Evaluation of Operating System Using Electric MultiCriteria DecisionMaking Method

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Abstract

Operating system are computer software a user and a computer is between Communication an operating system (OS) is a All other applications on the computer Programs and programs through the launch program After loading into the computer A program that managesto make Limited application interface Requests for services through (API). Mostly, Apple Mac OS, Microsoft Windows and The top five, including Google's Android OS the IT sector is focused on OSes. Linux Operating system and Apple iOS. Operating system is most people are using the very difficult situation solving the problem in computer. ELECTRE (Elimination Et Choice Translating Reality) analysis using the ELECTRE methods, performance comparisons combining an Operating system 1, Operating system 2, Operating system 3, Operating system 4 Alternative value and Memory management, Process management, Storage management, protection and security, Software Features, Database management Evaluation Parameters in value.Operating system 1 is got the first rank whereas is the Operating system 4 is having the Lowest rank. In this paper operating system for ELECTRE in Operating system 1 is got the first rank whereas is the Operating system 4 is having the lowest rank.
Keywords: Operating system, ELECTRE method, Memory management, Database management.

Introduction

The Operating System (OS) is another by all application programs After loading into the computer A boot program on the computer. in A program that manages Application programs operating system used to make Limited application interface Requests for services through (API). The module operating system has no direct connection to the system. Time sharing or multitasking operating systems. Distributed operating systems. network settings Turn on. Real-time operating systems. Enable mobile Systems. Microsoft Windows. Apple iOS. The set of series variants of the MCDM models is called 'Outranging Relations'. Elimination and Selected Translation Realism (ELECTRE) and its derivatives play an important role in this group. The Many criteria will make the decision (MCDM) application theory is the application of computational methods that involve a number of criteria and a sequence of options to evaluate and select the best option among the many alternatives based on the desired effect Two in the ELECTRE application The main parts are: First, it aims to create one or more advanced relationships, A detailed set of actions for each pair Way comparison; Second, in the first stage Describes the recommendations received An exploitative process. Natural of the recommendation depends on the problem to be solved: selection, ranking or ranking.

Operating system

The operating system is for many programs In between is a section of a computer installation that create unpredictable demands on its resources. Its designer's primary task is to create resource allocation (or planning) algorithms for a variety of resources (primary Each project contains A certain amount of local administration data, some procedures and with functions, to obtain and publish resources Called by desired programs. Related data and such a collection of procedures is a monitor Is called; And the appropriate code can be based on the class code [4]. Operating System Services Database Management Review for their compatibility to support functions Are done. Buffer pool management in these services Include; File system; Planning, process management and stops communications and stops communications; [1]. Operating system and input devices. Even the gate-level interpretation of the microprocessor may not be accurate enough to fully capture reality. Where a person makes a cut-off depends on what level of guarantee one is interested in and where the income will reach the point of decline [2]. The Run for this new type of portable computer devices Systems from today's operating systems Will be different. How about the ubiquitous computer world Our thoughts on being and everywhere Creating different areas of rich computing desktop [3]. Most multimedia enable Systems discussed above Use one of the methods Some settings, such as those discussed in the "Planning Experiments" in the sidebar, replace planning with a real-time schedule. View these settings as newer operating systems Possible because they are common systems and is not compatible with applications Based on the existing process manager other systems use the Meat Scheduler [6]. Operating systems are large enough to hold all the programs that fit into the system's memory, but there may be only a very limited number of versions of the operating system,

