Project Plan Report

Software Project Management Final Report

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1. Cost & Revenue Estimation

As we know, some firms use an one-year period, three-year period for some facilities like PCs, a five-year period for mid-range systems and a six or even seven-year period for mainframes. However, a growing number of practitioners believe that three to five years is the maximum period for which IT should be panned. Thus, we choose three-year as the period to make the cost displacement table.

The cost displacement approach - 3 years				
Using IT to automate jobs, 3 years	**All costs in thousand RMB**			
Cost Displacement	**Year 0**	**Year 1**	**Year 2**	**Year 3**
Set up costs		1	2	3
Hardware including PCs, LANs and other peripherals in basement	200			
Hardware including iPads, iPhones and other peripherals for communication while delivering	900			
Software including spreadsheet, database and so on.	80			
Accreditation cost for license and third-party service initial fee	10			
Training	50			
Installation and testing	50			
Total initial cost	1290			
Monthly On-Going Costs				
Staffing, including support		260	265	270
Maintenance and upgrades		50	52	53
Third-party service		50	50	52
General		30	30	30
Total costs		390	397	405

Using IT to automate jobs, 3 years	All costs in thousand RMB			
Cost Displacement	**Year 0**	**Year 1**	**Year 2**	**Year 3**
Monthly Benefits				
Reduction in clerical salaries		120	122	125
Reduction in supervisory salaries		100	102	105
Reduction in other staff costs		45	48	50
Revenue		100	102	105
Office space released		30	30	32
Other office expenses saved		50	55	55
Total benefits		445	459	472
Improvement per month		55	62	67
Annual net benefit	-1290	660	744	804
Simple annual ROI		51.16%	57.67%	62.33%
Simple payback	2 Years			
Cost of capital	10%			
Discounted annual net benefit	-1290	600.00	614.88	604.06
Discounted payback	3 Years			
Net present value	528.93			
Internal rate of return	31.27%			
Profitability index	1.41			

PS: The cost of hardwares including iPads, iPhones and other peripherals for communication while delivering is calculated under the following standard:

4000 (RMB/iPad) *100 (iPad) + 5000 (RMB/iPhone) *100 (iPhone) = 900,000 RMB

Seeing that the average monthly wage in Shanghai is around 13,000 RMB, we estimate the monthly cost of staffing around 260,000 RMB.

According to the calculated cost displacement approach, our annual ROI for the three years is 51.16%, 57.67% and 62.33%, which means in two years, our cost will payback. We defined our cost of capital as 10% according to the annual average and the market condition these years so that the discounted annual net benefit is 600 thousand yuan, 614.88 thousand yuan and 604.06 thousand yuan for the three years, which means our discounted payback is 3 years. On the basis of our simple payback and discounted payback, the three-year cost displacement approach, which we have chosen, is just enough for us to plan for our costs.

Then we calculate the NPV for our project. It is above zero, which means our investment plan is feasible and after the project implementation, we can not only ensure that we can achieve the predetermined rate of return, but we can also make more profits. It is the internal rate of return and profitability index that base on the value of NPV. Both of them show the feasibility of our product and our profit in these three years.

2. Profit Prediction

2.1.Payback Period

Payback period is the number of years it takes for a company to recover its original investment in a project, when net cash flow equals zero. The discounted payback period discounts each of the estimated cash flows and then determines the payback period from those discounted flows.

Considering our case, the initial investment is 1,290,000 yuan and the annual net benefit of three years are listed in the following table.

Year	Year 0	Year 1	Year 2	Year 3
Annual Net Benefit	-1290	660	744	804
Discounted Annual Net Benefit	-1290	600	614.88	604.06

Simple Payback Period = 1 + 630/744 = 1.85

Take cost of capital into account and get the discounted payback period:

Discounted Payback Period = 2 + 75.12/604.06 = 2.12

2.2.NPV

Net Present Value (NPV) is the difference between the present value of cash inflows and the present value of cash outflows. NPV is used in capital budgeting to analyze the profitability of a projected investment or project.

$$NPV = \sum_{t=1}^{T} \frac{C_t}{(1+r)^t} - C_o$$

where

Ct = net cash inflow during the period t

Co = total initial investment costs

r = discount rate

t = number of time periods

In our project, the cost of capital represents the value of discount rate and the annual net benefit of three years will be taken into the calculation of NPV.

Net Present Value = $660/(1+10\%) + 744/(1+10\%)^2 + 804/(1+10\%)^3 - 1290 = 528.93$

2.3.IRR

Internal rate of return (IRR) is a metric used in capital budgeting measuring the profitability of potential investments. Internal rate of return is a discount rate that makes the net present value (NPV) of all cash flows from a particular project equal to zero.

