# *Association of Management Tools with the Financial Performance of Companies: The Example of the Slovenian Construction Sector*

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The research problem dealt with in this article addresses the association of management tools with the financial performance of companies in the Slovenian construction sector. The aim of the quantitative empirical survey is to collect data on five of the most relevant accounting scores and indicators in the construction sector for the studied period 2001–2005, and to analyse their correlation with the management tools of Slovenian construction companies. The analysis of the relationship between quantitative indicators and scores with the dimensions of the factors in choosing management tools proved no strong correlation. The results of the analysis show that the dimensions of undesirable consequences of transformation and the financial performance of the companies are essentially unrelated. A comparative study of the arithmetic mean of the indicators and scores with the disadvantages in introducing the management tools, however, indicated that there is a certain relationship between them.

*Key Words:* indicators, scores, financial performance, construction industry, Slovenia
JEL *Classification:* L20, M20

## Introduction

With the transition from the self-management to the market economy, companies in Slovenia have been exposed to the rules of the market. This is why, in order to be successful in the long run, companies have to take into account the situation on the market, adapt to it and incorporate in their development strategies elements of efficient management, which are frequently unpleasant for the employees. The companies which have

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been adapting to this situation at too a slow pace found themselves in trouble or simply ceased to exist. Ownership transformation of the companies, strategic capital concentration with the aim of preserving healthy business cores and improved cooperation, as well as takeovers and mergers of the companies can also be observed. Considering that Slovenian companies are likely to put special emphasis on the implementation of strategic mergers and growth strategies, such as development of the market, diversification of products and markets and conglomerate diversification (Buble et al. 2003), it is also expected from construction companies to look for their strategies within this framework.

Regardless of all the difficulties and problems the construction sector was facing in the last decade, construction companies were more or less in line with other Slovene companies, which achieved 50% growth in business performance (companies undergoing bankruptcy were not included) while, simultaneously, the number of the employees decreased by 20% (Uršič and Mulej 2005). In the last ten years, efficient and competitive have companies continued to replace those which were less efficient (Bojnec and Xavier 2004), leaving the impression that relatively steady conjuncture cycles tend to appear every three to four years (Jagrič 2003).

However, the still ongoing problems, which are more or less known, should be pointed out: a surge in the prices of reinforcing bars and nonferrous metals on the world market, which have to paid primarily by constructors, the increasing oil prices, fierce competition among construction companies, because of which some of them accept contracts under the limit of profitability, as well as liquidity issues and shortage of workers.

The introduction of the article describes the situation on the market to which Slovenian companies have to adapt. The inclusion of the elements of efficient operation in development strategies of companies has also been emphasised. This is followed by theoretical starting points with an emphasis on the main findings of previous relevant surveys from the area of company transformation management and identification of the key weaknesses of the construction sector. The third chapter defines the purpose and key goals of the survey. Methodological tools, the sampling frame, limits of the survey and the realised sample are defined in the fourth chapter. The fifth chapter presents the results of a quantitative survey. The sixth chapter contains an analysis of the influences of management tools on companies' financial performance.

The conclusion of the article contains a substantial interpretation of the findings.

**Theoretical Bases**

The transformation of a company can ensue from spontaneous, intuitive managerial actions, which is possible in simple and transparent companies with stable external environments (Češnovar 2003). In companies with more complex external and internal environments, an intentional, planned and formalized process of transformation is more appropriate, based on established rules for the transformation of processes, structures and systems, and which can also be considered as a method or 'approach to transformation' (Strebel 1992; Champy 1996; Nohria and Berkley 1996; Rigby 2001b; Mintzberg 1996; Mintzberg, Ahlstrand and Lampel 1998; Grint 1997; Drucker 1995). Globally, the scientific literature lists up to 65 different approaches to transformation (Rigby 2001a). There is substantial pressure put on generating new approaches, since Grint (1997) states that at least one new approach to transformation has emerged every year in the last forty years. Regrettably, there are not many methodologically substantiated scientific research cases in a position to give advice to senior management on choosing the right method, what kinds of positive and negative effects a particular method introduces, which methods complement each other and which oppose one another, what the necessary initial knowledge is, and last but not least, what the appropriateness of that individual method is in relation to the existing culture and the coalitions of interest in the internal and external environment of a company (Češnovar 2003; Rosenzweig 2007).

In 1988, the construction industry, as a whole, operated profitably for the first time in a long period – thanks in great part to the flourishing motorway programme. However, we can still talk about the business environments that are not open enough, about the lack of financing mechanisms for smaller companies as well as the lack of financial discipline which typically affects smaller companies and subcontractors in particular. Aside from heavy competition, enormous increases in the prices of wire rod, non-ferrous metals and oil, other key restrictive factors in the construction industry are a chronic deficit in workforce and high material and labour costs (taxes, contributions, etc.). However, the latter should decrease with the introduction of new economic reforms. The following weaknesses have been identified in the development strategy of the Slovenian construction sector:

- Insufficient productivity and insufficient gross added value generated, which are the consequences of inefficiently reducing the cost of current operations;
- Poor structure regarding the qualification of employees, which is reflected by the low level of education, further reflected in the insufficiency of personnel in different professional areas (construction technicians) and at the management level (developers, technologists, marketing professionals);
- Insufficient understanding of foreign markets and achieving competitive price brackets due to the low level of usage of external knowledge (research and development, education, counselling, etc.);
- Improper assurance of quality concerning the starting materials (questionable use of total quality management) and the expensive purchase of starting components.