all of which are almost identical, providing much more coherent space. Only a few points that are very closely linked. Therefore, only a few guesses are needed to determine exactly which version of the operating system [9]. The operating system predates the Cantered 70s and 80s Military organizations, and many organizations such as with operating systems like Unix in the 90s Ideas for integrated information flow. Dynamic- Adjusted security labels data Tanning first pointed out that it could leak, suggested standard verification instead, which Then yielded useful results as type-analysis. demonstrated a significant relaxation of decentralized classification and approval. Idea in operating systems [10]. Operating system behaviour can vary Significantly in application behaviour from. Therefore, such a large implementation The effect of ignoring the elements is dramatic Will be on the scale. In modernity architecture, which takes into account the needs of operating systems, "Traditional Unix" operates the design. But, as mentioned, various new requirements change [11]. Operating System - The system executes the request Generally, foreign service for any computer call Utility programs that are needed Users cannot determine either. Honestly, most high-level areas of computer service practices are unaware of the network. Within the operation of the operating system, the so-called foreign service requirement is the operating system [13]. For multimedia applications Operating System Support Us Led to start anew. We are down in describing, one with the attributes we need Giving the impression of a virtual processor overall Has a profound impact on the structure [15]. Memory management Controls and integrates memory Is the process. Operating system (OS), applications and other running processes and their functions in order to have the memory needed to do Blocks of memory space exactly This ensures that it is managed and assigned. Process management is a company strategy Aligning processes with goals, process Designing and implementing structures, Process measurement that is consistent with organizational goals Establishing systems and educating managers and Indicates regulation. Storage management is the storage of data resources Performance enhancing software and Refers to processes. Network virtualization, Replacement, reflection, protection, contraction, reduction, Traffic analysis, process automation Storage allocation and memory management These include. Security is the main task for a company to provide certain security measures so that no external user can access the knowledge of the company. Security: Security deals with access to computer resources. It determines which files can be accessed or hacked by a particular user. Features are a set of tasks or actions The "tools" you use on your computer to complete Is. Function is the result you want That's how those features really deliver Operate. For example, most Vacation is a basic requirement for boarding schools Is the ability to customize types. Database management is the entire data life cycle Fulfil the necessary conditions throughout do a business manipulate data Refers to actions taken to control.

ELECTRE

ELECTRE is a multi-level exam rating Is a family with techniques alternatives to the underlying hassle by means of making the set of actions as accurate and applicable as viable or by way of casting off options that outperform Others. Team selection is real- Very suitable for global selection-product Is an effective process for delivering the solution situations industrial manipulate alternatives towards Release of a chemical contaminant surroundings. In this have a look at, four consultant manufacturing plants in France High environment for EOL product solution in a mechanism for selecting, the final The module used ELECTRE III. An illustrative example is given, in which The product is a phone. At the final degree of the process of verifying the On environmental and social impact Indicators used exams, the signs must be taken care of into classes. In one case have a look at related to 4 indicators, 3 MCDA strategies have been in comparison to deal with the final stage [21]. Electricity (Elimination at Choice Trade Realistic to assist multi-scale choice making (MCDA) on many actual global choice-making issues, Environment from agriculture and up to water management, plans Create funds. Selection, team of worker's recruitment first delivery and so forth. Theoretical studies on the basics of ELECTRE methods is likewise energetic right now. We accept as true with its far excessive time to expand the comprehensive traits of ELECTRE strategies via emphasizing their state-of-the-art extensions [22]. Attracting users with the simplest version The goal is to upgrade to a previous version. Guide styles for both versions Based on (Start Page, Select Size, Weight systems, door settings and ranking view) algorithm was usedhas the same user interface both versions and the required values are different [41]. To overcome this shortcoming, ELECTRE easily captures The choice maker's subjective evaluation of the dealer choice standards. Accurate and consistent supplier choice consequences. Second, drawing a actual case, this observe as compared and outstanding among the traditional crisp and ELECTRE strategies. Of the three opportunity providers in our case, dealer C was discovered to be the maximum beneficial dealer under the ambiguous ELECTRE technique, whereas dealer A become identified because the most suitable provider whilst using the soft ELECTRE method [23].The ELECTRE method was used as a transcendental relationship theory to analyse data related to the results matrix. Concordance and Discordance Indexes in Engineering Four Mathematical troubles can be taken into consideration as a degree of the dissatisfaction a choice maker makes use of in choosing an alternative. We take into account the M opportunity and n quit standards. Each alternative is rated according for every criterion shape a result matrix [39]. As mentioned above the ELECTRE algorithm There are some drawbacks If it is properly addressedwill be very attractive to use the problem in network selection. It'sConsiders the application and top-ranked candidate networks of all alternatives required to be identified Does not provide absolute ranking. In this paper, the ELECTRE algorithm an alternative to using The approach is developed [36]. The ELECTRE approach starts with the intuitively attractive prototype that can only make approximate comparisons of a DM's performance. Of alternatives. This system allows programs that are not equal in number to be considered equal. Outreach does not have a print basis, but rather parameters and decision-making algorithm. It is still necessary to give the DM Analyst scores for alternatives against the criteria, but the priority system is 'designed' by an approach that sets limits that reflect the DM's preferences for inaccurate comparisons of these performances. [34]. To support the selection process, properly coordinated We are the

