Chapter 8

ERP Selection

LEARNING OBJECTIVES

After reading this chapter, you will be able to understand:

- Importance of selecting the right ERP system
- Selection team
- Parameters for ERP selection
- ERP selection process

8.1 INTRODUCTION

The focus of this chapter is selection of enterprise resource planning solution—the phase that follows requirement engineering phase in the life cycle of an ERP implementation. The output of the requirements engineering phase is available in the form of business blueprint containing requirements. Based on the requirements, the selection of an appropriate ERP system is made by a selection team. The selection process includes negotiation and contract with the software vendor and implementation partner. Most of the ERP vendors do not implement their ERP system themselves, they outsource this activity to their certified implementation partners. Negotiations have to be done with both ERP vendor as well as implementation partner.

Given the considerable financial investment, and potential risks and benefits, the importance of selecting an appropriate ERP system cannot be over emphasized. ERP evolved from MRP/MRP-II keeping manufacturing industry at the centre. Existing commercial packages have further evolved according to the needs of their target industry and industry segment. Thus, no single ERP software can meet all functional and business requirements of a company. It is important to choose an ERP software that meets most of the requirements, and a cooperative vendor that will help the company manage the balance requirements either through customization or business process re-engineering. A company must avoid getting carried away by ERP vendor hype or by competitors' selection. The vendor makes every effort to convince an organization to sell their products. There are many ERP packages available in the market and each one of them claims to be different. The difference may come from the industry focus or features supported or both by the ERP package. Each company is unique in terms of its strategies, objectives and requirements. ERP system implementation has great impact on the business processes often coupled with business process re-engineering. A company must understand implications of implementing ERP for their business. The selection process should be guided by the goals and competitive strategy of the organization so that the selected ERP system is aligned with the objectives of the organization.

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The selection of the most appropriate ERP solution is a semi-structured process. There is no formal procedure that can be followed. It is a challenge to select the most appropriate ERP package.

In Section 8.6, various parameters that may be considered while selecting an ERP solution are discussed. The selection team may take anywhere from two to six months for selecting an ERP system. The constitution of the selection team is discussed in Section 8.2. Analytical hierarchy process for choosing the right set of parameters amongst all possible parameters and ordering them is discussed in Section 8.9. A similar process may be adopted for vendor and implementation partner selection.

8.2 ERP SYSTEM SELECTION TEAM

A team is required to collect relevant information about ERP systems and to evaluate them on selection parameters. The team first selects and prioritizes the selection parameters which are then used for selecting a fitting ERP system. There are three different ways to form a team:

- Top management and external consultants are the members of the selection team. The participation of functional heads from within the organization is minimal. Such a team selection works best when in-house capability for making major IT procurement decisions does not exist.
- An organization may have a selection process in place and decision makers may include functional unit heads and few senior level managers. A mature organization will usually have systems and processes in place for various activities. In some organizations, ERP project is treated as an IT project and the selection is made by information officer with or without the help of a consultant.
- A democratic way of making a decision is to include all stakeholders or their representatives in the selection team. The chances of making right selection and success of subsequent ERP implementation increases if the stakeholders are directly or indirectly involved, right from the beginning. The involvement enhances awareness and consequently the motivation of employees. A selection team consist of representatives of different user departments, chief information officer and senior manager.

The middle and top management may work together to form a selection team. The team generally would consist of 4 to 10 persons. But the selection team consisting of as many as 60 persons for a large organization is not unusual. ERP selection is a planned and budgeted activity. The selection process may take two to six months to complete. The selection team gathers information about ERP solutions available in the market. One can buy relevant studies done by benchmarking companies or analyse prototypes. Smaller companies mail their requirements in the form of a questionnaire to various ERP solution providers and analyse their responses. A small number of bidders are asked to make presentations where the selection team can ask further questions. Small organizations tend to use an informal method to analyse the information gathered and to arrive at a decision. Large organizations use more formal methods such as scoring and ranking method, 0–1 goal programming or analytical hierarchy process (AHP). Let us look at the parameters first, AHP and its application for selecting ERP system will be discussed later.

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8.3 ERP SOLUTION AND VENDOR SELECTION

The selection process involves the following steps:

1. Gather information about the vendors and their products using available channels and resources
2. Preliminary filtering
    - Demonstration by the vendors
    - Filtering using high level parameters
3. Decide selection parameters
4. Prepare and release RFP (request for proposal) using the business blueprint prepared during the requirements engineering phase
5. Analyse and select the vendor
    - Evaluate vendor's ERP system on certain paramaters
    - Analysis of financial terms and conditions
    - Detailed demonstration by the vendors

We will discuss each of these steps in detail in the following sections.

8.4 INFORMATION GATHERING

Information about the ERP solutions and vendors is available from different sources. One can analyse the prototypes and demonstration versions that are available. Many consultancy companies study ERP solutions and release reports every year. These reports are expensive but very rich in contents. One can buy these reports for information. The vendors can be invited to make presentations. IT magazines, exhibitions and Internet sites also provide information about ERP solutions and vendors. If there is no inhouse IT competence, a consultant can be hired to gather information about ERP solutions.

8.5 PRELIMINARY FILTERING

The preliminary filtering or first level of filtering can be done on few high level parameters. Some of parameters that have been cited in literature are listed in Table 8.1

TABLE 8.1 High Level Parameters That Can Be Used for Initial Filtering of the Vendors

Parameter	What Parameter Means to the Client?
Vendor size and presence	Has vendor supplied ERP solutions to the organization similar in size and scope to our company and does the vendor have presence in our geographical area?
Cost	Does the range of cost of ERP suits us?
Industry	Does the vendor have a solution for our specific industry?
Technology	Does the ERP run on our choice of platform (hardware, OS, database etc.)
Add-on software	Does vendor supplies add-on software such as SCM, CRM or does the solution integrates with add-on solutions?

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Parameter	What Parameter Means to the Client?
Stability of vendor and their solutions	How is the financial performance of the vendor for last two years and how frequently the software is updated?

After the preliminary filtering, there are two ways of selecting a vendor:

- Competitive bidding
- Two-phase acquisition

In competitive bidding, the vendors bid and the most competitive one is awarded the contract provided he fulfills the requirements. In two-phase acquisition, the seleted bidders are asked to do some additional work on which they are evaluated and awarded the contract. ERP vendors are generally selected through competitive bidding only.

8.6 PARAMETERS FOR ERP SELECTION

Following factors are considered important for ERP selection:

1. **Business process support or functionality:** An important criterion used in selecting an ERP system is the ERP fit with current business processes. An ERP system must support business processes of the organization. In fact, this is one of the most critical requirements. A good match would support more than 90 per cent of the business processes without requiring any change in the processes. The following factors capture the process fit:
    - The organizational processes flow
    - The business practices
    - The organizational processes

    ERP system must support all business processes, business practices and process flow.

    Process fit of an ERP may be less in Asia because the reference process models are influenced by European and American industries. The implementation partners suggest that the company should change their processes according to the chosen ERP system. The researchers and many client companies maintain that the ERP software should change to fit. In any case, a company would like to pick an ERP solution that will require them to change a little. Apart from business processes, one should also look for *data* and *user interface* fit.

2. **Data fit:** There are three functions associated with the data—creation, storage and usage. The users who create the data and use the data are the end-users of the data. There are certain properties associated with the data that are important for the end-users. These are as follows:
    - The name and meaning of data items used in the company (i.e. an sales order sheet, sales report).
    - The form and format of data items of documents.
    - The output data items of the documents.
    - The input data items of the documents.

