervised learning is effective for teaching an algorithm using machine learning to predict known results or conclusions, unsupervised learning is helpful for seeing patterns within data [7]. The third sort of machine learning, reinforcement learning, is a programmer learning from its own failures and successes as it attempts to complete a job (such as driving a car or forecasting medical decisions) [8]. When automating the tweaking of guesses or behaviors, such as when controlling an artificial pancreas system to accurately manage the measurement and supply of insulin for diabetic patients, reward learning is important. Reinforcement learning can be compared to operant conditioning in computer science [9]. ML is especially helpful for identifying minor patterns in huge datasets—patterns that may be imperceptible to humans undertaking manual studies—by utilising approaches that allow for more indirect and complicated nonlinear interactions and multivariate effects.

MATERIALS AND METHODS

RPM1: specificity to pathogens expressing one of two unrelated *Pseudomonas syringae* genes is made possible by the *Arabidopsis thaliana* RPM1 gene. RPM1 encodes a protein that, although serving this purpose, has several molecular characteristics with previously discovered single-specificity R genes.

RPM2: The SMOK RPM 2 needs a 5-volt charging current, and if you connect it to a power source that delivers voltage that is noticeably above or below that level, it won't charge. The SMOK RPM 2 or any vaping device should be connected to your computer rather than a mobile phone or tablet charger to charge it.

RPM3: Their decision-support systems would make it simpler for the organization/company mentioned in the selection process to complete it in terms of time and effort, especially when backed by the application approach to provide more objective outcomes.

RPM4: There are two resistance options for the RPM 4 coils: 0.23 ohms and 0.6 ohms. The mesh design of the 0.23 ohm coils, which has a larger surface area, results in more vapour and better flavour. These coils are ideal for use with sub-ohm/DL vaporizers.

RPM5: Suppliers or businesses vying for In addition to a projected project cost, bidders that are awarded federal Department of Defence (DoD) contracts to acquire weapon systems are required to include in their proposals details regarding the promised technical specifications associated with the aircraft, the delivery schedule, and managerial performance.

WEIGHTED PRODUCT METHOD

Human resources (HR) employees play a crucial role in any organisation or agency. One of the elements required to boost an institution's performance and productivity is the calibre of its human resources. An organisation or agency must thus evaluate the effectiveness of its staff. One of them is the Pringsewu District Revenue Service's evaluation of staff performance. To appreciate the significance of mapping the potential and quality of personnel, the agency evaluated each employee's performance and conducted an evaluation of their potential. conducting choices about something's qualitatively desirable or negative traits involves conducting an assessment. The success of a company's work may be impacted by effective human resource management. One example of managing an organisation or business in relation to its human resources is placement in the appropriate position and performance evaluation. Employee motivation and performance appraisal both benefit from employee performance, which has a beneficial impact on the evaluation of employee performance index. This study will investigate how employee motivation, a previously evaluated weighted product, affects employee performance as measured by the employee performance index. This study differs from other studies in that it tests various information technologies using weighted weighted products [4] In this organisation, employee performance is crucial to carrying out its duties within the context of organisational advancement. To get the best outcomes, every employee inside an organisation must be able to be used as effectively as feasible. Due to workers' capacity as resources and a source of power for propelling organisational activity, the success of the organisation heavily depends on their function within it. The employee performance appraisal process is still conducted manually under the revenue department's system in the Pringsewu district, and data processing still relies on Microsoft Excel to process data rather than an application programme to make decisions. As a result, processing data takes a long time. Furthermore, the evaluation is still subjective and irrelevant to the current circumstance, making it impossible to utilise as a foundation for objective decision-making. This is because the revenue service has challenges in identifying the greatest value employee performance. To address the employee performance index appraisal issue, weighting by weighted product approach is used during the decision-making

process. Additionally, certain criteria could have qualitative structures or ambiguous structures that make it impossible to measure them properly. This approach establishes the weight value for each attribute before moving forward with the evaluation process to choose the top candidates. Companies want new hires that will adhere to the evaluation standards that have been set by the organisation. Each employer uses a set of standards when hiring new employees, and these standards are meant to serve as benchmarks for the advancement of the individual personally. Since weighted product methods (WP) are thought to be more effective and need less time for calculations, they were utilised in this study to analyse the data. Given the importance employees play in a company's attainment of its corporate goals and development, the creation of decision support systems is projected to provide both private and public sector organisations with a means of conducting fair and impartial applicant selection for new hires. When supported by the application, their decision-support systems would make it easier for the organisation or firm specified in the selection process to accomplish it regarding of time and effort approach to provide more objective outcomes.

