

Whirlpool europe

[Business](#), [Company](#)



Whirlpool Europe Harvard Business School Case Study 9-202-017 The introduction of an Enterprise Resource System (ERP) [pic] ANSWER TO QUESTION 1: The Enterprise Resource Planning System is a cross-functional information system that represents an important development for Whirlpool and an important area of activity for the information management function. Instead of focusing on the information processing requirements of business functions, ERP software focuses on supporting the business processes involved in the operations of a business. The introduction of enterprise-wide computer networking makes it possible to control all major business processes within a single software design. ERP systems are commonly composed of four major parts, covering accounting, manufacturing, sales and human resources.

This forces organizations to operate along business processes. Three activities that need to be carried out in order to try to match supply and demand, with which ERP system helps: 1. Forecast demand 2. Plan the level of capacity that the operation is likely to need to meet the forecast demand, both in the long and the short term. . Control the use of that capacity. This involves the allocation of people, equipment and other resources to the various work tasks to ensure the smooth running of the operation in the short term.

There is a number of benefits that Whirlpool foreseen to gain, from the introduction of an ERP system, in various tangible and intangible areas. Observable tangible benefits come from lowering costs for datacommunication and telecommunication. In addition, there are intangible benefits associated with improved flow of information throughout the

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organization. However, increased user satisfaction and response times compensate the system complexity and potential data inconsistencies. Being an integrated solution, ERP, grants benefits from increased efficiency, and improved quality, productivity and profitability. ERP software penetrates functional departments and can be extended along the supply chain to suppliers and customers. The ERP system, being an industrial software, helps a business manage the important functions of its business, including product planning, parts purchasing, maintaining inventories, interacting with suppliers, providing customer service and tracking order.

Hence, a smoother and more transparent flow of all of these activities will mainly enhance monitoring of the supply chain. The following table reflects a smooth presentation of Whirlpool's foreseen benefits:

Benefits	Description of expectations upon implementation of the ERP system
Working Capital Reduction	Make its supply chain more transparent and efficient.
	As a result, eliminate 8 days sales of inventory (DSI) of allocated and reserved unites, 9 days of transit and 3 obsolete.
	Reduce 12 days of inventory in each wave.
Revenue and Gross Margin	Increase product availability by:
	Increase making the supply chain more visible and integrating sales forecasting and inventory management. Enable the company to realize an increase in unit sales equal to 25% of the improvement in product availability. The incremental sales would contribute to increasing the profitability of Whirlpool Europe.

| | | A 0. 25% gross margin increase by the second year after implementation. | | Benefits | Description of expectations upon

implementation of the ERP system | | Other Cost Savings | Simplify the processing and management of customer orders. | | | Reduce the 79 order desk employees by 18%, at an average cost of \$40, 000 per year per employee. | | Simplify the accounting function and result in a 15% reduction in the 60financeemployees. Expected cost saving was | | |\$45, 000 per year for each employee that was eliminated. | | | Reduce inventory, thus warehouse space could be reduced by 15%.

| | | Reduce the number of returned units by eliminating shipping errors. | | | Reduce bad debt expense and information system expenses. | From Exhibits 3 and 4, we can also analyse the following: • The “ West” wave enjoys the lowest DSI; as a result, it enjoys the highest rates of units sold, revenue and accordingly margin. Unfortunately the product availability percentage is low at this stage -relatively speaking- (only 73. 5%). Whirlpool targets 92% of product availability with the introduction of the ERP system. • The “ Central” wave has the highest DSI, thus it is most likely to be the number one beneficiary from the DSI reduction resulting from the introduction of the ERP system.

It is logical to notice that the “ West” and “ South” waves will notice benefit of 40% improvement by the second year of implementation; this is simply because they have already enjoyed the two lowest rates of DSI even prior to introduction of the ERP system. Similarly, the “ Central” and “ North” waves would notice the improvement of 40% immediately on implementation; again this is because they both had had the highest DSI prior to introduction of the ERP system. ANSWER TO QUESTION 2: Whirlpool has carefully

considered the capital expenditures, depreciation time of capital equipment as well as implementation requirements and costs (employee training, creation, testing and documentation of new business process and installation of the ERP software). This logical calculation helps out the company to evaluate the results of introducing the ERP system and estimate its profit prior to making the decision, because such innovative decisions must be profitable; and if not, they should not be introduced. Whirlpool has done a long-term capacity planning, which is concerned with decisions that take a long time to implement, and with large amount of capital investment, such as installing the ERP system. Whirlpool has carried out operations scheduling by allocating people to processes in order to get the work done, with the following objectives:

- The product or service is delivered on time
- The operation performs smoothly, giving optimum efficiencies
- The cash flow involved in the operation is balanced.

