Evaluating of SME's ERP in agriculture and rural areas by different multi-factored procedures

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Abstract

Business value of IT investment cannot be measured directly when the IT investment is applied by agriculture ventures. However, when we talk about the decision of investment it is important to judge the expectation profit of the investment to be established. In this article there is presented a multi-factored, easily plastic evaluating model. The model has been created in such a way as the management of ventures, or rather the specialist participants in the evaluation of the investment can objectively judge and compare the supplies with identical functionality. We have considered on compiling the model, that the IT investment means not only an one-time acquisition of assets and intangible assets and after that a conventional usage after wards but we have to warrant the development continually, following up the version and maybe some tools developments to save the state of repair. The quick changes of IT tools and economic environment is reflected in the high rate of depreciation too, consequently, saving the IT tools need further development in the future.

Key words:

evaluating of information system, business value of information system, IT investment, multi-factored evaluating procedure

Introduction

The introduction of a computerized information system similarly to any other investment requires pre- end post calculations for the economy efficiency, repayment, efficacy of the fixed assets and if it possible for the profitability as well.

Regarding the information investments two big groups can be distinguished. In the first case the computerised information system itself is the means of production or provision, whereas in the second one it indirectly contributes to the production process.

A part of the computerised information system applied by agricultural ventures belongs to the first class mentioned above. However, it must be stated, that the computerised information system belonging to this class are applied by big companies or medium sized ventures. As an example we can mention the food-processing industry.

In this case the evaluation of the employed information system can be more easily performed because in such case the income, profit growth as well as expense, input decrease can be measured, assessed and checked up well.

In that case when the computerised information system serves only indirectly the activity of the venture the evaluating procedure can be applied only for persons since those points must be found where assessable, countable categories are formed or the advantages and disadvantages must be counted according to the demands and priorities if the case is the management of a venture or a small- or medium sized venture.

For the evaluation of the computerised information systems the application of the methods assessing the investment traditionally is not enough on its own.

Affect of IT investments in business process

IT investments exercise an influence on different section of business. This influence depends to the nature of investments. (figure 1.)

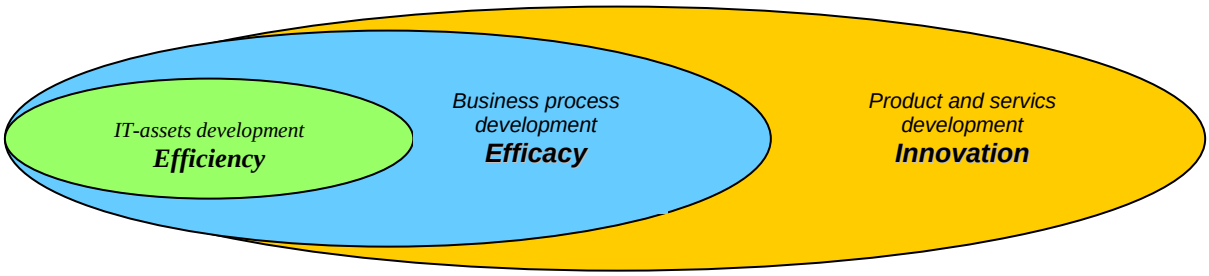

Figure 1: Effect of IT investment (Porganyi(2003))

There is characteristic of the IT –assets development that do not arise new functionality in business process.

If the IT investment is a business process development we do not talk about new functionality. In consequence of IT-investment which is a business process development, there are a compete rationalisation of business process. In case of this investment is a product and service development, informatics is a part of innovation.

Total cost of ownership of ERP viz. how much costs the ERP

The total cost of ownership (TCO) is an important indicator in analyzing IT investments. This indicator show total expenditure of this investment to investors.

We divide into two groups IT-investment's cost:

- Direct cost
- Indirect costs

In calculation of TCO pointer it is defined some cost category:

- Capital cost
- Technical Support costs
- Administration costs
- End-user costs

We do not apply this TCO indicator alone for appreciation, only together with any other evaluating models for example together with financial indicators (NPV).

