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| --- |
| Investment Appraisal for |
| Manufacturing Customer |



Basis of Preparation

This appraisal has been prepared in order to provide Manufacturing Customer with the potential financial implications and investment returns arising from the proposed solution.

It is based upon a number of stages that together provide an assessment of the investment returns likely to be delivered as a result of project acceptance.

This assessment is based upon information and explanation from Manufacturing Customer and is indicative only. It is therefore not a part of the contractual offer from Software Supplier.

Background to Investment Appraisal

All the benefits identified in this project have been assumed to start after the installation and training have taken place in month 7 unless otherwise stated.

The sales proposal for this solution is submitted separately - and should be cross-referred to this appraisal.

In order to complete the investment appraisal Manufacturing Customer has requested the use of the following appraisal methods:

Net Present Value

A financial measure of whether a proposal delivers a "profit" or a "loss" using an annual cost of money applied to the timing of spend and savings. It includes the initial cost of the equipment / services, the monthly cost of maintenance, compared to the financial benefits accruing. The result is the change in shareholder value to be anticipated from project acceptance.

Internal Rate of Return

The return rate per year to Manufacturing Customer taking into account: initial cost of the equipment / services, monthly cost of maintenance, and comparing these to the timing of benefits identified as a result of implementing the project. The "percentage" answer is compared to the minimum requirement specified by Manufacturing Customer for approval.

Payback

This is a comparison of the initial outlay of monies, to buy equipment or services, against the time taken for the net benefits to cover the initial outlay. This derives an answer which is a time measure, and is usually quoted in months / years.

Discounted Cash Flow - to NPV and IRR

A detailed statement of all the cash flows and timings that underpin the results provided for Internal Rate Of Return and Net Present Value analysis.

Investment Summary

Non-Recurring Costs

|  |  |  |
| --- | --- | --- |
|  | **Value** | **Month** |
| Licenses | 150,000 | 0 |
| Professional services | 75,000 | 0 |
| Training | 20,000 | 5 |
| Hardware | 10,000 | 0 |
| Total non-recurring costs (€) | **255,000** |  |

|  |  |  |
| --- | --- | --- |
| Figure 1: Non-recurring costs |   | total €255,000 |



Recurring Costs

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Value** | **Month** | **Growth (per yr %)** |
| Maintenance licenses | 45,000 | Yearly1 - 36 | 2 |
| Maintenance hardware | 10,000 | Yearly1 - 36 | 0 |
| Support | 40,000 | Yearly1 - 36 | 0 |
|  |  |  |  |
| Average monthly costs (€) | **7,992** |

|  |  |  |
| --- | --- | --- |
| Figure 2: Average monthly costs |   | €7,992 |



Benefits Evaluation

The following benefits have been identified that support this appraisal:

Manufacturing Benefits

**Increased Plant Utilization**

|  |  |
| --- | --- |
| Annual unavoidable fixed costs in process (€) | 10,000,000 |
| Current plant utilization level (%) | 85 |
| Improved utilization (plant cost recovery) (%) | 86.5 |
| Utilization improvement (linear %) | 1.8 |
| Recovery of unutilized cost (%) | 1.5 |
| Impact Life (months) | **7 - 36** |
| Average monthly increased asset recovery (€) | **10,417** |

**Reporting Savings - Document / Content Management**

|  |  |
| --- | --- |
| Time spent reporting (total FTE hours per month) | 400 |
| Annual loaded cost per person (€) | 86,000 |
| Reporting efficiency improvement with solution (%) | 50 |
| Annual value of time saving (€) | 122,311 |
| Annual non-labor cost saving (€) | 0 |
| Impact Life (months) | **4 - 36** |
| Average monthly savings (€) | **9,344** |

**Activity Time Savings - Searching and managing info**

|  |  |
| --- | --- |
| Time spent on activity (total FTE hours per month) | 300 |
| Annual loaded cost per person (€) | 86,000 |
| Efficiency improvement post-solution (%) | 25 |
| Annual value of time saving (€) | 45,867 |
| Annual non-labor cost saving (€) | 0 |
| Impact Life (months) | **3 - 36** |
| Average monthly savings (€) | **3,610** |

There are 25 people in the design department and they currently spend a 25% of time looking for and handling information which will be kept centrally with the proposed system. An estimated 25% saving will be made in this area, freeing up the staff to do more useful activity.