    The name and meaning of data items used in the company should remain same. A

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sales order should not become proforma invoice or a product should not become an item. These changes may confuse the employees. Similarly, data fields within sales order should also not change to something different. The form and format of data items of documents should also remain the same.

3. **User interface fit:** User interface has three following components:
    - User interface structures.
    - User capabilities required to use interface of the ERP.
    - Sufficient user interface to meet the business needs of the company.

    If ERP solution does not fit well, significant effort may be required to either adapt ERP or the organization. Many interesting examples of misfit are cited in the literature. The names in most ERP systems are entered in the western format as first name, middle name and last name. Now think of South Indian and Chinese names. One time, a new American student in the class asked me, 'Tell me your first name or last name or whatever it is'. Some companies enter the entire name as first name. The implications far reaching, names are usually sorted on either last name or first name. The output in this case will not be sorted either way. How about searching? It is left it to the reader to think about the searching. Every system has some mechanism to uniquely identify people, objects and transactions. A system may define a logical bank account and it may interface with the actual bank. If ERP system insists on using auto-generated numbers, bank interface may not work anymore. Access to ERP system is controlled for security against intentional and unintentional threats. Many ERP vendors give access to named users and charge license fee. A user who needs limited rights to limited data costs money to the company. Sharing password is not a good idea because then the accountability becomes an issue. An employee who is needed just to view the data also costs to the company, which is not something any company likes. As an example, an organization that has over 5,000 users always need one more type of reports. The IT staff spends considerable time to get the data from the system and format it in the required format. These reports are a major concern and it has now been acknowledged by ERP vendors. Many of the ERP systems provide capability to create report by dragging and dropping data items.

    An ERP solution that fits well would result in the following:

    - Lower resistance from the users
    - Reduced training needs
    - Less organizational adaptation

    An organization would undertake an exercise that is referred to as gap analysis for figuring out the gap between the process, data and user interface requirements and ERP offering. Gap analysis is discussed in Section 8.8.

4. **Implementation time:** Small organizations prefer to buy an ERP solution that would take only couple of months to implement. However, for large organizations, implementation time runs in tens of months. Implementation time of an ERP package depends on the following parameters:
    - *Number of sites where ERP has to be implemented:* If an organization has offices or manufacturing facilities at multiple locations across the country,

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considerably more effort would be required in comparison to the organization having only one site. The implementation effort would be even more if an organization is spread across countries, as ERP system would be configured for handling different regulatory rules, fiscal years and languages.

- *Number of modules or functions to be implemented:* ERP systems support almost all processes in all functional units of organization, but an organization has an option of selecting processes for implementation. The more processes and functions an organization implements, longer it will take.
- *Maturity level of organizations:* As mentioned in Chapter 1, IT systems have been developed and deployed in organizations in phases where phases progressed through transaction processing systems, management information systems, decision information systems and organization systems. Each advanced phase integrates IT more closely with the organization. An organization that has been using information systems in the past will take less time than an organization with less exposure and experience with information systems. Implementation time also depends on the maturity of processes of the organization (refer to Chapter 7). Organizational readiness (refer to Chapter 4) to implement ERP system also has also an impact on the implementation time.
- *Customization:* Small organizations prefer an ERP solution that would require no customization as customization adds to the implementation time. Certain amount of customization may be required if the organization is reluctant to re-engineer its processes or feels that their processes are better which often times happen in large organization. Customization increases implementation time of an ERP system.

5. **Total cost:** An ERP implementation is an expensive project (refer to Chapter 3). For a small organization, cost is an important factor in selecting an ERP system. Large organizations are somewhat more relaxed about this parameter. AHP model and to assign weight to various parameters will also be discussed later.
6. **Platform independence:** For large organizations, platform (operating system and hardware) independence may be important. Their manpower and existing infrastructure including servers and operating systems may be diverse. It may be better to buy an ERP system that will run on multiple operating systems and hardwares. Platform independence may save company considerable initial cost in infrastructure and training. Getting vendor-locked is another issue that larger organizations like to avoid. As an example, China has started training their people in Linux because the government did not want to depend on MS Windows as it is an American company and changed political situation may prevent free access to American products.

   Small and medium organizations work with small cash flow and they like to use their existing IT infrastructure to save switching cost and avoid excessive training. A company will have to assess their situation and then decide how important platform independence is for them. AHP, which will help decision makers to quantitatively decide relative importance of parameters is also discussed later.

7. **Process improvement:** An organization starts small that subsequently grows in a sizeable organization. The organization and its processes grow in somewhat ad hoc

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manner leading to inefficient processes. Many organizations expect an ERP system to bring in best practices to improve their processes. Organizations of all sizes consider ERP system implementation an opportunity to improve their processes. Most of ERP vendors continue to improve the processes implemented by ERP systems through research and releasing new versions accordingly.

8. **Reliability:** For engineering purposes, reliability is defined as the probability that a system will perform its intended function during a specified period of time under stated conditions. It is hard to judge reliability of an ERP package. One may try to gather information from references provided by the vendor and relevant studies from benchmarking agencies. A mature system is often more reliable than a new system as reliability of a software system improves as it matures. A reliable system is stable and performs its functions as expected with negligible down time. In case of failure, the system should recover quickly to a consistent state using data recovery mechanism. An enterprise system must be available 24 hours, 7 days a week (popularly written as 24 × 7). A system that handles customer orders or production schedules need to be much more reliable than say a payroll system. Depending on the planned functionality to be implemented, a company may decide its reliability requirements.
9. **Flexibility and scalability:** ERP system, once implemented, becomes an integral part of the organization, and a long-term relationship develops with the vendor. As the organization evolves, its IT requirements also change. ERP system should provide a mechanism (such as EXIT points of SAP) for integrating other applications. The ERP system itself should also evolve and newer version should become available. The ERP should be upgradeable and easy to integrate with other systems such as electronic data interchange (EDI, refer to Chapter 10). An ERP system should evolve as the organization evolves and should not in any way hamper growth of the organization. An organization may expand by starting operations at additional sites and increasing volume of business. ERP system should be able to scale up.
10. **User friendliness:** It has been established (refer to Technology Acceptance Model (TAM) and Extended Technology Acceptance Model (ETAM)) that if a system is user friendly, the employees of the organization would accept the system easily without offering much resistance. Users should not require extensive training for using the system, a brief training session of a week or so is acceptable though. User friendliness is very subjective. A system that seems user friendly to the employees of an IT savvy organization may not get same response from the employees of another organization. ERP system providing a user interface that looks and feels similar to current systems may score high on user friendliness parameter.
11. **Market position of the vendor:** Market position of the vendor is also a concern for organizations. If vendor is strong and has successfully implemented ERP systems in the past, the organization will feel more confident about the vendor. A strong vendor is unlikely to go out of business leaving its clients without any support and future updates. If an ERP is popular, finding trained manpower may be easy, most of the critical points in its implementation would be known, cost and implementation time will be easy to estimate through benchmarking. One may expect continuous improvement in the software and release of newer versions to incorporate any changes in the regulations from a strong vendor.

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Most of the parameters that have been compiled by researchers and documented were explained. An organization may come up with additional parameters such as capability to develop inhouse modules and integrate with ERP system.