Systems That Support Decisions:

A decision support system (DSS) is a system based on computers that produces a variety of possible outcomes to assist leaders in handling various challenges in semi- or unstructured ways using data and models[2] Making decisions is the conclusion of a process that involves choosing from a range of potential courses of action with the goal of producing the best result. Good decisions are made when all stakeholders are involved progressively, methodically, consistently, and throughout each phase from the start. DSS's objective is to assist decision-makers in selecting from a variety of alternate courses of action as they process data received or supplied by means of a decision-making model. The primary factor that makes the decision support system outstanding is its capacity to handle unstructured challenges. The following are features of decision support systems. The semi- or unstructured problem-solving aid for decision-makers known as a decision support system. The decision support system is created in a way that allows for its utilisation. People who lack even the most basic computer skills may use them rather easily. Decision support systems are developed with an emphasis on flexibility and adaptability in the Proceedings of the 2016 The third International Exhibition on Information Technology, Computer form, was an Electrical Engineers (ICITACEE), held in Semarang, the Philippines, from October 19–21. The user's preferences are so easily adaptable to a variety of external factors. In most real-world settings, contracts can be chosen through acquisition auctions based on a variety of criteria, such as price, quality, time to market, contract terms, supplier standing, incumbent cost of switching, etc. For instance, design concerns are at least as essential as economics in a sale for a new fighter aircraft. In addition to an anticipated project cost, suppliers or companies bidding for contracts from the Pentagon's Department of Defence (DoD) to purchase weapon systems need to include in their bids details regarding the stated technical strengths of the proposed helicopters, the delivery schedule, and managerial performance. Therefore, project costs are not the only factor considered when allocating funds for public works. Similar with goods, services can be identified by their level of risk, timing of delivery, and quality.

RESULT AND DISCUSSION

TABLE 1.Artificial Intelligence Assisted Health Risk Prediction

	Usefulness	Social factors	Ease of use	Quality of technological service	Compatibility
RPM1	0.2153	0.9865	0.9274	0.8835	0.0911
RPM2	0.8243	0.3254	0.8418	0.6120	0.5759
RPM3	0.5074	0.4864	0.4706	0.4016	0.6173
RPM4	0.6090	0.9170	0.1415	0.4633	0.2486
RPM5	0.3818	0.1107	0.7938	0.8334	0.0932

Table 1 showing alternative parameters usefulness, social factors, ease of use, quality of technological service, compatibility, and evaluative parameters RPM 1, RPM 2, RPM 3, RPM 4, RPM 5.