Based on the NPV calculation of the case above, the value of discount rate could be get when NPV = 0.

$660/(1+r) + 744/(1+r)^2 + 804/(1+r)^3 - 1290 = 0$

IRR = 31.27%

3. Risk Evaluation

3.1.Sensitivity Analysis

To evaluate the project risk, sensitive analysis is applied to figure out the most influential factor relevant to the project benefit. Items of cost and benefit are defined as variables to test their impact on NPV and IRR. Each variable will be evaluated its expected value and the pessimistic and optimistic one. From there, we can change various assumptions we had initially made based on other potential assumptions. NPV and IRR are then recalculated, and the sensitivity of the NPV and IRR based on the change in assumptions is determined. Depending on our confidence in our assumptions, we can determine how potentially risky a project can be.

Given the initial cost of 1,290,000 yuan and the fixed cost of capital of 10%, the sensitivity of the NPV and IRR is illustrated in the following table. According to the result, reduction in supervisory salaries and revenue exert the maximum difference between the optimistic NPV and the pessimistic NPV.

3 Year Project Analysis							
Initial cost		1290					
Fixed cost of capital		10%					
				All in thousand RMB			
Variable	**Pessimistic**	**Expected**	**Optimistic**	**NPVpess**	**NPV**	**NPVopt**	**NPVopt - NPVpess**
Staffing, including support	270	260	250	291.64	590.06	888.48	596.84
Maintenance and upgrades	60	50	40	291.64	590.06	888.48	596.84
Third-party service	55	50	45	440.85	590.06	739.27	298.42
General	25	30	35	739.27	590.06	440.85	-298.42
Reduction in clerical salaries	100	120	130	-6.78	590.06	888.48	895.26
Reduction in supervisory salaries	80	100	120	-6.78	590.06	1186.90	1193.68

Reduction in other staff costs	35	48	60	202.11	590.06	948.17	746.06
Revenue	80	100	120	-6.78	590.06	1186.90	1193.68
Office space released	26	30	35	470.69	590.06	739.27	268.58
Other office expenses saved	45	55	65	291.64	590.06	888.48	596.84
Variable	**Pessimistic**	**Expected**	**Optimistic**	**IRRpess**	**IRR**	**IRRopt**	**IRRopt - IRRpess**
Staffing, including support	270	260	250	22.45%	34.54%	46.16%	23.71%
Maintenance and upgrades	60	50	40	22.45%	34.54%	46.16%	23.71%
Third-party service	55	50	45	28.56%	34.54%	40.4%	11.84%
General	25	30	35	40.4%	34.54%	28.56%	-11.84%
Reduction in clerical salaries	100	120	130	9.7%	34.54%	46.16%	36.46%
Reduction in supervisory salaries	80	100	120	9.7%	34.54%	57.42%	47.72%
Reduction in other staff costs	35	48	60	18.70%	34.54%	48.43%	29.73%
Revenue	80	100	120	9.7%	34.54%	57.42%	47.72%
Office space released	26	30	35	29.77%	34.54%	40.4%	10.63%
Other office expenses saved	45	55	65	22.45%	34.54%	46.16%	23.71%

Further more, we concern the cost of capital, which varies from 5% to 15% and analyze its sensitivity on NPV.

Year	Year 0	Year 1	Year 2	Year 3
Cash Flow	-1290	660	744	804
	All in thousand RMB			
Fixed cost of capital	**NPV**			
5%	707.93			
6%	669.85			
7%	632.96			
8%	597.21			
9%	562.55			
10%	528.93			
11%	496.32			
12%	464.67			
13%	433.94			
14%	404.11			
15%	375.13			

3.2.Conclusion

According to the tables and analysis we mentioned above, we can safely come to the conclusion about the different factors' effects on NPV. We believe that the Staffing, including support plays the most important part in the NPV calculation, and it obviously agrees with logistics company's situation. Most of the logistics companies need to spend lots of money to hire deliver person to keep the sending packages efficiency and also have to invest lots on the support services such as transport and cooperation with e-business companies. What's more the Maintenance and upgrades is also a very important factor. Since we use lots of advanced technologies such as electronic signature, fingerprint identification and load balancing, which would definitely need lots of money and advanced engineers to deal with, we have to spend lots of money on keeping the whole system running safe and sound. Other factors also have some effects on the final NPV calculation and risk analysis but not that important as the two factors which we pointed out.

According to the cost of capital analysis we can easily come to the conclusion that NPV could decrease with the increase of cost of capital.