8.7 PREPARE AND RELEASE REQUEST FOR PROPOSAL (RFP)

If the client has decided to carry out requirements engineering phase without the help of vendor as discussed in Section 6.1, the requirements become part of the RFP. In case the client has decided not to carry out an independent requirements engineering phase, high level requirements will be included in the RFP. A sample RFP is shown in the following sections where only the high level requirements have been enumerated.

TIM MANUFACTURING
DELHI

Proposal request

for procuring and implementing an appropriate
ERP system
for TIM MANUFACTURING

1 INTRODUCTION

1.1 Objective

TIM Manufacturing Delhi (hereinafter referred to as **TMD**) intends to implement ERP System in the organization in a phased manner consisting of two phases to be completed in tandem.

The organization is currently small in size but will be growing in the coming years. Presently there are about 200 employees. An ERP solution is required which is economical and can be upgraded in the coming years to meet the increasing requirements. The main goal is to have complete automation and move towards paperless organization.

TMD requests proposals for supply, installation and commissioning of ERP solution described in the attached specifications by interested parties (hereinafter known as “the vendor”). Prices quoted shall be all-inclusive and represent procurement and complete implementation at TMD site as per the specifications included in this document. The vendor shall be responsible for all parts, labour, and all other associated apparatus necessary to completely procure, configure, test, deploy and acceptance by TMD, as per the specifications given in this document.

1.2 Schedule of Events

The following is the required schedule of events for this project. The schedule may change depending on the results of the responses and a final schedule will be established prior to contracting with the successful vendor.

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Event	Date
Release of RFP	Day 1
Pre bid meeting and demonstration by the vendors	Day 8
Response from bidders	Day 15
Opening of technical bids	Day 20
Evaluation of responses and further inquiry required, if any	Day 27
Opening of financial bids	Day 32
Contract award	Day 42
Project commencement	Day 57
Project Phase I complete	Day 177 (4 months)
Testing, exploring and bug fixing (if any)	Day 210
Warranty including support	Throughout the implementation and 12 months from the date of successful commissioning of the module in any phase.
AMC	Three years after completion of warranty period

2 TERMS AND CONDITIONS

2.1 Response Submission

It is a two-bid (Envelope 1 and Envelop 2) system. Both the envelopes will be sealed separately and will be enclosed in one main envelope subscribing on it as below:

MAIN ENVELOPE

Responses to this RFP should be submitted in a sealed envelope (containing Envelope 1 and Envelope 2). It is the sole responsibility of the respondents to ensure that their responses arrive in a timely manner. TMD reserves the right to reject all late arrivals. The vendor must submit both the technical and financial proposal latest by .....till 3:00 pm.

To
ERP Project Manager
TMD, New Delhi

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Envelope 1 (Subscribing Technical Bid)

The technical proposal should detail the technical specifications of the proposed solution, compliance to the specifications of various modules detailed in the RFP, implementation plan, post implementation warranty and support plan along with the checklist for technical bid supporting documents such as registration certificates (Income tax PAN No, service tax, sales tax certificate etc.), EMD, bidders profile. Any other relevant paper which a bidder feels necessary along with the terms and conditions duly signed and accepted by the bidder.

Envelope 2 (Subscribing Financial Bid)

The financial proposal should give detailed breakup of price of various modules and associated price of implementation and post implementation warranty/ support and AMC period in the proforma enclosed.

2.2 Costs Associated with Preparation of the Vendor's Response

TMD will not be liable for any cost incurred by the respondents in preparing responses to this RFP or negotiations associated with award of a contract.

2.3 Onsite Study for Effort Estimation

Onsite study will be permitted for one week after release of RFP, at TMD for the purpose of effort estimation, and receiving questions from the vendors that intend to respond to this RFP. Attendance at this onsite study is optional.

2.4 Proposal Binding Period

Prices quoted in the vendor's response for all labour and materials will remain in effect for a period of at least 240 days from the issuance date of the vendor's response.

2.5 Omissions

Omission in the proposal of any provision herein described shall not be construed as to relieve the vendor of any responsibility or obligation requisite to the complete and satisfactory delivery, operation, and support of any and all equipment or services.

2.6 Payment Conditions

Payment shall be made upon acceptance of the job by TMD. The software systems will be deemed acceptable when the vendor delivers to TMD:

- ERP (functionality described in Section 4) package implemented and functional.
- All deliverables including source code, documents reflecting the latest software architecture, configuration and description.
- Other

Acceptance will be deemed *in full* upon receipt by the vendor of a Notice of Acceptance issued by TMD upon full implementation of the Terms and Conditions and Technical Specifications of the Contract. Upon receipt of the Notice of Acceptance, the vendor shall

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notify TMD in writing of a release of all liens for all materials and services associated with this project.

Schedule of payments:

1. 20 per cent of the total cost (the license fee and implementation cost) will be paid on commencement of project.
2. 40 per cent after successful installation and running, and acceptance of the system of phase one modules.
3. 40 per cent after successful installation and running, and acceptance of the system of phase two modules.

2.7 Warranty and Support

The software systems specified and furnished shall be fully guaranteed and supported by the vendor for 12 months after implementation against any defects. Defects which may occur as the result of faulty code within the warranty period after implementation and acceptance by TMD shall be corrected by the vendor at no additional cost to TMD. The vendor shall promptly, at no cost to TMD, correct or re-perform (including modifications or additions as necessary) any nonconforming or defective work within the warranty period after completion of the project of which the work is a part.

The vendor will provide support through call to ensure the smooth running of the system.

The period of the vendor's warranty for any items herein are not exclusive remedies, and TMD has recourse to any warranties of additional scope given by the vendor to TMD and all other remedies available at law or in equity. The vendor's warranties shall commence with acceptance of the work in full.

The bidder shall do the preventive maintenance once a quarter for upkeep of the application running. This schedule shall have to be adhered to strictly by him.

2.8 AMC (Annual Maintenance Contract)

Subsequent to warranty period, AMC terms and conditions shall be mentioned in the tender. The payment during AMC period will be paid on half-yearly basis after completion of service period. The organization reserves the right either to avail AMC from the vendor or otherwise.

2.9 Acceptance and Title

Acceptance will be at TMD and upon successful implementation. If the services supplied to TMD are found to be defective or do not conform to the specifications, TMD reserves the right to cancel the contract upon written notice to the vendor and return work-products at the vendor's expense, based upon the terms of the Contract.

TMD shall at all times have access to the work wherever it is in preparation or progress, and the Vendor shall provide proper facilities for such access and for inspection

2.10 Price Quotations

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Price quotations are to include the furnishing of ERP solution (functionality and other project details given in Section 4), its implementation, data migration, maintenance, training; its source code, manuals, tools, and the provision of all labour and services necessary or proper for the completion of the work. TMD will not be liable for any costs beyond those proposed herein and awarded. The Vendor shall include all applicable sales, consumer, use, and other similar taxes in the price quotations. The taxes and other charges if any is to be mentioned specifically, otherwise the rates will treated as inclusive of all.

The price quotation should give complete breakup functionality-wise cost including the cost of the software licenses, cost of configuration and free warranty and warranty support for 12 months after rollover and AMC for a further period of three years after completion of warranty period.

In case of discrepancy in computed proposal prices, the lowest combined value of individual units costs shall prevail.

The Vendor may also include a time and materials quotation in their bid.

2.11 Price Stability

Contract prices and discounts shall be fixed at the time of contract approval by TMD and the vendor. In the event of price changes, replacement equipment shall be purchased at the lower or then current market price. In no case shall a price higher than contract price be paid for equipment proposed.