ELECTRE TRI assistant We propose It guesses priority from assignment examples given by DM Model parameters. The paper follows Organized: The next section is ELECTRE TRI A brief methodological description of the method Gives and choose section 3 How processes Explains supporting[32]. ELECTRE is a first aid method that first applies the concept of a decision-making relationship; It should only be used if all criteria are encoded in numerical measurements with identical limits. The end Repair with four criteria Model for contract problem and sample with ELECTRE method Includes applied theory ELECTRE is from the best of alternatives from worst to worst is a system. The ELECTRE method was used for the actual selection Solid Waste Management Organization process[31]. Electre method of the previous methods Have played a key role in the team.The main purpose of the elector is to systematically use transcendental relationships. Outreach methods help to use incomplete value information, for example priority of judgments at the ordinal level [29]. There can be three types: mutual reinforcement effect (synergy), mutual weakening effect (redundancy) and hostile effect. For example, when rating sport cars, maximum speed and acceleration may be considered unnecessary because, in general, fast cars also have good acceleration. Therefore, although these two criteria are very important for DM-preferred sports cars, their overall significance is The importance of being considered individually of two criteria Is smaller than the sum [28]. ELECTRE methods are required to accurately measure performance. The alternatives in each criterion and the corresponding stock for The mass of a criterion is its voting power Reflects, which is in favour of an over-relationship Contributes to the majority. Weights Should not be dependent encryption of limits or scales and cannot be interpreted as conversion ratios like the compensating MCDA methods. Of ELECTRE methods Key Limit (All family systems of MCDA methods) may depend on the subjective input of the decision maker [27].

Analysis and Discussion

TABLE 1. Operating system or ELECTRE method

	Memory management	Process management	Storage management	protection and security	Software Features	Database management
Operating system 1	1450	1850	7.5	6.5	96.3	1.05
Operating system 2	1750	1750	6.9	7.5	95.3	3.08
Operating system 3	1560	1950	8.5	8.6	88.6	6.15
Operating system 4	1650	1850	9.5	9.15	94.5	4.05

Table 1 Shows the Operating system for analysis using the ELECTRE Method. Memory management, Process management, Storage management, protection and security, Software Features, Database management and Operating system 1, Operating system 2, Operating system 3, Operating system 4 it seen also for Data set of the value.