Application of financial indicators

Net present value (NPV)

$$NPV = -C_0 + \sum_{i=1}^{n} \frac{C_i}{(1+r)^i}$$

We have to determine following things:

- Cash flow
  - Costs
    - Investment
    - Software
    - Hardware
    - Current costs
    - Advising
    - Education
    - Travelling
    - Communication
  - Turn over
- Period (n)
- Discount rate (r)

Multi-factored evaluating procedure

The basis of the multi-factored evaluating procedure involves creating some multidimensional viewpoint system or criterion system by the help of which we can perform the evaluation of the system.

The advantage of this system is the fact that the possibly uncountable factors can be built in the procedure of the assortment or analyses. Its disadvantage is the fact that there are no standards to establish a criterion system they can change independently and expertise and collaboration of several specialists are needed to make up the system.

The analysed aspects expedient to be rated in more groups:

- Excluding viewpoints: basic requirements
- Rating viewpoints: wanted requirements

In the course of creating the viewpoint system we can rely on the known methodology, such as the Euromethod ISO/IEC 9126

The evaluations of information system has a role not only in specifying business value of informatical investment, but it helps with the assortment of information systems. It helps in with that fact, that we can judge different systems by identical criterion. We don’t take the hardware costs using this evaluating procedure in consideration. Firstly, because by different guess hardware costs makes up only 30% in total investment cost, on the other hand, because evaluation of hardware tools can be easily done, because all parameters are commensurable and comparable.

Description of the model used by evaluating procedure

In the following (Table 1) there will be determined the evaluating model and on the ground of which it will be presented how it works. In creating this model we use and contract more evaluating procedures.

The weight levels, weighs, point claims, as well as maximum points are prepared by management directing IT investment.

Denomination	Denomination	Weight level	Weight	Point claim	Max.point
Economic viewpoint		30%			
	Prime cost		26%	5	10
	Upkeep		30%	5	10
	Rent		6%	5	10
	Counsel cost		12%	5	10
	Coaching cost		9%	5	10
	Cost of adaptation		4%	5	10
	Cost of service		10%	5	10
	Cost from paying's condition		3%	5	10
Software parameters		25%			
	Data safety		40%	5	10
	Surface of work		30%	5	10
	File size		5%	5	10
	Running time		20%	5	10
	Missing time (standstill)		5%	5	10
Supply		10%			
	Undertaking term		5%	5	10
	Guarantee		25%	5	10
	Creating, filling database		8%	5	10
	Introduction metodology		8%	5	10
	Follow up software		15%	5	10
	Foult prevention		15%	5	10
	Coaching		15%	5	10
	Documentation		9%	5	10
Opening attribut		5%			
	Electronic datachange		20%	5	10
	Operation system		30%	5	10
	Database		25%	5	10

	Possibility of applying the complementarly system		25%	5	10
		10%			
Supplier	Reference		20%	5	10
	Professional journals		10%	5	10
	Contrac conditions		25%	5	10
	Reliability		35%	5	10
	Turn-over		10%	5	10
		20%			
User expertation	Functional expectations		20%	5	10
	Reliability		10%	5	10
	Utility		10%	5	10
	Efficiency		10%	5	10
	Maintenence possibility		10%	5	10
	Portability		10%	5	10
	Expansibility		15%	5	10
	Compatibility		15%	5	10
		100%			

Table 1: Evaluating model

Forrás: Michelberger, 2002, with private completion.

Each software products have to be doted by venture-free specialist. When we determine different prices have to count with dynamic indexes, particularly when we talk about the service costs. These costs concern more years essentially. These products which has less point than point claim have to be disqualified.

In the following (Table 2) there will be presented how the evaluating model works.