In the event that TMD desires to purchase equipment or services not contained in the contract, future purchases will be determined using The vendor-specified discount rate in the proposal from the manufacturer's suggested retail price as of the date of the order.

In no case shall the price exceed the favoured vendor prices.

2.12 Project Team Composition

The composition of the project team assigned by the vendor to TMD projects will be reviewed and approved by TMD. The vendor will be required to submit resumes of prospective team members for review by TMD.

The vendor must have experienced project managers, leaders, database administrators and developers on staff. The project shall be staffed at all times by a project manager and project leaders who, in the role of lead persons, will be able to provide leadership and technical resources for the remaining team members on the project.

If, in the opinion of TMD, any team member does not possess adequate qualifications to participate in the project, TMD reserves the right to require the vendor to assign a team member who, in TMD's opinion, possesses the necessary skills and experience required for this project.

2.12.1 Project Manager

The vendor will provide a full-time, project manager who will act as a single point of contact for all activities regarding this project. The project manager will be totally responsible for all

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aspects of the work and shall have the authority to make immediate decisions regarding configuration work.

The experience and background of the Project Manager should be between 6–8 years.

2.12.2 Project Leaders

The vendor will assign project/module leaders. The background/experience for project/module leader should be of minimum 4–6 in the required field.

2.12.3 Developers and Implementors

At least 70 per cent of the configuration team, assigned to the TMD project, should have at least one year of vendor's ERP software configuration experience. The vendor will guarantee that the TMD project will not be used as a training ground for fresh engineers hired by the vendor.

2.12.4 Database Administrator

The vendor must have a Database Administrator (DBA) on staff, who will be responsible for the database creation for this project. The DBA must have sufficient experience in this type of project as to be able to lend adequate technical support for deployment, during the warranty period, and during any extended warranty periods or maintenance contracts.

2.13 Changes in Team

After project initiation, the Vendor *cannot* pull out team members from the TMD project team unless (a) they leave the company or (b) TMD requests for a change. In case of (a), the vendor will inform TMD in writing and submit documentary evidence of the person resigning from the vendor company.

Any new team member will be allowed to join the TMD project team only after the background has been reviewed and approved by TMD. Should any team member assigned to the project change during the project life cycle, the vendor must submit a resume of the new team member assigned for review by TMD. The experience and background specifications (given above) hold for any changes in team.

2.14 The Vendor Qualifications

2.14.1 Experience

The selected vendor shall be fully capable and experienced in deployment of the software systems specified. To ensure the system has continued support, TMD will contract only with vendors having a successful history of software configuration, installation, service, and support. During the evaluation process, TMD may, with full cooperation of the vendors, visit the vendors' places of business, observe operations, and inspect records.

2.14.2 References

TMD may, with full cooperation of the vendors, visit client installations to observe operations and consult with references. Specified visits and discussion shall be arranged

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through the vendors; however, the vendor personnel shall not be present during discussions with references. The vendor must provide a reference accounts at which similar work, both in scope and design, have been completed by the vendor within the last two (2) years.

2.15 Codes, Standards and Ordinances

Software related to accounting work shall conform to the latest rules, regulations, procedures and standards declared by the Central Auditor General, and all local codes and ordinances, as applicable. All software functions must conform to the IT Act, wherever applicable. The software design should be such that it is given acceptance by the MP/Central Audit.

2.16 Performance and Payment Bonding

Within two (2) working days after notice of award, the vendor is required to have a valid Performance and Payment Bond in the form of Bank Guarantee in force covering the work performed up to the acceptance by TMD. The amount of Bond will be based upon the cost of implementation.

2.17 Bid Evaluation Criteria

Apart from the pricing, bids will be evaluated based on the following criteria:

- Fit of ERP solution and its components
- Compliance with bid documents
- Completeness of bid
- Qualifications and experience
- Domain experience and background
- Level of tailoring of development implementation process to suit TMD needs.
- Client references

2.18 Right to Reject

TMD reserves the right to reject all bids. Responses should be submitted initially with the most favourable terms that the vendor can propose.

3. PROJECT DETAILS

3.1 Onsite/Offsite

TMD would prefer maximum part of the project to be executed onsite. The parts which ***must be*** carried out by the company onsite are: requirements study and configuration. The company must maintain presence of its key configuration team members during Acceptance Testing also.

During onsite implementation/configuration period, TMD will provide office space for the team members including amenities.

3.2 Reporting

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The vendor will submit a status report on the progress of the project on a weekly basis to the Project Manager in TMD. The template for the status report must be approved by TMD. During onsite phases, the project team of the vendor will meet the project monitoring team of TMD on a weekly basis for project reviews. The status report may be the starting point for discussion during weekly project review meetings.

The vendor will be required to make technical presentations to give a report on the progress, any problems encountered and their resolution, any deviations from the project plan/schedule, planned activities and their schedule, and any pending issues. Any feedback given during the presentation will be incorporated in the relevant plan/document, and a follow-up presentation made, if required.

3.3 Configuration Process

TMD expects that the vendor will use a configuration process which is more suited to manufacturing organization.

- The requirements study and analysis must be allocated appropriate resources so that the study is carried out thoroughly and extensively.
- At least two cycles of acceptance testing will be required – one by the in-house team and one by the end-users.

3.4 Configuration Management

TMD expects that the vendor will have appropriate tool-based configuration management in place to manage the project of TMD.

3.5 Deliverables

The following deliverables are expected by TMD from the vendor:

- Installation scripts including scripts for creation of hard data.
- User manuals
- Technical documentation including functional description of the system
- Source code
- Application software executables working
- Documents produced in each phase as follows:

Phase	Documents
Analysis and requirements study	• Requirement specifications • Acceptance test plan • Acceptance test cases
Implementation and configuration	• Functional description of the system • System test plan • System test cases
System testing	• System testing results

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Phase	Documents
Acceptance testing and user training	• Deployment details • Training manuals

3.6 Standards

TMD expects that the vendor will use standards, especially for configuration and user-interface, which will be used throughout.

Checklists for reviewing user interfaces must be developed and used by the vendor.

3.7 Integration Issues

The vendor will identify and provide integration of new software with existing software or system, if any, wherever required. Information regarding existing software will be provided to the vendor by TMD when requested by the vendor or otherwise.

3.8 Data Migration and Retrospective Conversion

The vendor will be responsible for migrating all required data from databases of legacy software, if any, to the database for new software. The migration should be done through scripts and should be a repeatable exercise, as it may be carried out for acceptance testing and later again for final implementation. The new software and legacy software will run in parallel for a period of time before use of legacy software is stopped completely.

For modules where no legacy software is available, need for retrospective conversion of information has to be identified by the vendor. The vendor must include any special programs or screen interfaces that may be required for entry of retrospective data, in the software design. TMD will be responsible for any data entry required for retrospective conversion.

3.9 TMD Involvement

TMD will assign a project manager and a tester. The project manager will be the single-point contact for the project.

All major decisions must be made with the involvement and agreement of the TMD project team. At no time must the vendor hold back any information related to the TMD project and system, which is requested for by the TMD project team. It is the responsibility of the Vendor to ensure that the TMD project team has complete information on the software and system so that, after the warranty period, the TMD project team is fully capable of maintaining and enhancing the software system.

The TMD Project team will participates in reviews of all documents and will have approval authority.