The following table shows Whirlpool's Capital Expenditures: [pic] Figures above in US\$000 Depreciation = 0.

2 million as of the third year, for 5 years The following table shows the Operational Costs: [pic] Figures above in US\$000 Taking into consideration the forecasted other expense savings, the operational expenditures would be as shown in the Grand Total below: [pic] Figures above in US\$000 From the figures above, we can conclude that Whirlpool would absorb resources and incur costs through balancing out the operational costs against the operational savings, as follows:

IT Equipment & Software: Whirlpool will pay high costs for the equipment over the first four years of implementation. It will also buy software license for the first two years; this is for the servers and clients. On top of this comes the license maintenance which starts

immediately on the second year of implementation and remains paid on an annual basis. This is extra cost that Whirlpool will have to cover and justify by long-term planning and reaching a point where all this extra cost is paid back. This is explained in the following points. Human Resources: Hiring consultants for the installation and boosting of the system. Number of consultants does not remain the same, but rather reduces over time.

Consultants are expected to train staff, thus their cost will end once Whirlpool's own trained staff continue doing the job. Conclusion: consultant's cost stops by the fourth year of implementation. • Using current employees, 50 of them, reduces the cost of hiring new ones. Building their capacity at an extra cost is more feasible than hiring and training fresh ones. Operations & Accounting: Ongoing operation and license maintenance costs would increase over time, but this is met by the reductions foreseen through: o Simplifying the processing and management of customer orders. o Reducing the 79 order desk employees by 18%, at an average cost of \$40, 000 per year per employee. o Simplifying the accounting function and result in a 15% reduction in the 60 finance employees.

Expected cost saving was \$45, 000 per year for each employee that was eliminated. Reducing inventory, thus warehouse space could be reduced by 15%. o Reducing the number of returned units by eliminating shipping errors. o Reducing bad debt expense and information system expenses. From the above, it is obvious that the new operational costs are balanced with the operational savings; thus by the 2005 Whirlpool would cover the operational cost of implementing this system and start benefiting as of 2005

onwards. This is seen in the positive figure under the Grand Total (103).

ANSWER TO QUESTION 3: The main highlights of the study are: 1.

Capital expenditure: This includes all payment that will be made for the project which is in this case the price of the capital equipment and software licenses (see table below). [pic] Figures above in US\$000
 2. Revenue: which is the inflow of assets such as cash, amount owed to a business by debtors or reduction in liabilities that arise as a result of trading operations. In this case revenue increase is expected because of implementing the application. Such increase in the revenue will be a result of integration, error reduction, inventory saving, etc.
 3. Cost of goods sold: this is the cost of the goods bought then sold to customers, like transportation, storage, maintenance, etc.

4. Operating expenditures, as in the following table: [pic] Figures above in US\$000
 The table above shows two contrasting calculations during the implementation of the ERP system:
 A) A reduction of:
 - order desk employees (0.18 X 79 X \$40,000) - finance employees (0.15 X 60 X \$45,000) - Warehouse space by 15% - Eliminate shipping errors, reduce returns by (30 X 0.03 X units sold) - Reduce bad debt expenses - Reduce information systems
 B) An addition of:
 - license maintenance fees to start on 2000 by \$0.1 million each year and increased by 0.1 each next year, - fifteen consultant in 1999, nine in 2000 and seven in 2001, four for following year (average monthly cost is \$15,400 X 12 month X number of consultants), and - three person task on 2000 till 2004 on \$600,000 a year.

5. Depreciation expense: This is the portion of the cost of fixed assets that has been used up in generating revenues recognized during a particular period. The depreciation rate is 20% over five years (capital expenditure X 0.2). We have to be careful to stop depreciating capital expenditure after 5 years from the year capital expenditure was added, i. e. capital expenditure of 2000 is depreciated by 2005.

