

ECONOMIC EVALUATION AND JUSTIFICATION OF E-BUSINESS (PROJECTS) IN SLOVENIA

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ABSTRACT

The scholarly research on economic evaluation of e-business project implementation is relatively rare. The lack of such research on one hand and the increasing e-business presence stimulates this paper, particularly because rich empirical data exist on this subject in Slovenia since 1996. The paper presents the findings from the special 2003 follow up survey, which was entirely devoted to the evaluation of e-business projects. The major finding is that only minority of companies employ some formal evaluation procedures, although there exist a strong need for these procedures. The companies even report the lack of time for proper economic evaluation as the largest among all problems with the implementation of e-business projects. There seems to be little difference with respect to the type of the project, while the size of the project has somehow larger effect on practice and perception of economic evaluation of e-business.

Keywords: e-business, project, economic evaluation, economic justification, Slovenia

INTRODUCTION

With the term e-business we typically understand the application of information-telecommunication technologies into the business process. The notion is slightly broader compared to the e-commerce, as this may exclude some not strictly commercial applications, such as communication, administration, etc. (10), (8), (16).

E-business has been more often studied from the technical (IT and communication aspects), organizational, managerial or legislative aspects than from the economic point of view. However, the latter presents an important supplement to all former aspects. It can also provide an answer to the question about economic effects of the introduction and implementation of e-business for enterprises and the economy as a whole.

On the basis of various research (3), (4), (17) it seems that, as for now, the economic aspects of e-business are neither sufficiently nor properly investigated. There are many reasons for these shortcomings. One lies in the fact that the existing methods of investment justification (e.g. the method of net present value, the cost-benefit analysis, return-on-investment analysis, etc.) are not even suitable for IT projects let alone for e-business projects. The next problem is connected to the fact of rapidly changing phenomena in this area. Due to the changing nature of e-business it is thus very difficult to establish and examine various financial models (7). Accordingly, the proper economic assessment of e-business should include – besides standard economic theory approach - the features of traditional IT projects and also the features related to the specific nature of e-business (9).

Within this challenging context we investigate how Slovenian companies cope with the economic evaluation of e-business. After research overview and presentation of some theoretical concepts we present finding of special empirical study, which elaborated the existing practice of economic justifications of e-business projects, the metrics and the methods used for that purpose.

REVIEW OF PREVIOUS RESEARCH

Several research studies have evaluated the impact of e-business usage and dealt with the justification of e-business projects from the economic viewpoint.

The Center for Research in Electronic Commerce at the University of Texas conducted a survey about the influence of e-business usage on some financial success measures (such as revenue, profit, ROA, ROI, etc.) among American companies in 2000. Only companies from non-services sector were included in the research. Only 25% out of 4,500 companies contacted by phone responded (1). The main finding of the survey is that the introduction of e-business had a considerably more impact on financial success measures in smaller enterprises than in large ones, as the impact in small enterprises is noticed much earlier.

Business benefits of e-business in 34 small enterprises were also examined in Australia in early 2001 by the National Office for the Information Economy (NOIE) together with Ernst & Young (1). The majority of respondents (62%) saw e-business as an opportunity for the improvement of their business operations, whereas other companies saw e-business only as the opportunity to increase sales in existing or new markets. On average 55% of the gross benefit of e-business comes from efficiency savings and 45% from additional revenue. Key non-financial benefits are improved customer service and improved relationships with other businesses such as suppliers.

The influence of e-business on profits and costs has also been studied by the Brookings Institution along with the Momentum Research Group (17) in 2001. Their research has been carried out on a representative sample of companies from the Dun & Bradstreet database, including 2,065 in the USA and 634 companies from France, Germany and Great Britain. Only about 20% of the respondents saw no payoff from their e-business investments. Financial impact of e-business introduction can be seen as an increase in revenues or a decrease in expenses. Surprisingly, more than 63% of investigated enterprises have no formal procedures for the assessment of the impact of IT investments, despite the fact that the management believes that a metrics for the assessment of such impact is necessary.

According to the research carried out by IDC in summer 2000 (4) in more than 650 companies, which accomplished the projects of introducing e-business, only 33% of companies used any of the existing return on investment (ROI) analysis, 16% of surveyed companies did not know if the analysis had been carried out, and 51% of companies did not use any of the traditional ROI analysis. In the companies that did ROI analysis, the results met expectations in more than 50%.

The assessment of e-business was also systematically conducted in Slovenia (13), (14) in the continuous national research on e-commerce RIS 1996-2002, where in 1998 a third (32%) of enterprises could not have properly estimated the amount of their profit made on the Internet. This percentage further increased in last years.