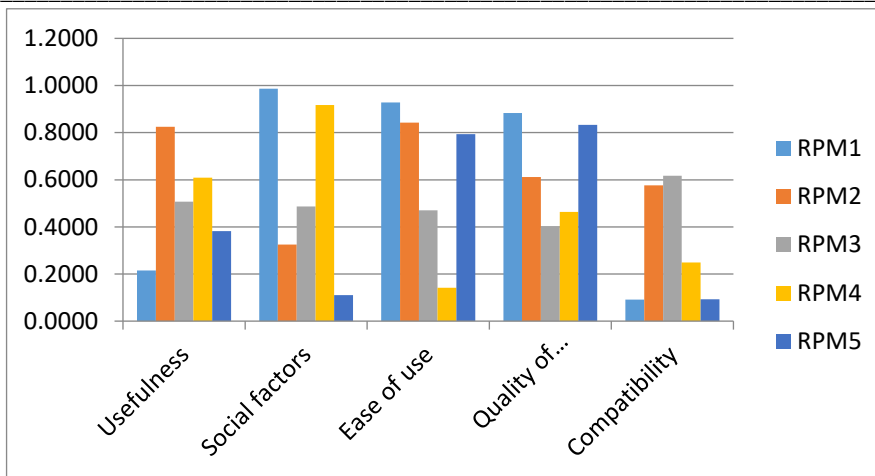


FIGURE 1. Artificial Intelligence Assisted Health Risk Prediction

Figure 1 shows the graphical representation Usefulness it is seen that RPM2 is showing the highest value for RPM1 is showing the lowest value. Social factors it is seen that RPM1 is showing the highest value for RPM5 is showing the lowest value. Ease of use it is seen that RPM1 is showing the highest value for RPM4 is showing the lowest value. Quality of technological service it is seen that RPM1 is showing the highest value for RPM3 is showing the lowest value. Compatibility it is seen that RPM3 is showing the highest value for RPM1 is showing the lowest value.

TABLE 2. Performance value

	Performance value				
RPM1	0.26124	1	1	1	0.14754
RPM2	1	0.32982	0.90769	0.69264	0.93296
RPM3	0.61562	0.49304	0.50746	0.45455	1
RPM4	0.73888	0.92954	0.15257	0.52441	0.40274
RPM5	0.46324	0.11218	0.85598	0.94324	0.15093

Table 2 Performance value showing the given table represents a performance value matrix for different RPM (Revolutions Per Minute) values. Each row in the table corresponds to a specific RPM, and each column represents a different performance metric.

Let's go through each entry in the table:

- RPM1: This RPM has the following performance values for each metric: 0.26124, 1, 1, 1, and 0.14754.
- RPM2: For this RPM, the performance values are: 1, 0.32982, 0.90769, 0.69264, and 0.93296.
- RPM3: The performance values for RPM3 are: 0.61562, 0.49304, 0.50746, 0.45455, and 1.
- RPM4: This RPM has the following performance values: 0.73888, 0.92954, 0.15257, 0.52441, and 0.40274.
- RPM5: The performance values for RPM5 are: 0.46324, 0.11218, 0.85598, 0.94324, and 0.15093.

Each performance value represents the performance or effectiveness of a particular metric at a specific RPM. The specific meaning of each metric is not provided in the table, so without additional context, it is difficult to interpret the exact significance of the performance values. However, based on the values alone, you can observe the relative performance of each RPM across the different metrics. For example, comparing the performance values within each row, you can determine which RPM has the highest performance for a given metric. Similarly, comparing the performance values within each column, you can assess the performance

of each RPM across different metrics. Keep in mind that without more information about the specific context and interpretation of the metrics, it is challenging to draw definitive conclusions from the table alone.

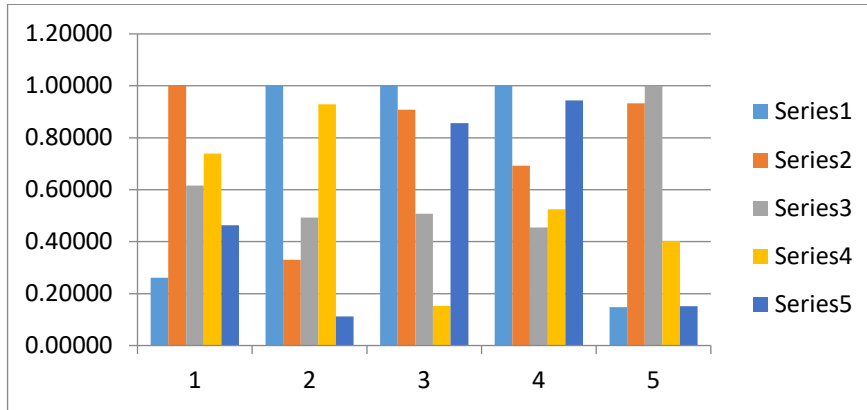


FIGURE 2. Performance value

Figure 2 shows a graph of many characteristics, including utility, social considerations, convenience of use, technological service quality, compatibility, and evaluation metrics RPMs 1, 2, 3, 4, and 5.

TABLE 3. Weighted normalized decision matrix

	Weighted normalized decision matrix				
RPM1	0.76455	1	1	1	0.68199
RPM2	1	0.80104	0.98082	0.92918	0.98622
RPM3	0.90753	0.86811	0.87313	0.85412	1
RPM4	0.94127	0.98549	0.68658	0.87889	0.83369
RPM5	0.85736	0.64563	0.96938	0.98838	0.6851

Table 3 Weighted normalized decision matrix showing alternative parameters usefulness, social factors, ease of use, quality of technological service, compatibility, and evaluative parameters RPM 1, RPM 2, RPM 3, RPM 4, RPM 5.