Denomination	Denomination	Point "A"	Point "B"	Weighted "A"	Weighted "B"	Weighted "Claim point"
Economic viewpoint				**1,9992**	**2,3061**	**1,5**
	Prime cost	6,30	9,80	1,638	2,548	1,3
	Upkeep	6,50	6,30	1,95	1,89	1,5
	Rent	7,00	6,90	0,42	0,414	0,3
	Counsel cost	6,10	6,00	0,732	0,72	0,6
	Coaching cost	7,20	8,30	0,648	0,747	0,45
	Cost of adaptation	8,30	7,80	0,332	0,312	0,2
	Cost of service	6,50	7,80	0,65	0,78	0,5
	Cost from paying's condition	9,80	9,20	0,294	0,276	0,15
Software parameters				**1,9775**	**2,0475**	**1,25**
	Data safety	7,20	7,80	2,88	3,12	2
	Surface of work	8,50	8,50	2,55	2,55	1,5
	File size	8,20	8,60	0,41	0,43	0,25
	Running time	8,30	8,40	1,66	1,68	1
	Missing time (standstill)	8,20	8,20	0,41	0,41	0,25
Supply				**0,8221**	**0,8281**	**0,5**
	Undertaking term	9,50	9,20	0,475	0,46	0,25
	Guarantee	8,60	8,90	2,15	2,225	1,25
	Creating, filling database	8,40	8,10	0,672	0,648	0,4
	Introduction metodology	9,50	8,90	0,76	0,712	0,4
	Follow up software	6,30	7,60	0,945	1,14	0,75
	Foult prevention	8,80	7,90	1,32	1,185	0,75
	Coaching	7,50	7,40	1,125	1,11	0,75
	Documentation	8,60	8,90	0,774	0,801	0,45
Opening attribut				**0,403**	**0,3945**	**0,25**
	Electronic datachange	6,30	7,40	1,26	1,48	1
	Operation system	8,50	7,70	2,55	2,31	1,5
	Database	8,60	7,80	2,15	1,95	1,25
	Possibility of applying the complementarly system	8,40	8,60	2,1	2,15	1,25
				0,668	**0,8245**	**0,5**
Supplier	Reference	6,70	6,50	1,34	1,3	1
	Professional journals	5,40	7,40	0,54	0,74	0,5
	Contrac conditions	8,30	8,30	2,075	2,075	1,25
	Reliability	5,70	9,40	1,995	3,29	1,75
	Turn-over	7,30	8,40	0,73	0,84	0,5
				1,511	**1,634**	**1**
User expertation	Functional expectations	5,40	6,30	1,08	1,26	1
	Reliability	6,80	7,50	0,68	0,75	0,5
	Utility	6,80	7,90	0,68	0,79	0,5
	Efficiency	9,50	9,20	0,95	0,92	0,5

	Maintenence possibility	8,50	9,30	0,85	0,93	0,5
	Portability	7,50	9,40	0,75	0,94	0,5
	Expansibility	8,60	8,90	1,29	1,335	0,75
	Compatibility	8,50	8,30	1,275	1,245	0,75
				7,3808	***8,0347***	***5***

Table 2: Examples of using multi-factored evaluating model

On the grounds of points we would told that the "B" is the best choice, but usually it isn't enough for a well decision.

For other analysing we can use different statistic tools. For example point diagrams (fig: 1), radius diagrams (fig 2-3).