The recent survey on e-business was conducted in December 2002 among 1,282 Slovenian companies. Among other topics, issues regarding reasons for introducing e-business were asked. The following aspects were found important: the impact on increasing quality of services, flexibility, competitive advantage and new markets. The increase of e-business on revenue and lower costs were found less important. The result, relevant to our research, is the fact that the majority of firms believe that e-business should lower costs by more than 10% to justify it (14).

A similar study is systematically performed also in large EU countries (Germany, Spain, France, Italy, the UK) for selected sectors (5). There, the overall impression is that in 2003 around half of the companies have a Web page, and one fifth have internal e-processes of workflow documents. However, the on-line procurement still presents less than 5% of all orders for the majority of companies. With respect to the evaluation of e-business, only a minority of companies agrees that e-business processes already play a significant role in how their company operates. On the other hand, the satisfaction with e-business is relatively high, with roughly 20% of the companies being very satisfied and 70% fairly satisfied with their e-business. However, some 10% are still disappointed with it. In addition, in next 12 months one third of the companies will increase expenditures in e-business technologies, while two thirds will maintain the current level.

Similar findings are reported also in the SIBIS survey conducted in 2002 among European enterprises (15). There, among the obstacles for further implementation of e-business, strongly stands the belief that the on-line sale potentials are relatively low and that it is difficult to adopt the corporate culture to e-business. The costs of investment were also considered relatively high and that users often lacked the necessary skills.

Here, we should add that in general, the situation in Slovenia is very much similar to the one described above in EU countries. This holds true for the general level of ICT adoption as well as for the attitudes towards the e-business. The satisfaction with e-business is thus typically high and the same is true for annual growth and future expectations. On the other side, the general adoption and impact of e-business is still relatively moderate and many serious obstacles exist. The proper evaluation of e-business project may present important contribution to the understanding of the barriers that prevent a more rapid expansion of e-business practice.

RESEARCH, RESULTS AND DISCUSSION

Purpose of the research

Based upon the prior research and the results of the research mentioned above, we investigate how Slovenian companies are evaluating and justifying e-business (projects) from the economic perspective. Specifically, we were interested in providing answers to the following questions:

1. In which areas and to what extent the e-business affects the companies?
2. What are the problems of introducing e-business into the practice?
3. Are there any formal methods used for evaluating e-business projects?
4. Does the presence of different types of e-business (e.g. B2B, B2C, etc.) have any influence on the impact and problems of e-business, and usage of formal methods for evaluating e-business projects?
5. Does the size of e-business projects have any influence on impact of e-business, problems related to e-business, and on the use of formal methods for projects evaluation.

The Research Model

Our research model consisted of two independent variables – presence of e-business type in companies (i.e. B2B, B2C, B2C, A2B, etc.) and size of e-business project. There are two dependent attitudinal variables measured on 1-5 scale: the strength of the positive impact of e-business usage and the strength of the problems with the evaluation of e-business projects. Another dependant variable was the type of the method used for evaluating e-business projects.

Methodology – Data collection

We analyze the subset of the data gathered among Slovenian companies in June 2003. The list of potential respondents for this 2003 survey was made from the responding companies in December 2002 national e-commerce survey (n=1,260, response rate 70%). There, in December 2002, almost 60% of all companies actually reported some type of e-commerce usage. The e-commerce was defined in the broadest sense as “any commercial activity performed via electronic networks”, what it may include also the simple commercial email. From the December 2002 survey we should also point out that almost 75% of Slovenian companies are using e-banking (B2B type) and almost half of them are using the Internet for on-line orders. Among those reporting e-business, we found the following e-business applications: e-business application for the core activity (29%), flow of the documents (23%), application for exchange of the business documents with partners (16%) and credit card authorization (4%) (14).

At this point, we thus deal with a follow-up survey of the basic national survey on electronic commerce. In the next step, only those companies with at least one e-business project that exceeded 5,000 euro were included in the full 10 minutes telephone questionnaire. We estimated that smaller e-business project might not be relevant for the issues of the e-business evaluation. We thus analyze here the responses from 222 companies among 422 initially contacted in June 2003 “RIS e-business evaluation” follow-up survey.

Results and Discussion

As mentioned, only the companies with some e-business activities in December 2002 were included into the survey.

e-business type (multiple response)	f _k	f _k %
B2B	166	74.8
B2C	94	42.3
B2A	90	40.5
B2E	188	84.7
e-business project size		
More than 5.000 euro	81	36.5
More than 10.000 euro	28	12.6
More than 20.000 euro	78	35.1
More than 40.000 euro	35	15.8
Total	222	100%

Table 1: Number of companies with respect to the type of e-business and the size of the project

Table 2 shows the impact of e-business usage, expressed in average percentage points of the impact and the number of companies, which expressed that experienced impact in a particular area of their business.