3.9.1 Requirements Gathering Period

The TMD project team will fully participate in all activities of the requirements study and

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configuration period. The TMD team will be responsible for validating the outcome of the requirements study done by the vendor. TMD will fully participate in the configuration of the system and the database creation, and review and approve the outcome of the design.

3.9.2 Configuration and Implementation Period

The vendor must keep the TMD project team fully informed and involved during configuration and implementation period of all technical details on the software, including information on configuration, software structure, techniques used, and any major or minor decisions made regarding the software configuration and implementation.

3.9.3 System Testing

In case resources are available, TMD may like to run a system test cycle after the vendor has performed system testing. The vendor has to make the system test plan and cases used by it for system testing available to TMD. Any defects found by the TMD project team during system testing must be removed by the Vendor.

3.9.4 Acceptance and User Training Period

TMD project team would like to run at least two cycles of acceptance testing and will fully participate in implementation efforts by the vendor. It will aid the vendor in ensuring that the software developed by the vendor is tested and the end-users are trained to use it effectively and efficiently.

4. INTEGRATION, SECURITY AND BACKUP

- It should be possible to build the ERP modules into a fully integrated system and various modules shall be totally interlinked. As far as possible, system shall remove duplication of work. Every module shall be provided with user login and password security.
- ERP modules should support multi-user, multi counter network with 100 per cent protection against unauthorized access. Every user shall have login name and password for every module he wants to work. System administrator shall be in a position to give access to limited menus: sub menus to a user. Powerful backup and recovery procedures must be available and must ensure 100 per cent security of data and smooth functioning of the system. This shall is a time tested ERP and must support smart card/RFID. The smart cards/RFID may be purchased from other agency at later date. Smart card/RFID vendor will provide SDK (System Development Kit) for the interface. The successful bidder will be required to interface the smart card/RFID system with the ERP developed.
- The vendor will identify and provide integration of new software with existing software or system, if any, wherever required. Information regarding existing software will be provided to the vendor by TMD when requested by the vendor or otherwise.
- No unauthorized access to modules and it should be possible to integrated Active Directory and LDAP.
- Facility shall be provided for system administrator for creation of desired number of users for various modules. To different user, depending upon his level and work done by him, various privileges can be given by system administrator. He can give access

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to specific menus and submenus to a user. All the transactions such as data entry/modification shall be stored with user names so that accountability of user is possible. IP address-based protection shall be given for more critical applications. Normally administrative activities such as payroll processing, service record entries, fees collection, etc are to be performed from specific computers. To such users, IP address-based protections may be provided. So, such crucial transactions can be entered through specific nodes only. Well-established backup and security procedures shall be defined. Backup must be automatic. Practically there shall be no chance of data loss.

- The exact data security and backup arrangements shall be worked out after system studies and total network study by the successful bidder. Following sections define software requirements of various modules.
- Bidder may give a graphic outline of the deployment architecture of the ERP system

5. PERFORMA FOR FINANCIAL/PRICE BID

S No	Description	Cost (INR)	
		License Fee	Implementation cost
1	**Module**		
	I. Material management (MM) (Phase 1)		
	II. Sales and distribution (SD) (Phase 1)		
	III. Financial accounting (FI) (Phase 1)		
	IV. Production planning (PP) (Phase 2)		
	V. Quality management (QM) (Phase 2)		
	VI. Controlling (CO) (Phase 2)		
3	Technological planning		
4	Servers		
5	Database management server		
6	Additional hardware		
7	Additional software		
8	Data migration		
9	Training		
10	AMC charges		
	I. Year 1		
	II. Year 2		
	III. Year 3		
11	Any other charges		
12	Total		

6. IMPLEMENTATION STRATEGY

The overall project will be implemented in two phases. The modules to be implemented in Phase I are:

- Material management (MM)
  - Purchasing
  - Inventory management

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  - Materials requirements planning
  - Valuation
  - Product catalogue
- Sales and distribution (SD)
  - Sales
  - Billing
  - Credit management
  - Transport and shipping
  - Sales information system
- Financial accounting
  - General ledger (GL)
  - Accounts receivable (AR)
  - Accounts payable (AP)
  - Legal consolidation (LC)
  - Accounting information system.

Phase II modules are:

- Production planning (PP)
  - Sales and operations planning
  - Master planning
  - Capacity requirements planning
  - Production orders
  - Product costing
  - Material requirements planning
- Controlling (CO)
  - Cost element accounting
  - Cost centre accounting
  - Activity-based accounting
  - Profit centre accounting
  - Profitability analysis
  - Product cost controlling

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8.8 GAP ANALYSIS

The objective of gap analysis activity is to learn the offering of an ERP system and to assess the gap between the offering and the requirements of the organization. As mentioned earlier, three to four ERP systems are considered thoroughly. An initial filtering may be done using some gross features. The gap analysis will involve the vendor as well as the selection team. There are two ways to perform the gap analysis:

ERP			
S.No	**Activity/Event**	**Support**	**Customization**
1	Contacted by Potential Customer		√
2	Log Effort		√
3	Contact Later Reminder	√	
4	Record Request	√	
5	Check Inventory	√	√
6	Refine Requirements	√	
7	Dispatch Material		√
8	Follow-up Supplier	√	
9	Prepate Quotation	√	
10	Management Approval	√	√
11	Dispatch Quotation	√	
12	Sales Order to Supplier		√
13	Shipment Arrangement		√

FIGURE 8.1 Gap Analysis Report for Sales Process of RetailS

- Vendor may be asked to make a presentation of their ERP system. The vendor may also make a prototype available, that one can experiment with. The selection team may ask questions, and based on the answers of the vendor, gap is established.
- Vendor may be provided with a detailed document of requirement and the vendor submits a response to all requirements.

In both the cases, the choices for a response include full support, will require minor changes and customization. After checking for all requirements, the team may declare that the ERP system supports 80 per cent of the requirements, 10 per cent requirements would need a change in the ERP system and the remaining 10 per cent requirements can be handled by changing the requirements. The gap analysis report is shown in Figure 8.1. This is a planned activity for which budget, resources and time is allocated. For RetailS, sales process is used as shown in Figure 6.18 of Chapter 6 as a reference. The ERP system that KN—a company, had was evaluated. KN is a company that provides ERP solutions for small companies. The sales process as a reference was used and the product that KN demonstrated to us was evaluated.

8.9 AHP FOR ERP SELECTION

A model based on Analytic Hierarchy Process (AHP) enables a decision maker to express

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a problem seemingly requiring qualitative judgement as a hierarchy and make a quantitative decision. AHP transforms a subjective problem into an objective one. AHP has been applied to decision making in many diverse domains. A hierarchy is created by putting the objective or the decision at Level 1. For choosing an appropriate ERP system, the objective may be stated as *Select the most suitable ERP system*, sub-objectives are placed at Level 2 of hierarchy. An ERP system is supplied by the vendor and implemented by one of the implementation partners of the vendor. The sub-objectives are to pick the most suitable ERP system (or vendor) and implementation partner. These two items are available at Level 2. At Level 3, parameters that were discussed earlier for selecting ERP system are placed. The parameters for selecting an implementation partner are not yet explained. The components of parameters included at Level 3 are placed at Level 4. For example, component of the cost parameter are infrastructure cost, software cost, license cost and consultancy cost. It is not necessary to have components for every parameter. Level 4 could be empty for some of the parameters.