FIGURE 1. Operating system

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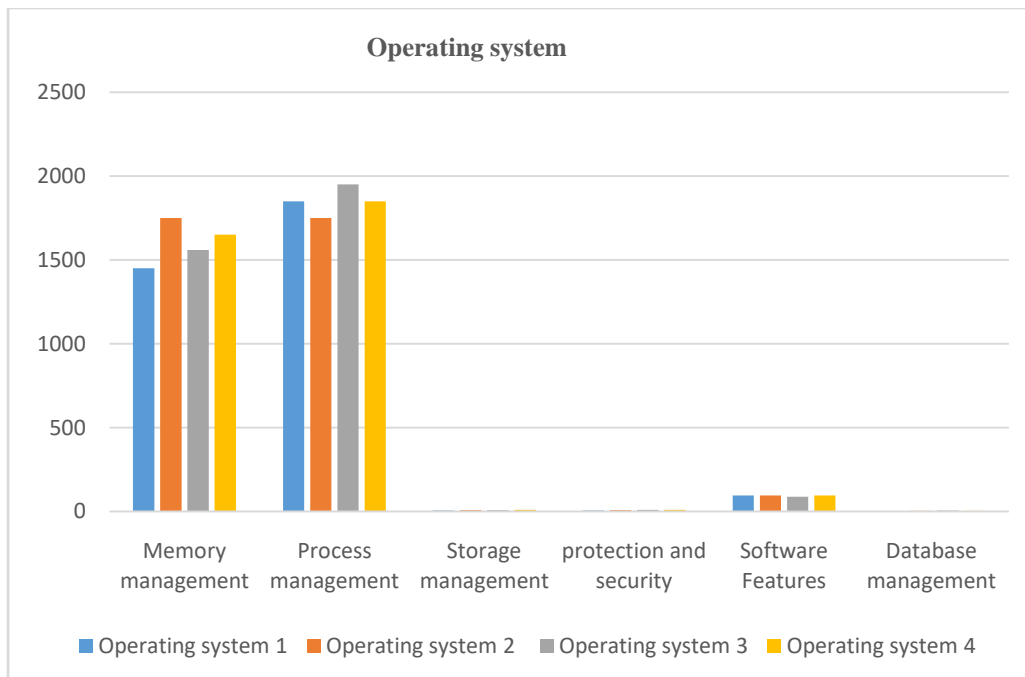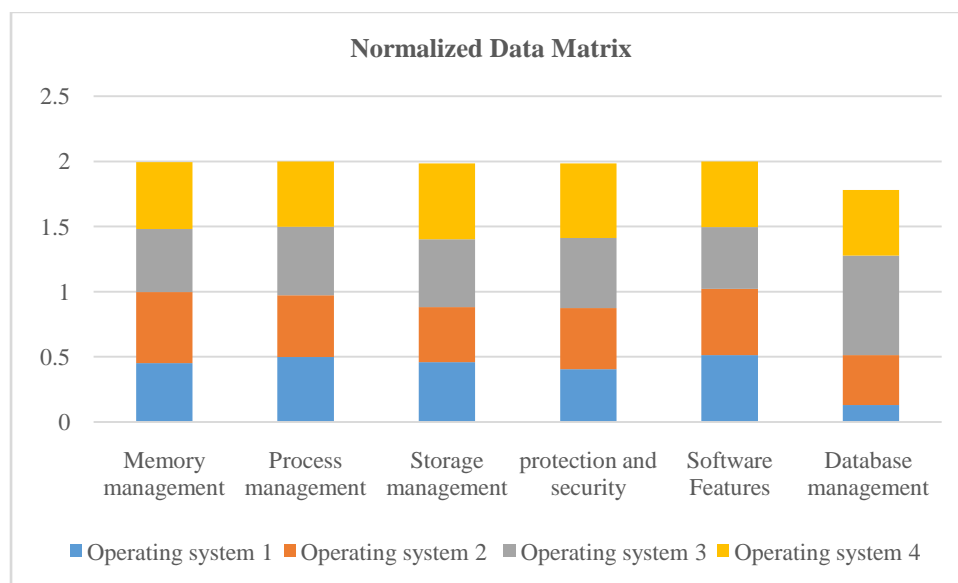
TABLE 2. Operating system SUM & SQRT

	Memory management	Process management	Storage management	protection and security	Software Features	Database management
Operating system 1	2102500	3422500	56.25	42.25	9273.69	1.1025
Operating system 2	3062500	3062500	47.61	56.25	9082.09	9.4864
Operating system 3	2433600	3802500	72.25	73.96	7849.96	37.8225
Operating system 4	2722500	3422500	90.25	83.7225	8930.25	16.4025
SUM	10321100	13710000	266.36	256.1825	35135.99	64.8139
SQRT	3212.647	3702.702	16.32054	16.0057	187.446	8.050708

Table 2 shows the Operating system SUM & SQRT value of AlternativeOperating system 1, Operating system 2, Operating system 3, Operating system 4. Evaluation Parameters in Memory management, Process management, Storage management, protection and security, Software Features, Database management. This table mention the SUM & SQRT value in Memory management is showing the highest value for Database management is showing the lowest value.

