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## **An Assessment on Enterprise Resource Planning Using Weighted Sum Method**

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**Abstract:** Enterprise resource planning (ERP) software integrates business processes and data from a variety of organisational functional areas, including finance, human resources, procurement, and supply chain management, into a single, integrated system. ERP strives to boost output, give organisations real-time insight into their performance, and simplify internal business procedures. One of the many business processes that can be automated and managed by ERP systems, which typically include a centralised database and a collection of integrated modules, is project management. Other business processes that can be automated and managed by ERP systems include customer relationship management (CRM), inventory and supply chain management, human resource management (HRM), and accounting and financial management. Enterprise Resource Planning (ERP) is significant because it helps connect and streamline corporate operations, increase productivity, and give users real-time visibility into how their organisation is doing. Among the main advantages of ERP are increased productivity, Better decision-making, Planning, Analysis, Design. Alternate parameters: Some alternate parameters of enterprise resource planning (ERP) could include placement, scheduling, shipping, tracking and invoicing. Evaluation parameters: Evaluation parameters of enterprise resource planning (ERP) could include effectiveness, efficiency, satisfaction, volume, complexity, duplication. Compared to other themes, placement has a higher-ranking capacity, and tracking has at least one. Enterprise Resource Planning (ERP) is a software programme that unifies data and business procedures from many departments within an organisation, including finance, human resources, procurement, and supply chain management. ERP aims to improve productivity, provide real-time visibility into an organization's performance, and streamline corporate processes.

**Keywords:** software solutions, business processes, supply chain management, development.

### **1. INTRODUCTION**

When properly deployed, an enterprise resource planning (ERP) system, which is a collection of integrated, all-inclusive software, can be used to manage and integrate all business processes inside a company. According to Boykin, Chen, and Yen et al. (2001), these sets typically include a variety of well-known business applications and tools for sales and distribution, materials management, human resource management, production planning, computer integrated manufacturing, supply chain, and customer information. According to Al-Mashari and Zairi (2000a), these packages can make it easier for information to be shared between all internal and external supply chain operations inside a firm. The effectiveness of a supply chain network can also be increased with the aid of an ERP system. ERP stands for enterprise resource planning, a practical method for developing integrated enterprise information systems that is acknowledged by the industry. The academic research community has significantly advanced the field. It is common practise to contribute to discipline by making archive journal articles available to the public. This article reviews the ERP literature that was written between 2000 and 2006 (May 31, 2006). Three objectives are listed in the article. It will be beneficial for researchers first and foremost who are interested in the kind of questions that have been addressed in the field. Since the middle of the 1990s, enterprise resource planning (ERP) systems have been adopted in hundreds of firms worldwide. ERP systems, which are enterprise-wide interactive online systems, enable cross-functional processes by using a common database. ERP solutions should, in theory, provide a seamless procedure. Business nowadays is increasingly challenging because of heightened competition, escalating customer requirements, and growing markets. Companies are being pushed to reduce costs across the supply chain, reduce inventory, improve logistical procedures, diversify their product offerings, improve delivery times, improve quality, and accelerate material flow times. Businesses have come to the realisation that the only way to overcome these challenges and execute the necessary improvements is by sharing information with their suppliers, distributors, and consumers. As a means of maintaining their competitiveness, businesses

are increasingly developing strategic partnerships and/or collaborations with their suppliers. Enterprise resource planning (ERP) solutions are being used by businesses more frequently to accomplish these objectives.[24].

## 2. MATERIALS AND METHODS

**Supplies and technique: Needs Assessment:** List the organization's precise criteria and goals. Understanding the current procedures, the constraints of the system, and **Project Planning:** Create a thorough project plan that specifies the objectives, schedule, allocation of resources, and roles. The process of implementation will be steered by this plan. Analyse current business processes and map them into the ERP system. This is known as business process analysis and mapping. Determine the areas where processes can be improved and how the ERP system can help these improvements. **System Configuration:** Set up the ERP system in accordance with the needs of the company. Determining workflows, data structures, user roles, security configurations, and integration points with other systems are all part of this process. Transferring data from old systems to the ERP system is known as data migration. Data must be cleaned and verified, data fields must be mapped, and data integrity must be maintained throughout the transfer. **Development and Adaptation:** adapt the ERP system to unique organisational requirements that.