Coming back to picking up a good ERP implementation partner, the most appropriate partner may not be the one who has the highest market share or who has largest clientele. It may be the one for whom customer is important and will pay enough attention to customer's project in a productive manner. The parameters for selecting appropriate implementation partner are listed below. The selection committee would hold multiple meetings to discuss and select the parameters that are important for the organization. During discussions and meetings, some team members may talk about high-level objectives and some may quickly jump to the parameters and sub-parameters. All these are required to be put into a hierarchy. Building a hierarchy is an iterative process as well as art. If the team is not satisfied with the hierarchy, one can modify till most of the team members are satisfied. It may not be possible to satisfy all team members.

Let us say in a meeting, the following parameters/objectives etc. were discussed:

Cost	Implementation time
No customization	No process modification
Platform independence	Maintenance
Running Cost	Consultancy cost
Software cost	Hardware cost
Infrastructure cost	Training required
Availability of trained manpower	Payment terms
Total cost	Total time
Functionality	Flexibility

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Some of the team members would quickly get into drilling down and ask questions such as ‘how do we test flexibility of a system?’ or ‘what is the cost of the ERP system?’ Some of the questions can be easily answered while many will have no clear answer. Here are some other questions that may surface during deliberations:

- *Is the ERP designed to work with RDBMS:* Most of the big ERP systems require RDBMS at the backend. One may like to find out what RDBMS will be required. This is also a direct cost factor and may be added at Level 4 as a component of the *cost* or as a parameter under *flexibility*.
- *Uploading the legacy data:* One will have to upload legacy data into the database. The legacy data may need cleaning and conversion before it can be uploaded into the database. This activity progresses in parallel and does not add to the overall time of the project. This parameter may be added as a component of the *cost*.
- *Material requirement planning (MRP):* There are whole lot parameters that go into deciding material requirements and there are lot many MRP algorithms. It is required to find out that MRP solution integrated into the ERP solution matches the expectation. This is a Level 4 parameter that belongs to functionality fit.
- *Security:* Security is a major concern and becomes more important after ERP implementation as the entire data of the company is in a centralized database. It is necessary to find out the security layers incorporated into the software. This is also a Level 4 parameter that belongs to functional fit.
- *Support:* Is implementation partner located in your town? It will be difficult to get required support from a remote location. This may again be a Level 4 parameter under *Technical Support* at Level 3 that, in turn, is under sub-objective *Select Appropriate Vendor* at Level 2.
- *Vendor experience:* Has the vendor implemented modules that your organization needs earlier? One may not want to become training ground for the vendor. Hence it is essential to check IT/ ERP experience of vendor. The implementation time will decrease if the vendor has implemented a similar system elsewhere. This seems like a Level 4 parameter under *Technical Support* at Level 3 or under *Good Reputation*.
- *Availability of the product:* Is the product ready and available for immediate delivery? What is the level of maturity of the product? Such a situation may arise if there has been a change in the governing rules and vendors are modifying their software. There could be a change in the technology leading to a similar situation. Government of India has introduced value added tax (VAT) and all ERP softwares had to be touched to incorporate changed tax rules. This could be a parameter at Level 4 under *Implementation Time*.
- *Does the software maintain an audit trail of all the transactions?* All financial transactions must leave an audit trail. The auditor should be able to check the time of transaction, the person who made the transactions in addition to the transaction details. If a change is made in the transaction, the earlier document is not changed instead a new document is created referring to the earlier document. This parameter may be a Level 4 parameter under *Functional Fit* at Level 3.
- *Database size:* Will ERP system support the data through its database system?

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Performance and scalability becomes, important as the size of the data grows. This may be a parameter under *Scalability*.

- *Objective:* Will ERP help the organization to achieve its business objective? For example, will ERP help in reducing lead times of the selected business processes? This parameter may find place under *Functionality*.
- *Some more parameters:* There are some parameters that may be discussed during the selection process. The selection team may come up with concerns such as:
  - Hardware support
  - Upgrade support for the software
  - Documentation
  - Web-enabled access
  - Will the software be implemented in modules?
  - Will the software be purchased in modules?
  - Year-ending accounting
  - Posting of transaction online
  - Business rules
  - Data entry screens
  - Report generation
  - Master data preparation
  - Is the customization cost included in the ERP cost?

The objectives, sub-objectives, parameters and sub-parameters are all put in a hierarchy. The team can collectively work in deciding the levels of the hierarchy. But generally 4 levels are sufficient. There are some hierarchies that have been prepared by the researchers and if any of these appeal to the team possibly with some modification, the hierarchy can be used. One hierarchy is shown in Figure 8.2 that includes objectives, sub-objectives, parameters and sub-parameters which are discussed above.

AHP is used for making two decisions:

- Compute relative importance of parameters based on the input from the ERP selection team.
- Compute relative performance of ERP systems under consideration based on the important parameters identified in previous step.

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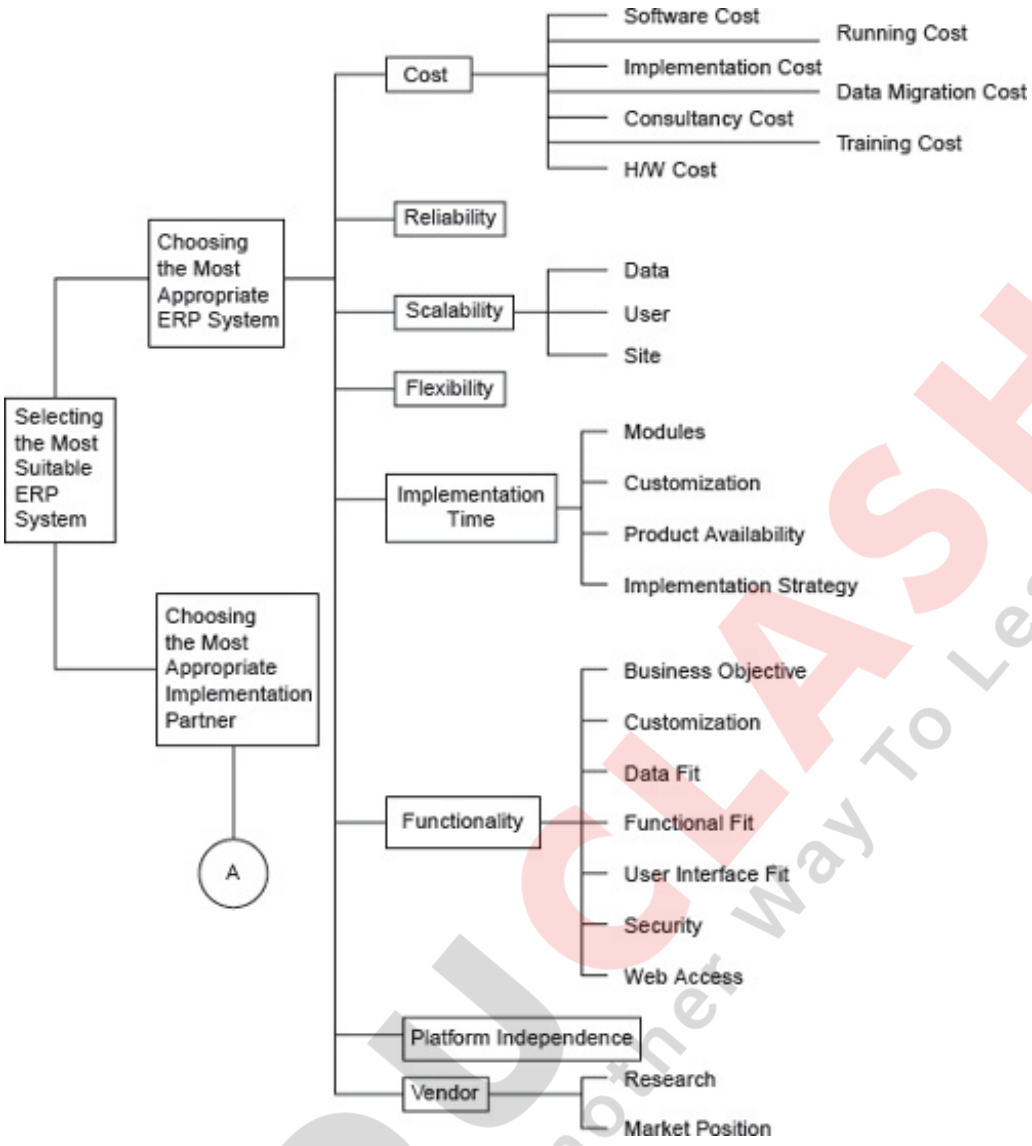