TABLE 3. Normalized Data Matrix

	Normalized Data Matrix					
	Memory management	Process management	Storage management	protection and security	Software Features	Database management
Operating system 1	0.451341	0.499635	0.459544	0.406105	0.513748	0.130423
Operating system 2	0.544722	0.472628	0.42278	0.468583	0.508413	0.382575
Operating system 3	0.485581	0.526642	0.520816	0.537309	0.47267	0.763908
Operating system 4	0.513595	0.499635	0.582089	0.571671	0.504145	0.503061

Table 3.Shows the Normalized Data Matrix of AlternativeOperating system 1, Operating system 2, Operating system 3, Operating system 4 Evaluation Parameters in Memory management, Process management, Storage management, protection and security, Software Features, Database management is Normalized Data Matrix value.

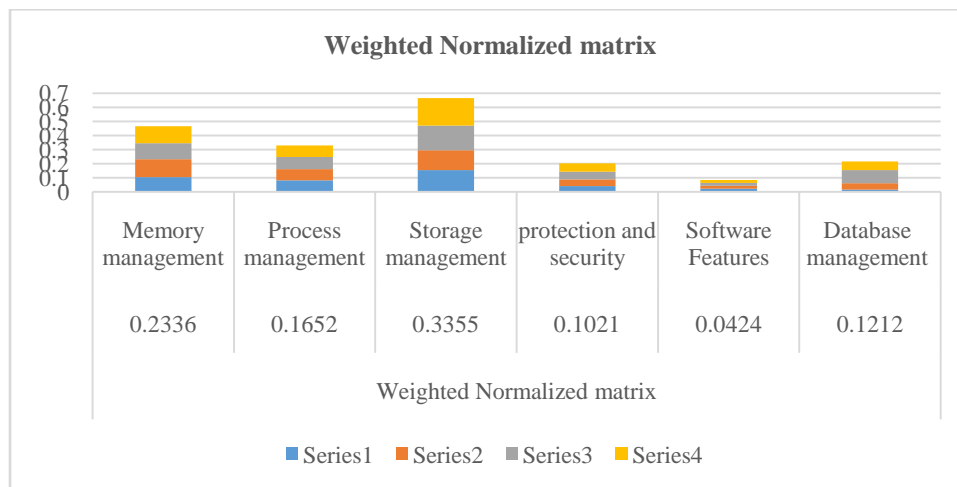

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TABLE 4. Weighted Normalized matrix

	Weighted Normalized matrix					
	0.2336	0.1652	0.3355	0.1021	0.0424	0.1212
	Memory management	Process management	Storage management	protection and security	Software Features	Database management
Operating system 1	0.105433	0.08254	0.154177	0.041463	0.021783	0.015807
Operating system 2	0.127247	0.078078	0.141843	0.047842	0.021557	0.046368
Operating system 3	0.113432	0.087001	0.174734	0.054859	0.020041	0.092586
Operating system 4	0.119976	0.08254	0.195291	0.058368	0.021376	0.060971

Table 4 Shows the Weighted Normalized matrix value of the Operating system 1, Operating system 2, Operating system 3, Operating system 4 Evaluation Parameters in Memory management, Process management, Storage management, protection and security, Software Features, Database management in Normalized Data Matrix multiplication criterion Weightsthis will be going to multiply again will be constant Weighted Normalized matrix value.