Impacts	Percent (Mean)	# of companies
Shorten the duration of processes or activities	46.1%	162
Increase in the quality of products	35.5%	166
Decrease in the number of employees	- 35.3%	171
Decrease of costs	- 13.6%	154
Decrease of distribution costs	- 12.5%	167
Increase of market shares	9.7%	144
Decrease of stocks	- 8.7%	166
Increase in revenue	6.8%	144
Increase in profit	6.4%	143

Table 2: Impact of e-business usage

The majority of companies (from 60 to 70%) thus believe that e-business has a positive and quite important impact on different areas of their business. The largest impact of e-business usage is on duration of activities and processes, quality of products and the number of employees. These impacts are considerable when compared to other sources, e.g. the results of the research conducted by the Center for Research in Electronic Commerce at the University of Texas in 2000. There, the increase in revenue was 13.2% and the increase in profit was 11.8% (1).

Table 3 shows the usage of methods for evaluating and justifying e-business projects. Methods were classified into formal such as ROI – Return of Investments, NPV – Net Present Value, CBA - Cost Benefit Analysis and informal such as estimations, etc.

Usage of methods	f_k	%
Do not use any method	181	81.5
Use informal methods	6	2.7
Think of using a formal method	2	0.9
Plan to use formal methods in the near future	8	3.6
Use formal methods	25	11.3
Total	222	100.0

Table 3: Methods for evaluating and justifying e-business projects

More than 80% of the companies with e-business projects do not use any formal method for evaluating and justifying e-business projects. This is also comparable to the results of the research carried out by the Brookings Institution in the 2001 where more than 63% of investigated enterprises have no formal procedures for the assessment of the impact of IT investments (20) and the research carried out by the IDC in summer 2000 where only 33% of companies used any of the existing return on investment (ROI) analysis (4).

From the Table 4 we see that almost half (48%) of companies believe that the lack of time for evaluation e-business projects is the most serious when implementing e-business projects and, interestingly, less than 30% believe that prolonging e-business projects is a serious problem.

e-business project implementation problems	Agree		Neither agree nor disagree		Do not agree	
	f _k	f _k %	f _k	f _k %	f _k	f _k %
Lack of time for evaluating and justifying	104	48.4	58	27.0	53	24.6
Exceeding the planned costs	86	39.8	60	27.8	70	32.4
Problems with the evaluation know-how	78	36.1	87	40.3	51	23.6
Lack of knowledge	77	35.3	78	35.8	63	28.9
Problems with educating users	74	33.9	82	37.6	62	28.5
Problems with subcontractors	72	33.2	63	29.0	82	37.8
Prolonging of the project	61	27.7	76	34.6	83	37.7

Table 4: e-business project implementation problems

Another set of questions dealt with their opinion about the impact of e-business and evaluation of e-business projects from the economic perspective. Interestingly, half of the companies believe that the impact of e-business usage is so trivial that there is no need to evaluate it and in one third of companies they are not satisfied with the impact of e-business usage. In only one third of companies the management demand economic justification of e-business projects. Finally, in majority of companies express that they need more information and knowledge about economic evaluation of e-business and its projects.

Since e-business project implementation problems could be seen as a composite variable, the reliability (internal consistency) was assessed by calculating Cronbach's alpha. The reliability coefficient was higher than 0.74, suggesting that the research variables are satisfactorily reliable, therefore, we performed a principal component factor analysis. We were satisfied with the % of the explained variance of the first component, which was later used for correlations.

We finally investigate correlations among the variables. Expected statistically significant correlations could be found between the size of e-business projects on one hand and the impact of e-business usage (0.35**) and used methods for evaluating e-business projects (0.33**) on the other hand. Interestingly, there are no significant correlations between the variety of present e-business types and the other variables and no correlations between problems of evaluating and justifying e-business projects, and variety of e-business types and the size of e-business projects.

CONCLUSION

We investigate how Slovenian companies are coping with the economic evaluation of e-business projects and we can summarize:

- Two thirds of the companies with e-business project report a strong positive economic effect of the e-business on their companies and their operations.
- Almost 90% of companies do not use any formal methods for economic and financial evaluation of e-business projects.
- The companies believe that the lack of time for proper economic evaluation is the largest of all problems they face when implementing e-business in their companies.
- The size of the e-business projects and not the type of e-business influences the impact of e-business and the use of methods for evaluating and justifying e-business projects.

The results open a few questions related to the evaluation and justification of e-business projects, particularly the high urge for using formal evaluation methods and almost non-existing practice of such evaluation. Very often, when assessing e-business projects the traditional assessments of investment cannot be used, because permanent change prevents applications of proper financial models. The use of traditional methods should be thus at least combined if not substituted with new promising methods such as portfolio method (3), »Loyalty Value Added« methodology (7), (11) and Benchmarking method (6).

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