**Reduce Downtime Costs**

|  |  |
| --- | --- |
| Current downtime per month (hours) | 1.5 |
| Downtime cost per hour (€) | 115,000 |
| Reduction in downtime post-solution (%) | 2 |
| Growth (per yr %) | **25** |
| Impact Life (months) | **7 - 36** |
| Average monthly savings (€) | **3,885** |

**Bill of Materials Management Savings**

|  |  |
| --- | --- |
| Number of people managing BOMs | 25 |
| % of time managing BOMs | 4 |
| Annual loaded cost per person (€) | 86,000 |
| Time saving post-solution (%) | 25 |
| Annual savings (€) | 21,500 |
| Impact Life (months) | **7 - 36** |
| Average monthly savings (€) | **1,493** |

**Reduce Warranty Provisions**

|  |  |
| --- | --- |
| Annual cost of warranty provision (€) | 400,000 |
| Reduction in provision post-solution (%) | 5 |
| Revised annual warranty cost (€) | 380,000 |
| Impact Life (months) | **13 - 36** |
| Average monthly saving (€) | **1,111** |

Improved production quality will lead to reduced need for warranty set-aside. Counted from the start of year 2.

**Better Forecasting - Control Inventory**

|  |  |
| --- | --- |
| Current value of inventory (€) | 15,000,000 |
| Percentage reduction with improved forecasting (%) | 2.5 |
| New level of inventory post-solution (€) | 14,625,000 |
| Annual interest cost (%) | 3 |
| Impact Life (months) | **13 - 36** |
| Average monthly savings (€) | **625** |

This benefit will be realised after the start of the second year.

Benefits Summary

|  |  |
| --- | --- |
|  | **Monthly Saving** |
| **Manufacturing Benefits** |  |
| Increased Plant Utilization | 10,417 |
| Reporting Savings - Document / Content Management | 9,344 |
| Activity Time Savings - Searching and managing info | 3,610 |
| Reduce Downtime Costs | 3,885 |
| Bill of Materials Management Savings | 1,493 |
| Reduce Warranty Provisions | 1,111 |
| Better Forecasting - Control Inventory | 625 |
| Total average monthly benefits (€) | **30,485** |

|  |  |  |
| --- | --- | --- |
| Figure 3: Average monthly benefits |   | €30,485 |



Cash Only Summary

The cash only impact of this appraisal, which specifically excludes any revaluation for time value of money is summarized in the table below. This table should be reviewed in isolation from the rest of the appraisal which may include revaluations for delays, growths, timings, interest costs etc.

|  |  |
| --- | --- |
|  | **Value** |
| **Benefits** |  |
| Increased Plant Utilization | 375,000 |
| Reporting Savings - Document / Content Management | 336,369 |
| Activity Time Savings - Searching and managing info | 129,948 |
| Reduce Downtime Costs | 139,860 |
| Bill of Materials Management Savings | 53,760 |
| Reduce Warranty Provisions | 40,008 |
| Better Forecasting - Control Inventory | 22,512 |
| Total benefits (€) | **1,097,457** |
|  |  |
| **Costs** |  |
| Licenses | 150,000 |
| Professional services | 75,000 |
| Training | 20,000 |
| Hardware | 10,000 |
| Maintenance licenses | 137,700 |
| Maintenance hardware | 30,000 |
| Support | 120,000 |
| Total costs (€) | **542,700** |
|  |  |
| Net benefits (€) | **554,757** |
| Simple ROI (%) | **102** |

Return On Investment Appraisal Elements

Net Present Value (NPV)

**Calculation**

|  |  |
| --- | --- |
| Review period (months) | 36 |
| Non-recurring costs (€) | 255,000 |
| One-Time Benefits (€) | 0 |
| Peak monthly benefits (€) | 36,938 |
| Average monthly costs (€) | 7,992 |
| Minimum return (per yr %) | 10 |
| NPV (€) | **415,844** |