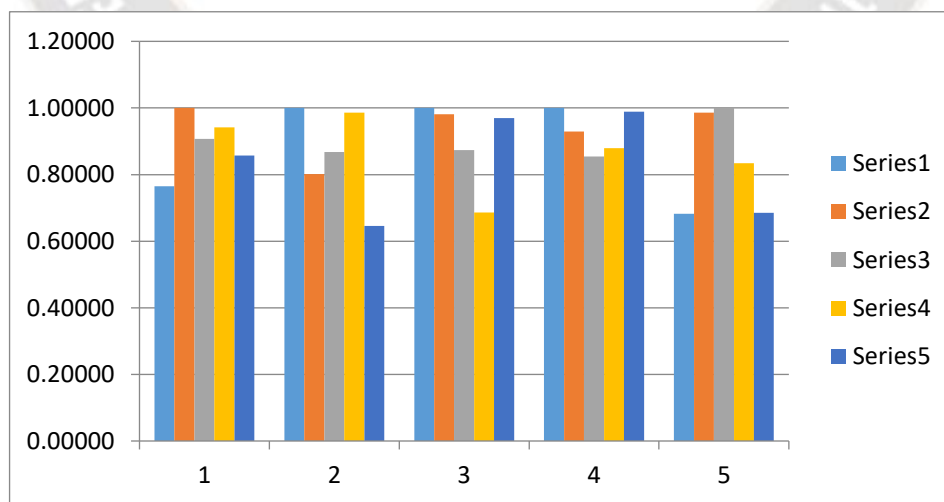


FIGURE 3. Weighted normalized decision matrix

Figure 3 Weighted normalized decision matrix shows a graph of many characteristics, including utility, social considerations, convenience of use, technological service quality, compatibility, and evaluation metrics RPMs 1, 2, 3, 4, and 5.

TABLE 5. Preference Score & Rank

	Preference Score	Rank
RPM1	0.366867	4
RPM2	0.436745	3
RPM3	0.549625	2
RPM4	0.878383	1
RPM5	0.258492	5

Table 5. shows the Preference Score value RPM1 (0.366867), RPM2 (0.436745), RPM3 (0.549625), RPM4 (0.878383), RPM5 (0.258492). the final result of this paper the RPM1 is in Fourth rank, RPM2 is in third rank, RPM3 is in Second rank, RPM4 is in First rank, RPM5 is in Fifth rank.