6. Taxable earnings: Which is the Sum of Revenue - (Cost of goods sold + Operation Expenditure + Depreciation Expense). 7. Taxes: Each company has to pay their own tax on profit, the calculation of the tax would be based on the profit of the year (Taxable Earning X Profits Tax Rate). 8. Earnings after taxes: This is the profit minus taxes to be paid which means (Taxable Earning - Taxes).

Add back depreciation: This is the same amount of depreciation but in positive value. 10. Cash flow from operations: This is equal to earnings after taxes + the add back depreciation. 11. Reduction in need for Inventory: This is the result of DSI reduction by 12 days, and as a result warehouse space reduction of 15%. 12. Cash flow: This is the total of the transactions (Capital expenditure + cash flow from operation + Reduction in need for inventory).

This is the Profit amount which starts in 2001. 13. Discount Factor: This is the rate applied to future cash flows to derive the present value of those cash flows $(1/(1+r)^n)$ where r is discount ratio and n number of years. This factor keeps reducing over time. 14. Discounted cash flow: This is the value of cash flow in the coming years which equal to (Cash flow X discount factor) = Present value for that year. 15.

Sum of discounted cash flow: This is the NPV (Net Present Value) which is the total discounted cash flow from 1999 till 2007. NPV is a method of investment appraisal based on present value of all relevant cash flow associated with the project. To decide whether the project is acceptable (profitable) we check the NPV (sum of discounted cash flow). In our case it is a positive figure with 23. 883, which means that the project is acceptable and profitable. Recommendation: I recommend Whirlpool corporation to proceed with the implementation of the proposed ERP system, because the NPV is positive (> 0), which means that the project will add income to the company starting from the third year (2001) onwards, and as a total cash flow after taking consideration the risk, inflation and interest rates included in the discounted factor. Please double click on the table below to see how all the calculations above are incorporated.

[pic] ANSWER TO QUESTION 4: Please double click on the table below to see how all the changes are incorporated. [pic] From the changes we've incorporated in the sheet above, we can conclude that: The higher we increased the discount rate the more we reduced the NPV: • When the discount rate was 9%, the NPV was 23. 883. • When the discount rate was raised to 15%, the NPV went down to 5. 824. The IRR is the discount rate which will give us an NPV of exactly zero. If the discount rate were zero, the NPV would be the sum of the net cash flows.

No account would be taken of the time value of money. However, if we assume increasing discount rates, there is a corresponding decrease in the NPV of the project. When the NPV line crosses the horizontal axis there will

be a zero NPV and the point where it crosses is the IRR. From several trials on the amended sheet, the following table and charts are resulted: |

Discount Rate	NPV
9%	23, 883
15%	5, 824
23%	1, 560
25%	712
27%	(29)

From the table and chart above, as well as from excel calculations we notice that NPV equals zero when the IRR equals 26. 82. On the other hand, since the IRR here is 26. 82%, which is > cost of capital (15%), we conclude that the project is accepted.

Recommendation: I would recommend Whirlpool to consider the low discount rate if it seeks good return on its investment; otherwise the high discount rate would cause failure of the project. Answer to Question 5: Business

graduate skills outcome | Example of how work on this TMA has contributed

to my | Self-assessment of current level of skill - | | | skills development |

high/medium/low; any actions to be taken | | Using examples and analysing

case studies to enhance | Through referring back to the module as well as

the | Medium, more analysis would result in higher | | understanding, support

conclusions and illustrate | accounting text book, I was able to understand a

lot of | understanding. | issues concerning business functions in | accounting

concepts, even prior to the lecture itself. | | organisational contexts | | |

Problem solving and decision making | When calculating the depreciation, a

lot of trials took | High | | | place before finding the lost hook, which was the |

| | | depreciation over 5 years is calculated from the first | | | year

expenditures are spent! | | Understanding the way in which numbers are

used in | I had an idea on this before, but not with such | Medium, more

accounting practices are | | the core business functions | details; this TMA

has enhanced and broadened my | required | | | understanding. | | |

Interpreting spreadsheets for managing numbers and | From this TMA I
learned how the various calculations | Medium, it took me a while to come up
with | | quantitative analysis | and formulas are made and how substantial
accountants | the calculations in the spreadsheet and | | | are in the decision
making process. | linking them together. | ----- [pic]