FIGURE 8.2 Hierarchy Built—Based on Objectives, Sub-objectives, Parameters and Sub-parameters

The process is same for making these decisions (Figure 8.2). There are eight parameters at Level 3—cost, reliability, scalability, flexibility, implementation time, functionality, platform independence and vendor. The objective is to figure out relative importance of these parameters.

The process of making the decision consists of the following five steps.

Step 1

Create a matrix for level 3 parameters as shown in Table 8.2. The team makes pair-wise comparison to answer questions of the form—what is the relative importance of $Parameter_i$ with respect to $Parameter_j$? We can use a scale of 1 to 5 (1 to 9 or 1 to 3), where relative importance of 1 means that both parameters are equally important and 5 means that $Parameter_i$ is five times more important than $Parameter_j$. We will prepare matrices for each level of hierarchy and make pair-wise comparisons for each level. Every member of the team will fill up these matrices.

TABLE 8.2 Matrix for Pair-wise Comparison of the Parameters

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	Parameter$_1$	Parameter$_2$	.....	Parameter$_n$
Parameter$_1$				
Parameter$_2$				
.....				
Parameter$_n$				

Example for Step 1

For the hierarchy shown in Figure 8.2, the matrix as shown in Table 8.3 will be created for deciding relative importance of the parameters.

TABLE 8.3 Pair-wise Comparison of the Parameters Filled by One Team Member

	Cost	Functionality	Reliability	Time	Platform	Vendor	Flexibility	Scalability
Cost	1	1/9	3	1/7	3	5	1	3
Functionality	9	1	5	2	7	1	9	3
Reliability	1/3	1/5	1	1/3	5	3	4	2
Time	7	1/2	3	1	7	3	4	5
Platform	1/3	1/7	1/5	1/7	1	1	1/3	2
Vendor	1/5	1	1/3	1/3	1	1	3	5
Flexibility	1	1/9	1/4	1/4	3	1/3	1	3
Scalability	1/3	1/3	1/2	1/5	1/2	1/2	1/3	1

All people responsible for making the selection decision will have to fill the matrix according to the relative importance of the criteria using a scale of one to nine.

Step 2

One can use software like Expert Choice[10] to analyse the data. At the end of analysis, we will get a vector giving us relative importance of parameters. The parameters that turn out to be relatively less important can be ignored from further consideration to reduce the number of parameters. Let us call this vector:

W: < w_1, w_2, w_3, ... , w_n >,

where w_i is the relative importance or weight of parameter i.

Expert Choice is available as trial version that one can download and run a Level 3 hierarchy with three participants. This software also checks for consistency of the responses. A response will be inconsistent if a respondent says, A is three times more important than B, B is two times more important than C and C is three times more important than A where A, B and C are the parameters being compared. Such responses are ignored from further consideration.

Example for Step 2

For the matrix of Table 8.3, the following vectors are ortained:

< Cost, Functionality, Reliability, Time, Platform Independence, Vendor, Flexibility, Scalability >
$\leq .119, .327, .10, .242, .035, .091, .052, .033 >$

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We can evaluate ERP solutions on top five parameters—functionality, time, cost, reliability and vendor, and ignore the remaining parameters.

Step 3 and Example for Step 3

After discovering relative importance of the parameters, we evaluate ERP solution under consideration on the selected parameters. We create one matrix for each parameter as shown in tables 8.4 to 8.8. We compare every pair of ERP solutions on each parameter and fill the matrices. We would answer questions such as: Does ERP solution A meet our requirements better than ERP solution B? Does solution A more reliable than solution B?

TABLE 8.4 Pair-wise Comparison of ERP Solutions A, B, C and D on Functionality

Pair-wise	ERP_A	ERP_B	ERP_C	ERP_D
ERP_A	1	2.0	7.0	7.0
ERP_B	1/2	1	7.0	7.0
ERP_C	1/7	1/7	1	1
ERP_D	1/7	1/7	1/7	1

TABLE 8.5 Pair-wise Comparison of ERP Solutions A, B, C and D on Reliability

Pair-wise	ERP_A	ERP_B	ERP_C	ERP_D
ERP_A	1	1	3	3
ERP_B	1	1	3	3
ERP_C	1/3	1/3	1	1
ERP_D	1/3	1/3	1	1

TABLE 8.6 Pair-wise Compare of ERP Solutions A, B, C and D on Cost

Pair-wise	ERP_A	ERP_B	ERP_C	ERP_D
ERP_A	1	5	5	6
ERP_B	1/4	1	3	6
ERP_C	1/5	1/3	1	6
ERP_D	1/6	1/6	1	1

TABLE 8.7 Pair-wise Comparison of ERP Solutions A, B, C and D on Implementation Time

	ERP_A	ERP_B	ERP_C	ERP_D
ERP_A	1	3	4	5
ERP_B	1/3	1	4	5
ERP_C	1/4	1/4	1	2
ERP_D	1/5	1/5	1/2	1

TABLE 8.8 Pair-wise Comparison of ERP Solutions A, B, C and D on Vendor

Step 4

After we have filled all these matrices, we will run them through Expert Choice and get one vector for each parameter that gives relative score of each ERP solution on each parameter. Now we have relative score of each parameter for each ERP solution:

	ERP_A	ERP_B	ERP_C	ERP_D
ERP_A	1	5	7	9
ERP_B	1/5	1	4	6
ERP_C	1/7	1/4	1	2
ERP_D	1/9	1/6	1/2	1

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$$\text{Param}_1 :< \text{score\_}ERP_A, \text{score ERP}_B, \ldots, \text{score\_ERP}_D >$$
$$\text{Param}_2 :< \text{score\_ERP}_A, \text{score ERP}_B, \ldots, \text{score\_ERP}_D >$$
$$\text{Param}_3 :< \text{score\_ERP}_A, \text{score\_ERP}_B, \ldots, \text{score\_ERP}_D >$$
$$\text{Param}_4 :< \text{score\_ERP}_A, \text{score\_ERP}_B, \ldots, \text{score\_ERP}_D >$$
$$\text{Param}_5 :< \text{score\_ERP}_A, \text{score\_ERP}_B, \ldots, \text{score\_ERP}_D >$$

Example for Step 4

We compared ERP_A, ERP_B, ERP_C and ERP_D as shown in tables 8.4 and 8.8 on five parameters. When we solve these matrices using Expert Choice, we get ratings of each ERP solution on all five parameters as shown in Table 8.9.