**Discounted Cashflow Analysis - NPV**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Month | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| 0 | -235,000 |  |  |  |  |
| 1 | -94,248 | -55,068 | -49,995 | 0 | 0 |
| 2 | 0 | 31,241 | 29,215 | 0 | 0 |
| 3 | 3,732 | 31,061 | 29,060 | 0 | 0 |
| 4 | 13,577 | 30,882 | 28,906 | 0 | 0 |
| 5 | -5,752 | 30,706 | 28,755 | 0 | 0 |
| 6 | 13,363 | 30,532 | 28,606 | 0 | 0 |
| 7 | 30,101 | 30,360 | 28,459 | 0 | 0 |
| 8 | 29,925 | 30,190 | 28,314 | 0 | 0 |
| 9 | 29,750 | 30,023 | 28,170 | 0 | 0 |
| 10 | 29,578 | 29,857 | 28,029 | 0 | 0 |
| 11 | 29,408 | 29,693 | 27,890 | 0 | 0 |
| 12 | 29,240 | 29,532 | 27,753 | 0 | 0 |
| Total |  |  |  | **415,844** |

|  |  |  |
| --- | --- | --- |
| Figure 4: NPV Cumulative Discounted Cashflow |   | €415,844 |

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Internal Rate of Return (IRR)

**Calculation**

|  |  |
| --- | --- |
| Review period (months) | 36 |
| Non-recurring costs (€) | 255,000 |
| One-Time Benefits (€) | 0 |
| Peak monthly benefits (€) | 36,938 |
| Average monthly costs (€) | 7,992 |
| IRR (%) | **83.5** |

**Discounted Cashflow Analysis - IRR**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Month | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| 0 | -235,000 |  |  |  |  |
| 1 | -90,312 | -31,625 | -17,207 | 0 | 0 |
| 2 | 0 | 17,192 | 9,635 | 0 | 0 |
| 3 | 3,284 | 16,379 | 9,184 | 0 | 0 |
| 4 | 11,447 | 15,605 | 8,754 | 0 | 0 |
| 5 | -4,647 | 14,868 | 8,344 | 0 | 0 |
| 6 | 10,345 | 14,166 | 7,954 | 0 | 0 |
| 7 | 22,329 | 13,498 | 7,583 | 0 | 0 |
| 8 | 21,272 | 12,862 | 7,229 | 0 | 0 |
| 9 | 20,265 | 12,256 | 6,892 | 0 | 0 |
| 10 | 19,306 | 11,679 | 6,571 | 0 | 0 |
| 11 | 18,393 | 11,130 | 6,265 | 0 | 0 |
| 12 | 17,524 | 10,607 | 5,974 | 0 | 0 |
| Total |  |  |  | **0** |

Payback

**Calculation**

|  |  |
| --- | --- |
| Non-recurring costs (€) | 255,000 |
| One-Time Benefits (€) | 0 |
| Peak monthly benefits (€) | 36,938 |
| Average monthly costs (€) | 7,992 |
| Payback (months) | 18 |

|  |  |  |
| --- | --- | --- |
| Figure 5: Payback Cumulative Cashflow |   | 18 months |

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Cost of Delay

Every month that the decision is delayed is worth €22,493. If Manufacturing Customer chooses to delay the decision by 4 months net benefits of €89,972 would be lost.

Summary

|  |  |  |
| --- | --- | --- |
| €255,000 | €7,992 | 36 months |
| Non-recurring costs | Average monthly costs | Review period |
| €30,485 | €415,844 | 83.5% |
| Average monthly benefits | Net Present Value | Internal Rate of Return % |
| 18 months | Based upon an assumed cost of capital of |
| Payback | 10% per yr |

The Investment Appraisal outlined above is based upon identified benefits that would accrue to Manufacturing Customer as a result of project acceptance.

The investment evaluation of these costs and savings has been completed using the Shark appraisal tool. The output from this tool is fully visible and can be audited by Manufacturing Customer if so required

This indicative analysis stands separately from the contractual elements of the Software Supplier solution and is necessarily dependent upon the benefits identified jointly with Manufacturing Customer.