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TABLE 5. Concordance Interval Matrix & Discordance Interval Matrix

C12 ={2}		D12 = {1,3,4,5,6}
C13 = {3,5}		D13={1,2,4,6}
C14 = {2}		D14={1,3,4,5,6}
C21={1,3,4,5,6}		D21={2}
C23={1,3,5}		D23={2,4,6}
C24={1,4}		D24={2,3,5,6}
C31={1,2,4,6}		D31={3,5}
C32={2,4,6}		D32={1,3,5}
C34={1,2,4,6}		D34={3,5}
C41={1,3,4,5,6}		D41={2}
C42={2,3,5,6}		D42={1,4}

C43={3,5}		D43={1,2,4,6}

Table 5 shows the Concordance Interval Matrix & Discordance Interval Matrix is showing the Common Value.

TABLE 6. Concordance Value

0	1	1	0	1	0
0	0	0	0	1	0
0	1	0	0	1	0
1	0	0	1	0	1
1	0	0	0	1	0
1	0	0	0	1	0
1	1	1	1	0	1
0	1	1	1	0	1
0	1	0	0	0	1

Table 6Shows the Concordance Value for Operating system using the ELECTRE Method=IF(I12>=I13,1,0) to =IF(N14>=N15,1,0)is the Common Value.

TABLE 7. Concordance Interval Matrix

	Concordance Interval Matrix					
	M1	**M2**	**M3**	**M4**		
M1	0	0.1652	0.3779	0.1652	0.7083	
M2	0.8348	0	0.6115	0.3357	1.782	
M3	0.6221	0.3885	0	0.6221	1.6327	
M4	0.8348	0.6643	0.3779	0	1.877	
	2.2917	1.218	1.3673	1.123	6	0.5

Table 7 Shows the Concordance Interval Matrix in shown the valueTable 4 addition of I10 to N10.

TABLE 8. Concordance Index Matrix

	Concordance Index Matrix			
	M1	**M2**	**M3**	**M4**
M1	0	0	0	0
M2	1	0	1	0
M3	1	0	0	1
M4	1	1	0	0

Table 8 Shows the Concordance Interval Matrix in shown the value of Operating system using the ELECTRE Method =IF(J29>=0.5,1,0) to =IF(M32>=0.5,1,0) is the Concordance Interval Matrix.

TABLE 9. Discordance value

	C1	C2	C3	C4	C5	C6
D12	0.021814	0.004462	0.012334	0.006379	0.000226	0.030561
	1					
D13	0.007998	0.004462	0.020557	0.013396	0.001742	0.076778
	1					
D14	0.014543	0	0.041114	0.016904	0.000407	0.045164
	1					
D21	0.021814	0.004462	0.012334	0.006379	0.000226	0.030561
	0.145991					
D23	0.013815	0.008923	0.032891	0.007017	0.001516	0.046218
	1					
D24	0.007271	0.004462	0.053448	0.010525	0.000181	0.014603
	1					
D31	0.007998	0.004462	0.020557	0.013396	0.001742	0.076778
	0.267744					
D32	0.013815	0.008923	0.032891	0.007017	0.001516	0.046218
	0.711658					
D34	0.006544	0.004462	0.020557	0.003508	0.001335	0.031615
	0.650235					
D41	0.014543	0	0.041114	0.016904	0.000407	0.045164
	0					

D42	0.007271	0.004462	0.053448	0.010525	0.000181	0.014603
	0.196926					
D43	0.006544	0.004462	0.020557	0.003508	0.001335	0.031615
	1					

Table 9 Shows the Discordance value of operating system Table 4 Weighted Normalized matrix and table 5 Concordance Interval Matrix & Discordance Interval Matrix or using the Formula =ABS(B43-B44) and Maximum is shown the operating system Value.