**Weighted Sum Method:** The weighted sum method is a decision-making approach used to evaluate and compare alternatives using multiple criteria. It involves assigning weights to each criterion to indicate their relative importance. By multiplying the scores of each criterion by their respective weights and summing them, a weighted sum is calculated for each alternative.

The weighted sum method follows these general steps:

1. **Identify the criteria:** Determine the relevant criteria essential for evaluating the alternatives.
2. **Assign weights:** Allocate weights to each criterion to reflect their relative significance. The weights should total 1 or 100
3. **Score the alternatives:** Assess each alternative against each criterion and assign scores or ratings.
4. **Calculate the weighted sum:** Multiply the scores of each criterion by their corresponding weights and add them together to derive a weighted sum for each alternative.
5. **Compare and make decisions:** Compare the weighted sums of the alternatives. The alternative with the highest weighted sum is considered the most favorable choice.

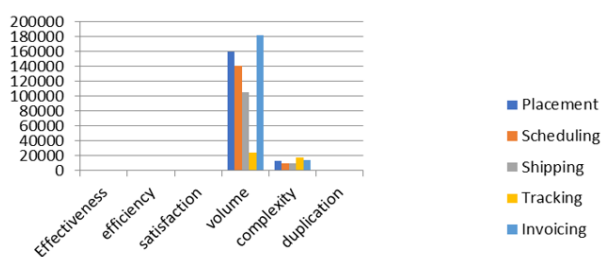
The weighted sum method enables decision-makers to simultaneously consider multiple criteria and incorporate their preferences by adjusting the weights. It provides a systematic and structured approach to decision-making, aiding in the selection of the best alternative based on the specified criteria and their relative importance.

## 3. RESULT AND DISCUSSION

**TABLE 1.** Enterprise Resource Planning

	Effectiveness	efficiency	satisfaction	volume	complexity	duplication
Placement	0.803	0.673	6.8	151791	13042	0.102
Scheduling	0.883	0.813	7.9	134571	9907	0.092
Shipping	0.953	0.903	8.3	99768	9702	0.082
Tracking	0.543	0.463	3.9	23461	16693	0.122
Invoicing	0.603	0.553	6.1	173575	13938	0.112

Table 1 Showing enterprise resource planning using the analysis method in WSM alternative in use% effectiveness% efficiency% satisfaction% volume%. Complexity% duplication% Evaluation Preference: placement, scheduling, skipping, tracking, invoicing.



**FIGURE 1.** Enterprise Resource Planning

Figure 1 shows that placement has more compared to other topics and shipping has less in effectiveness and others are normal And invoicing is highest compared to other ones.

**TABLE 2.** Normalized Matrix

0.842602308	0.7452935	0.81927711	0.8745	0.78128557	0.83606557
0.926547744	0.9003322	0.95180723	0.77529	0.5934823	0.75409836
1	1	1	0.57478	0.5812017	0.67213115
0.569779643	0.5127353	0.46987952	0.13516	1	1
0.63273872	0.6124031	0.73493976	1	0.83496076	0.91803279

Table 2 Showing the normalized matrix calculated using weighted sum method for the assessment of enterprise resource planning.

**TABLE 3.** Weights Distributed

0.16	0.16	0.16	0.16	0.16	0.16
0.16	0.16	0.16	0.16	0.16	0.16
0.16	0.16	0.16	0.16	0.16	0.16
0.16	0.16	0.16	0.16	0.16	0.16
0.16	0.16	0.16	0.16	0.16	0.16

Table 3 shows the weight preference for the assessment for the enterprise resource planning. Here weights are equally dispersed among the evaluation parameters.

**TABLE 4.** Weight normalized decision matrix

0.134816369	0.112991	1.14165792	25484	2189.63274	0.01712487
0.148247639	0.136495	1.32633788	22593	1663.29486	0.01544596
0.16	0.151605	1.39349423	16750	1628.87723	0.01376705
0.091164743	0.077733	0.6547744	3938.9	2802.60231	0.02048269
0.101238195	0.092844	1.02413431	29142	2340.06296	0.01880378

Table 4 shows the weighted normalized matrix for the assessment of enterprise resource planning. Here this is calculated by multiplying weight matrix and normalized matrix.

