USE OF INTELLIGENT TOOLS IN CROATIAN COMPANIES

KORIŠTENJE INTELIGENTNIH ALATA U HRVATSKIM PODUZEĆIMA

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Abstract: *Business intelligence usage in companies is increasing daily. It is one of the key methods for improvement company business performance. In this survey research the focus is on Croatian companies and their use of intelligent tools. The aim is to present the circumstances in which the Croatian companies use certain intelligent tools by departments, types of ownership and software used.*

Key words: *Business intelligence, Business intelligence tools, Croatian companies*

Sažetak: *Korištenje inteligentnih alata u poduzećima povećava se svakodnevno, kao jedna od ključnih metoda za unapređenje poslovnih rezultata. Provedeno je istraživanje s ciljem određivanja razine korištenja inteligentnih alata u hrvatskim poduzećima. Cilj rada je prikazati okolnosti u kojima hrvatske kompanije koriste određene inteligentne alate prema odjelima, vrstama vlasništva i korištenju softvera.*

Ključne riječi: *Poslovna inteligencija, alati poslovne inteligencije, hrvatska poduzeća*

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1. Introduction: Business intelligence

We can easily say that large amounts of data are "frozen" in various applications Data can be manually extracted, and „home made", which are often the common cases. Such approach has a disadvantages of large time consumption, and is error prone to human mistakes. Business intelligence is a key term for various software applications which are used for data analysis in companies. Some of the reasons why companies use Business intelligence are in order to improve the decision making, reduce the costs, and find new business opportunities (Vitt, E., et al., 2002).   In business intelligence, we have two sorts of tools which are divided as: reporting tools, and data mining tools (Kroenke, 2007). Reporting tools are programs which use data from various sources, and use that data for creation and dissemination of reports to interested users (Kimball, 1996). On the other hand data mining tools are based on the use of statistical methods, of which many methods are very mathematically complex (Berry & Linoff, 2000).

2. Methodology of the survey and characteristics of the sample

The aim of the survey research is to examine the use of intelligent tools in the Croatian companies. In the survey, the possibility of improvement of intelligent tools in the Croatian firms for the purpose of lowering operational costs and maintaining the stability of the business processes is examined.

Among 1000 Croatian biggest firms, 21 firms took part in the research. The research was performed in April, May and June 2008 using the questionnaire and respondents were people from the information technology department who are very familiar with the use of advanced intelligent tool.

The largest firm has 9927 employees, and the smallest firm has 29 employees, so the average number of employees is 2679,07 with rather large standard deviation of 3390,16 employees. All firms are divided into 7 industries and those industries are: financial intermediation, business services, business banks, production, trade, telecommunications and transport. Results are given in percentage, so telecommunications, business services and trade made the biggest part, 19 percent of all examined number. Ten percent of all examined firms make their business in financial intermediation, banking and in transport.

Of all examined firms half of them, 52% do their business in Croatia and other foreign countries and 29% only in Croatia. Only small number of 5% conduct their business only in the region, wide region or in more than one county in Croatia. There are three types of ownership in Croatia and those are: public firms, private firms and mixed (public and private ownership together). Most firms in Croatia are private firms. Our sample confirms that with 67% of them are in private ownership, and 29% of them are public firms. There are only 5% of firms with mixed ownership.

Capital source can be foreign, domestic and mixed. In the examined firms capital is mainly domestic (57%). There are 10% of firms with foreign capital and only 10 % of them have mixture of domestic and foreign capital.

Due to their business goals all firms have their own business strategy. There are three options which firms can use in market penetration: differentiation, low costs and market niche (Davis, 2002. Differentiation is the process of distinguishing the differences of a product to be more attractive to a particular target market. A niche market is a focused portion of a market. Low cost strategy is a strategy under which a firm offers a relatively low price to stimulate demand and gain market share. Differentiation and market niche are used in most cases, 33% and 38%. Low costs are not so profitable option so only 24% of firms use this business strategy.

3. Implementation of intelligent tools in Croatian companies

From the advanced intelligent tools, many of them are used in the examined 21 firms. We asked participants in the survey to state which tools they used: Data warehousing, Reporting, OLAP, Data Mining, and Company Performance Management. Data warehousing is used by 76% of examined firms, and Reporting is used by 67% of firms. Therefore, those two tools made the biggest share. About one fifth of the firms (19%) use no intelligent tools. Olap is used by 48% of firms and the smallest share make Company performance management which is use by only 14% of firms.