TABLE 10. Discordance Index matrix

Discordance Interval Matrix					
	M1	**M2**	**M3**	**M4**	
M1	0	1	1	1	3
M2	0.145991	0	1	1	2.145991
M3	0.267744	0.711658	0	0.650235	1.629637
M4	0	0.192926	1	0	1.192926
	0.413735	1.904584	3	2.650235	7.968554
				d bar	0.664046

Table 10 show the Discordance Index matrix for operating system is using the Table 9 Discordance value.

TABLE 11. Discordance Index matrix

Discordance Index matrix				
	M1	**M2**	**M3**	**M4**
M1	1	0	0	0
M2	1	1	0	0
M3	1	1	1	1
M4	1	1	0	1

Table 11 show the Discordance Index matrix for operating system is using the Table 8 Discordance value.

TABLE 12. Final Result of Net superior value &Net Inferior Value

	Net superior value		Rank	Net Inferior Value		Rank
M1	-1.5834		4	2.586265		1
M2	0.564		2	0.241407		2
M3	0.2654		3	-1.37036		3
M4	0.754		1	-1.45731		4

Table 12 Shows the Final Result of Net superior value & Rank of the Net Inferior Value (Concordance Interval Matrix) Memory management, Process management, Storage management, protection and security, Software Features, Database management and Operating system 1, Operating system 2, Operating system 3, Operating system 4. Operating system 4 is showing the Highest Value for Net superior value and Operating system 1 is showing the Lower value. Operating system 1 is showing the Highest Value for Net Inferior Value and Operating system 4 is showing the Lower value.
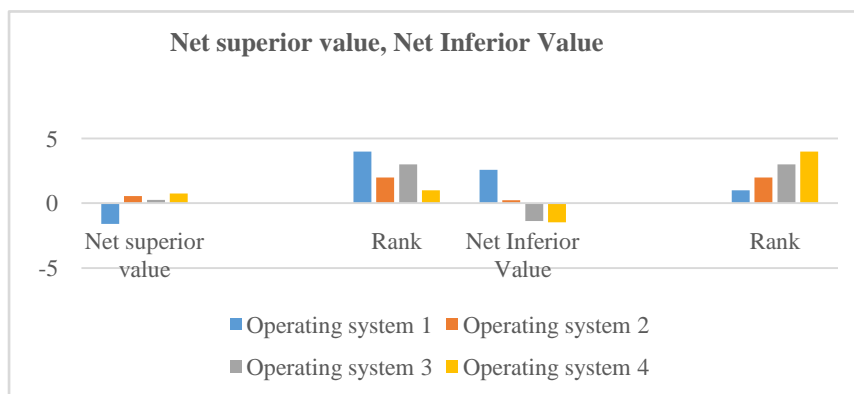
FIGURE 4. Shown the Rank

Figure 4 Final Result of Net superior value & Net Inferior Value Ranking of Operating system for analysis using the ELECTRE Method. Operating system 1 is got the first rank whereas is the Operating system 4 is having the Lowest rank.

Conclusion

The operating system is the unit that creates the unpredictable needs of its resources among the many programs of a computer installation. Its designer's primary task is to create resource allocation (or planning) mechanisms for various resources (primarily to obtain and publish specific amounts of local administrative data, with certain procedures and functions, and resources required by the program called a set of relevant data and such processes called a monitor, and the appropriate code Based on the class code Operating system services that support database management functions are reviewed for their compatibility, including file system buffer pool management; planning, process management and terminating communications It has the ability to provide actions or alternatives that are as accurate and relevant as possible By removing the alternatives To the underlying problem. Team decision making is real world decision making The most AP-appropriate solution for situations Is a very effective process to deliver.ELECTRE (Elimination Et Choice Translating Reality) analysis using the ELECTRE methods, performance comparisons combining an Operating system 1, Operating system 2, Operating system 3, Operating system 4 Alternative value and Memory management, Process management, Storage management, protection and security, Software Features, Database management Evaluation Parameters in value.Operating system 1 is got the first rank whereas is the Operating system 4 is having the Lowest rank.

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