**TABLE 5.** Preference score

ERP planning	Preference
Placement	0.783843533
Scheduling	0.784249292
Shipping	0.772498573
Tracking	0.590009274
Invoicing	0.757292021

Table 5 displays a roster of enterprise resource planning (ERP) activities along with their corresponding preference scores, which indicate the assigned level of importance or preference to each activity. ERP Planning obtains a preference score of 0.783843533, implying that it holds significance or is favored in the realm of ERP. Scheduling, with a preference score of 0.784249292, is given a comparable level of preference as ERP planning. Shipping is assigned a preference score of 0.772498573, indicating that it is also considered a noteworthy aspect within ERP. Conversely, tracking receives a lower preference score of 0.590009274 when compared to the preceding activities, suggesting a relatively lesser level of importance in the ERP context. Invoicing garners a preference score of 0.757292021, signifying its importance but slightly lower preference compared to ERP planning and scheduling. These preference scores can be applied in decision-making processes for ERP implementation or optimization initiatives. By employing the weighted sum method, appropriate weights can be assigned to these activities based on their preference scores, thereby determining their relative significance within the overall ERP system.

**TABLE 6.** Rank

ERP planning	Rank
Placement	2
Scheduling	1
Shipping	3
Tracking	5
Invoicing	4

Table 6 provides the ranks for a list of ERP activities, indicating their relative importance. Scheduling is ranked 1, signifying its highest priority, followed by placement at rank 2. Shipping holds rank 3, indicating it is the third most important activity. Invoicing is ranked 4, implying a lower level of importance, while tracking has the lowest rank of 5, suggesting it is the least important activity. These ranks can guide decision-making by helping organizations allocate resources and prioritize attention to different ERP activities. They assist in determining the implementation or optimization order within the ERP system.

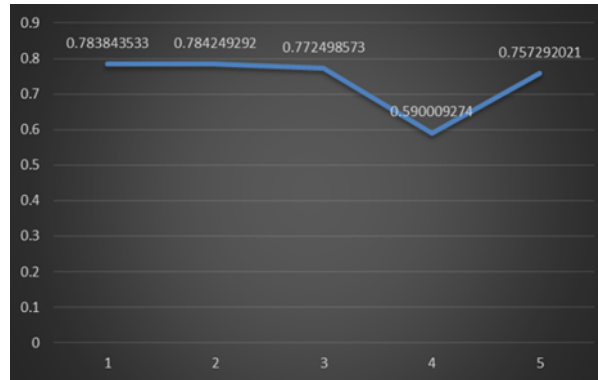


FIGURE 2. Preference score

Figure 2 presents the preference scores for various ERP activities, indicating their relative importance or preference. ERP Planning, Scheduling, and Shipping receive high preference scores, suggesting their significance in ERP. Tracking has a lower preference score, implying relatively less importance. Invoicing is also important but slightly less preferred than ERP Planning and Scheduling. These preference scores can guide decision-making in ERP implementation or optimization projects using the weighted sum method to assign appropriate weights and determine the activities' overall significance.



FIGURE 3. Rank

Figure 3 presents a list of ERP activities along with their corresponding ranks. The rank indicates the relative positioning or order of importance among the activities. Scheduling activity is ranked 1, indicating that it is considered the most important or has the highest priority among the listed ERP activities. With a rank of 2, placement is assigned the second-highest importance or priority. The rank for shipping is 3, suggesting that it is considered the third most important activity among the listed ERP activities. Invoicing receives a rank of 4, indicating that it is ranked lower in importance compared to the previous activities. Tracking has the lowest rank of 5, suggesting it is considered the least important or has the lowest priority among the listed ERP activities. These ranks can be utilized in decision-making processes to prioritize and allocate resources or attention to the different ERP activities. The ranks can help organizations determine the order in which they should focus on implementing or optimizing these activities within their ERP system.

#### 4. CONCLUSION

Enterprise resource planning (ERP) software integrates business processes and data from a variety of organisational functional areas, including finance, human resources, procurement, and supply chain management, into a single, integrated system. ERP strives to boost output, give organisations real-time insight into their performance, and simplify internal business procedures. making wiser choices, the ERP enables firms to have real-time visibility into business performance, allowing them to make better-informed decisions and respond more quickly in response to changing market conditions. Analysis: During this stage, the business carefully assesses its current operational practises and identifies potential areas for improvement. This could involve establishing the requirements for the

new ERP system, cataloguing current workflows and procedures, and pinpointing pain points and inefficiencies. ERP stands for business.

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