TABLE 8.9 Rating of Each ERP System on All Five Parameters

	ERP_A	ERP_B	ERP_C	ERP_D
Functionality	0.516	0.363	0.061	0.061
Reliability	0.375	0.375	0.125	0.125
Cost	0.056	0.131	0.353	0.460
Time	0.069	0.121	0.316	0.495
Vendor	0.653	0.225	0.076	0.047

Step 5

We can now consolidate the scores by multiplying weight of each parameter with score of ERP and add them as follows:

$$\text{Overall score of ERP}_A = 15 \text{ weight of Parameter}_i * \text{score of ERP}_A \text{ for Parameter}_i$$
$$\text{Overall score of ERP}_B = 15 \text{ weight of Parameter}_i * \text{score of ERP}_B \text{ for Parameter}_i$$
$$\text{Overall score of ERP}_C = 15 \text{ weight of Parameter}_i * \text{score of ERP}_c \text{ for Parameter}_i$$
$$\text{Overall score of ERP}_D = 15 \text{ weight of Parameter}_i * \text{score of ERP}_D \text{ for Parameter}_i$$

Example for Step 5

For the above weights and scores, the final vector turns out to be

$$ERP_A = 0.327 * 0.516 + .1*0.375 + 0.119* 0.056 + 0.242*0.069 + 0.091*0.653 = 0.289$$
$$ERP_B = 0.327 * 0.363 + .1*0.375 + 0.119* 0.131 + 0.242*0.121 + 0.091*0.225 = 0.221$$
$$ERP_C = 0.327 * 0.061 + .1*0.125 + 0.119* 0.353 + 0.242*0.316 + 0.091*0.076 = 0.158$$
$$ERP_D = 0.327 * 0.061 + .1*0.125 + 0.119* 0.46 + 0.242*0.495 + 0.091*0.047 = 0.211$$
$$< ERP_A, ERP_B, ERP_C, ERP_D >=< 0.289, 0.221, 0.158, 0.211 >$$

ERP_A is the preferred solution based on five parameters and their weights with ERP_B the second choice.

We can use the same process for selecting important sub-parameters for functionality, cost and implementation time. The same process applied to the hierarchy shown in Figure 8.3 would rank the implementation partners.

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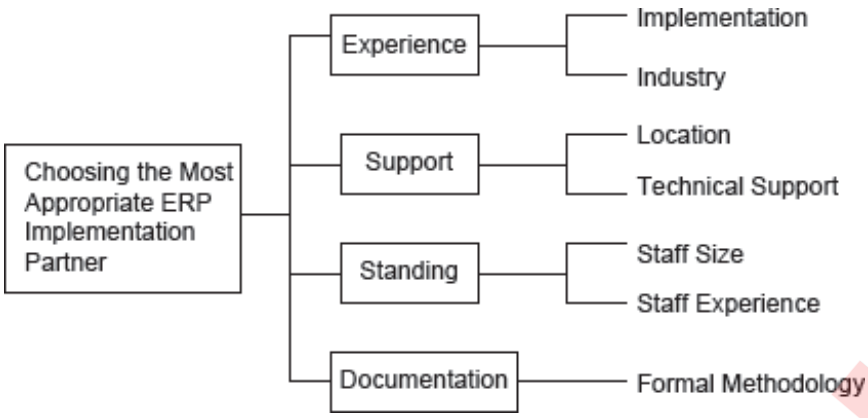

FIGURE 8.3 Hierarchy Built—Based on Objectives, Sub-objectives, Parameters and Sub-parameters

CONCLUSION

ERP selection is a planned and budgeted activity in an ERP project. A team is constituted by the management consisting of generally 6 to 10 people. The job of the selection team is to identify parameters that are important for the organization. The objective is to select an appropriate ERP system for the organization. The constitution of the selection team and their role in selecting an ERP system were discussed. It is possible that too many parameters are mentioned by the team initially. The team can use Analytical Hierarchy Process (AHP) to learn the relative importance of the parameters (and sub-parameters). Smaller number of important parameters are then used to evaluate ERP systems under consideration in an objective manner using AHP.

CASE STUDY

Let us observe the selection process that we followed for RetailS. You would recall that RetailS is a small retail company and we have been working with company right from the beginning of the book. The main concerns of the company were the following:

1. Cost should be between ₹ 4,00,000 to ₹ 5,00,000.
2. Implementation time should be six months or so.
3. No process change.

Since it is a small company, solutions such SAP or Oracle were not feasible as they are unnecessarily bulky and expensive for RetailS. These concerns ruled out any of the standard package. We then started looking at the custom made solutions. The process started with vendor selection.

Vendor Selection

There are three different channels to locate a vendor:

- Search engines such as Google
- Business directories and Yellow pages
- Personal contact

Search engine and business directories gave us more than 50 potential ERP vendors. We went to the Web sites and based on the look and feel, and the last update, we shortlisted about 15 companies to contact. Some of the companies could not be contacted because

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either their phone number was stale or the company did not exist anymore. Some of the Web sites overclaimed their expertise and they were dropped from further consideration after first interaction. We were looking for a company based in Delhi (NCR) region. If a company did not have presence in NCR, it was also dropped. We managed to get a list of about six companies to interact with us. We made appointment and waited anxiously on each appointment for the company representative. To our utter surprise, each one of them was late for their appointments. Since these appointments were spread over a week and all these companies were in NCR region, we failed to find any valid reason. Moreover, their representatives turned up without any preparation. None of our questions were answered. The whole experience was very disappointing and we decided to try the next channel—personal contact.

We approached our friends and colleagues for finding an ERP vendor. We quickly zeroed upon two companies, both were located in NCR region. We made appointment with one of the company and the guy arrived about 45 minutes late. This was the first meeting that was organized at RetailS and CMD of RetailS was present. He questioned the company representative and objected to his latecoming. His response was very annoying and we dropped his company. We then moved onto our last option—let us call this company KN and its CMD Mr Tiwari (not his real name). Mr Tiwari also arrived late but by now, we all had lowered our expectations and decided to impress upon him to be on time from next time onwards.

First interaction with Mr Tiwari was reasonable and we all felt that we can work with him. His team members were just about average or below average from our expectation. Mr Tiwari showed us his product that they delivered to another client. His claim was that he can quickly adapt the existing system to suit requirements of RetailS. After two meetings, the terms and conditions of the contract were finalized and a time line for various phases that were in accordance to the schedule we had in mind. Everything got formalized and a contract between RetailS and LN was signed. The signing amount was paid to KN right away.

EXERCISES

Check Your Understanding

1. Give some good reasons for allocating time and budget for ERP selection activity.
2. What will be the constitution of a selection team of medium size manufacturing enterprise?
3. List seven parameters that you think are important and should be considered while selecting an ERP system. Explain each of these parameters briefly.
4. Briefly explain AHP for making an ERP selection decision. You may use an example for clarity.

Apply Your Understanding

1. Create a selection team for the organization that you chose in the beginning. Justify the constitution of the team that you created.
2. Use AHP matrix to collect data on the relative importance of the parameters that you identified in question. You may request 10 to 15 of your classmates for filling the

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matrices. Run the collected data through Expert Choice to identify the four most important parameters.

3. In Chapter 1, you chose an organization to work with. If the company has already implemented an ERP system or any other large information system, learn who made the selection and how? What were the parameters that were considered important? If your organization has not deployed any major information system, try to find out how major procurement decisions are made?

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