Business functions that use intelligent tools are: sales, supply, finance, accounting, controlling, marketing, human resources, production, research and development. Intelligent tools are widely used by sales, finance, and controlling which account 62% each. Accounting function use intelligent tools in 52% firms, and supply by 43%. Marketing department use intelligent tools in 29% firms. Human resources and research and development use intelligent tools only in 19% firms each. The smallest use of intelligent tools is accounted in production function, only in 14% firms.

Company departments which use intelligent systems the most are controlling, finance and accounting and their programs used include: SAP, Oracle eBusiness Suite, Office, ABC, MBS Navision, Oracle Analytics, PIS Enel, TIS BI, Apropos (Mips Zagreb), Cognos, OLAP Enel, IRMA, Oracle Siebel. SAP is used by 86 % and Oracle eBusiness Suite is used by 48% firms. Only 5% of firms use IRMA and Oracle Siebel.

4. Relationship between characteristics of the firms and the use of intelligent systems

Another purpose of this paper was to show the relationship between the use of intelligent systems and firm characteristics. Following characteristics are examined: size of the market, ownership, capital and the strategy of the firm. Number of intelligent tools that the firm uses is calculated for each characteristics examined. Statistical tests are conducted in order to test if found differences are statistically significant.

Because of the small sample of the firms, nonparametric tests are used. Mann-Whithey test is used when there are two groups of firms, and Kruskal-Wallis test is used where there are three groups of firms.

According to the territory following differences are found. Firms that operate only at the territory of Croatia use smaller average number of intelligent tools (2,51) compared to the firms that operate at the territory of the Croatia and larger region (average number of tools is 2,91). However, the difference is not statistically significant (p-value=0,603).

Ownership impacts the usage of intelligent tools in the following way. Firms with the private ownership use the largest average number of intelligent tools (2,77) compared to the firms that have state ownership (average number of tools are 1,90). The difference is statistically significant at the 10% (p-value=0,087).

The use of capital has the following influence to the usage of the intelligent tools: firms that have foreign capital use the biggest number of intelligent tools (5,71), compared to the firms with the domestic capital (2,92) and the firms with the mixed capital (0,50). The difference is statistically significant at the 5% level (p-value=0,023). Strategy also influences the usage of the intelligent tools.

Firms that use the lowest cost strategy use the largest average number of intelligent tools (4,60) compared to the firms that use differentiation (3,71) and market niche (3,00). However, the difference is not statistically significant (p-value=0,546).

	Average	N	Standard deviation	Test differences	P-value
Size of the market					
Croatia	3,44	9	2,51	Mann-Whitney test	0,603
Croatia and region	4,09	11	2,91		
Types of company ownership					
State (public firms)	2,00	6	1,90	Mann-Whitney test	0,087**
Private	4,50	14	2,77		
Source of capital					
Domastic	2,92	12	2,31	Kruskal-Wallis test	0,023*
Foreign	5,71	7	2,43		
Mixed	0,50	2	0,71		
Company strategy					
Differentiation	3,71	7	3,25	Kruskal-Wallis test	0,546
Low costs	4,60	5	2,30		
Market niche	3,00	9	2,69		

** statistically significant at 10% probability
* statistically significant at 5% probability

Table 1. Connection between number of intelligent tools and company characteristics

5. Conclusion

The purpose of this paper was to look at the business intelligence tools used in Croatian companies. Here were examined the Croatian companies classified by business activities, size of the market, types of company ownership, sources of company funding, and company strategies implemented. The results of the survey revealed that the most used business intelligence tool used in Croatian companies is data warehousing. Here it is also significant to say that 19% of the companies use no intelligent tools at all. This shows that there is still plenty of room for implementation of business intelligence in those companies, which have not been using the tools so far. The departments which use business intelligence tools dominantly use SAP.

Based on the results of the survey, firms only operating in Croatia use business intelligence tools less than the companies which conduct their business in Croatia and abroad.

The differences are also visible based on the type of ownership, where private companies in contrast to public companies, more often use business intelligence units. Survey also displays, that companies with foreign capital use tools more, than companies funded by domestic capital, which means, that foreign owners are more aware of the benefits and advantages of these tools, and large number of domestic owners are yet to discover their real value of the tools for the companies.

Differences between implementation of strategies do exist, but are not statisticaly significant and therefore the strategies implemented do not differ greatly with repect to tools used. From everything found in this survey, it is plausible to state that Croatian companies are implementing business intelligence tools, but the potential in all companies in Croatia in comparison to foreign companies, which are displayed by foreign owners relationship and attitude towards the use of the tools in the companies owned by foreigners in Croatia still exists, and is very likely for Croatian companies in the nearby future to start implementing the tools more intensely.

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