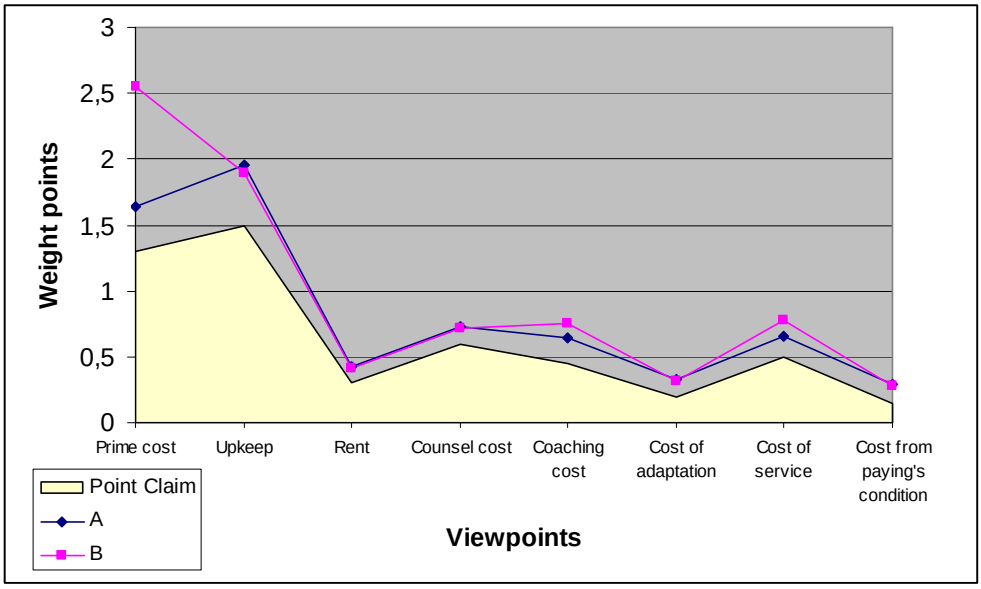

Figure 1: Compare investment "A" and "B" in the first viewpoint

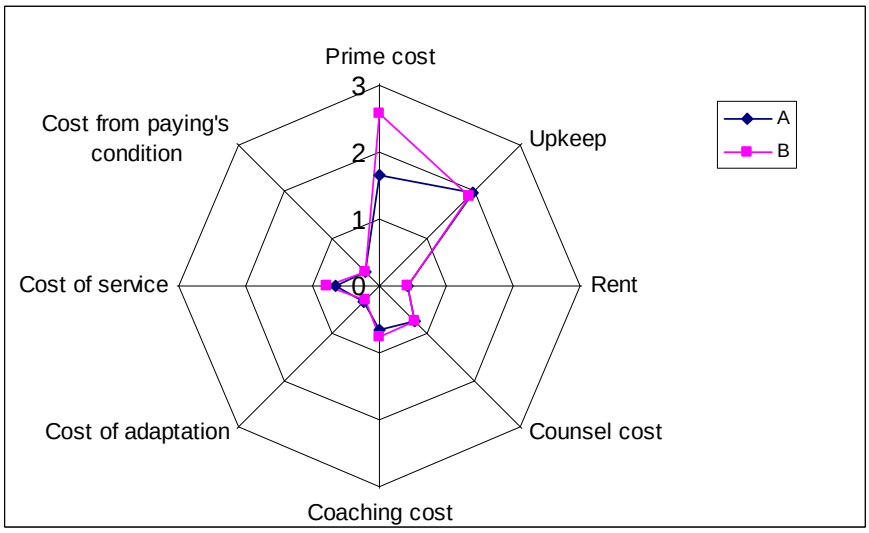

Figure 2: Compare investments "A" and "B" in a radius diagram

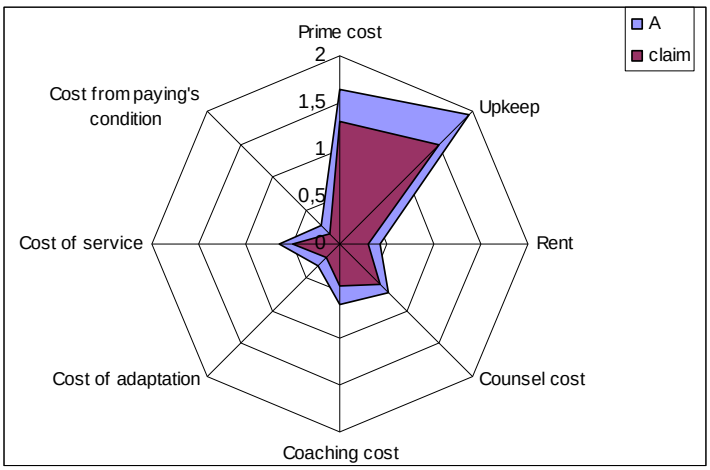

Figure 3: Compare investment “A” with “Claim”

Observations about this model:

Advantage:

- Can take in account uncountable factors
- Easily modifiable factors
- Factors judged to be important for the ventures is considered by it
- Can use more statistical tools in our analyzing
- Can modify optional all factors and, the model contain all important information

Disadvantage:

- If you have to use more factors the model would became complicate
- High differences disappear using a averaging
- Differences grow dim.

Using this model isn’t enough for a well decision, but it can efficiently assist to come into existence a suitable decision. For a good analyzing it is necessary to apply known TCO (Total Cost of Ownership) indicator or other known pointers and indicators applying in similar investment.

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