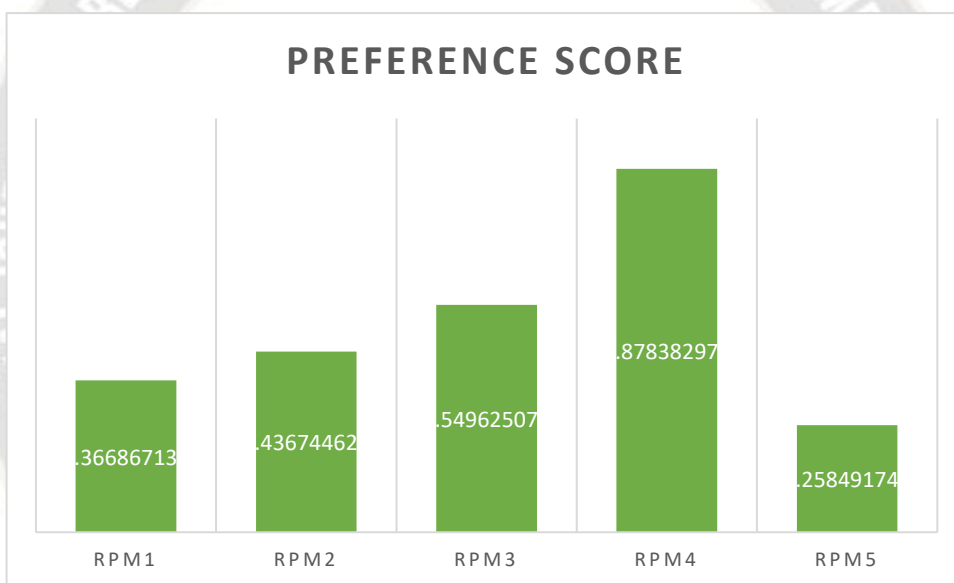


FIGURE 4. Preference Score

Figure 4 Preference Scores shows a graph of many characteristics, including utility, social considerations, convenience of use, technological service quality, compatibility, and evaluation metrics RPMs 1, 2, 3, 4, and 5. the Preference Score value RPM1 (0.366867), RPM2 (0.436745), RPM3 (0.549625), RPM4 (0.878383), RPM5 (0.258492).

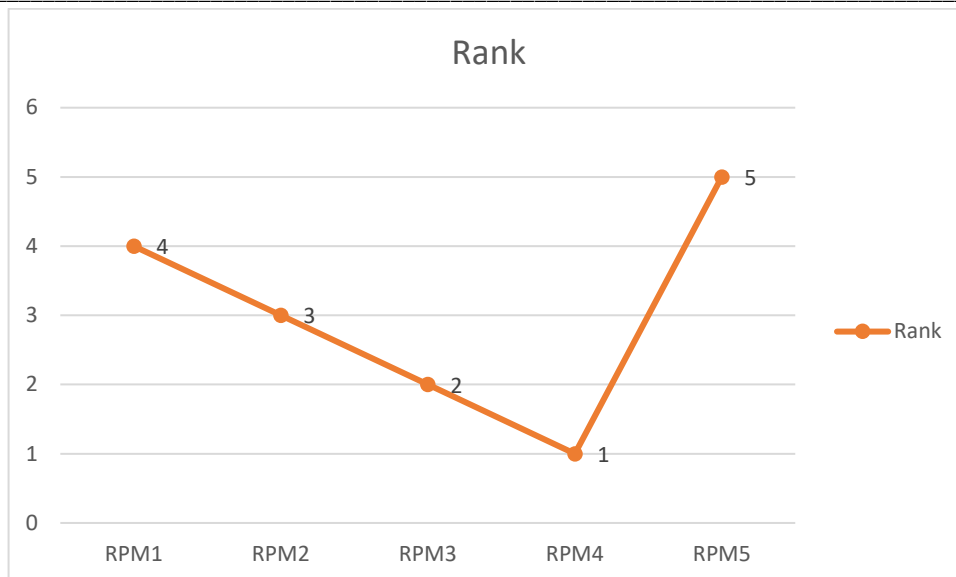


FIGURE 5. Rank

Figure 5 shows the graphical view of the final result of this paper the RPM1 is in 4th rank, RPM2 is in 3rd rank, RPM3 is in 2nd rank, RPM4 is in 1st rank, RPM5 is in 5th rank.

CONCLUSION

This article examines a particular type of multi-attribute procurement auction where each bid comprises a price and a set of quality factors, such as technical specifications, delivery schedules, and management abilities. Such scenarios are common in business procurement. We present two different models for multi-attribute auctions, where in order to assign a score to each bidding, the procurer chooses the WP scoring function, and the price goal function is either projected profit or the Cobb-Douglas utility function. We compare the procurer's revenue, talk about the best auction layout from the procurer's vantage point view, assess the two approaches from the perspectives of the bidding and the procurer, and then provide extensions of our models by loosening the initial assumptions. These additions support price fluctuations, risk-averse bidders, associated cost factors, and an unlimited number of quality attributes. It is feasible to draw the conclusion that the system does the process of computation for alternative data utilising criterion and weight parameters based on study findings regarding candidate selection using the Generalised Product approach. The system chooses the order of suggestions based on the highest possible value of the vector V by using the fascination rate value. The test findings employing up to four possible workers as test data led to the identification of these recommendations as the best alternate prospects for new hires. It is feasible to draw the conclusion that the system accomplishes the calculation process on additional information by applying criteria plus weighting criteria, using the value of the interest rate, based on research findings about the selection of new employees' recruitment via the Weighted Product approach. The test results showed that the value vector V emerged as the top alternate option for new recruits when employing up to four extra potential workers as test data.

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