All of the above-stated shortcomings show that the Slovenian construction industry is in critical need of transformation and adaptation to the new requirements of the business environment which is increasingly open to global competition. Long-term positive business operations may only be successfully solved and ensured in 25% of cases, after crisis in a company has already started (Slatter 1984).

The research problem discussed in the article examines the relationship between management tools (mostly the methods of transformation of companies, the factors involved in their process of selection, shortcomings in their introduction and in particular the undesired consequences of transformation) of Slovenian construction companies and the most relevant accounting scores and indicators of financial performance of those companies. Examined methods of transformation of the companies are the following:

1. Shortening of Flow Times
2. Strategic Planning
3. Total Quality Management
4. Creating a Vision and Mission
5. Outsourcing
6. Benchmarking
7. Vertical Integration
8. Creating Crucial Competitive Advantages

9. Measuring the Level of Customer Satisfaction
10. Growth Strategy
11. Business Process Reengineering
12. Cost Optimisation by Business Process Activities of (ABC method)
13. Customer Relationship Management
14. Knowledge Management
15. Strategic Alliance
16. Balance Scorecard

Choice factors are considered to be the factors created by the external and internal company environments which could have impact on choosing the management tools. In creating the factors, we considered the characteristics of the internal environment (structure, processes, systems, culture, the source of the company, etc.), the characteristics of the external environment transformation, the concepts of the company's response to environment transformation, and models for analysing the situation in the companies in relation to the external environment.

In relation to the disadvantages and barriers that can occur while introducing the management tools to companies, the notion of substantial disadvantages is not referred to as a negative connotation, but as deviations from theoretical norms and guidelines. The panel of possible negative consequences that can occur after introduction of the company's management tools is also an integral part of the research.

### The Purpose and the Aim of the Survey

The aim of the quantitative empirical survey is to collect data on the five most relevant accounting scores[1] and indicators[2] in the construction sector, and to analyse their relationship with the management tools of Slovenian construction companies. The average value of the individually chosen scores and indicators will be calculated for the period 2001–2005.

The main aim of the survey is to verify the hypotheses and to determine:

1. The differences between the arithmetic means of the five accounting indicators and indicators of participating and non-participating construction companies in the survey.
2. The existence and the strength of influences caused by the size of companies, in accordance with Article 55 of the Companies Act

(ZGD-1), on their financial performance, expressed with five accounting indicators.

3. The existence of influence and strength of connection (correlation) of the five accounting indicators with Management tools (methods, factors, deficiencies and unwanted consequences of the transformation).

**Definition of the Research Method**

In designing and implementing this empirical research, we used an appropriate combination of research methods, namely:

- Descriptive Statistics for ranking the findings according to the set criteria;
- Contingency tables with the Chi-squared test, which is used to establish whether two categorical variables are related to each other or not;
- Student's *t*-test for testing statistical differences between average values of scores and indicators of the financial performance of the cooperating and non-cooperating companies in the research to test the representative value of the acquired sample;
- Principal Component Analysis to search new latent (immeasurable) dimensions which are common to a larger number of variables;
- Variant Analysis, Correlations and Multiple Regression Analysis.

In the context of data collection, the empirical survey can be divided in to two parts. The *first* part, which is not subject to detailed discussion in the article, relates to the survey questionnaire intended for the collection of data on the impact of the factors in choosing management tools on the performance of the transformation of companies in the Slovenian construction industry. Using a questionnaire that comprised four sets of closed-ended questions, we established the intensity of usage of sixteen methods of management tools, measured the frequency of usage of thirty factors that influence the choice of individual management tools, and detected the occurrence of twenty-one disadvantages of introducing the methods, as well as nine undesired consequences of transformation in the company.

In the context of clarity and comprehensibility of the questions asked and to avoid potential duplication, we pilot-tested the survey questionnaire before starting the research, using a control group consisting of six senior managers that were included in the research.

The *second* part of the survey, which represents the main focus of this article, refers to data collection on the financial performance of the companies for which data on the methods of choosing and introducing the sixteen methods of management tools by the companies were collected in the *first* part of the survey. After the initial consultation with the financial experts in the field of construction business, we chose the five most relevant accounting scores and indicators for all of the examined population units in the period (2001–2005) from the IBON (2006; data on business operation of Slovenian companies and private entrepreneurs and insight into business credit rating between 1994 and 2005) and from the AJPES (2006; Agency of the Republic of Slovenia for Public Legal Records and Related Services), namely:

1. *Equity* as a category of result.
2. *Return on equity* is an indicator which reflects the ratio between net profit and equity. It gives the company the information on how many cash units of net profit it created per one cash unit of equity. This is one of the most summary indications of company performance and is also comparable between sectors. It is particularly important from the owners' point of view. It explains how a successful management staff manages the assets of the owners.
3. The *financial (in)dependence indicator (ownership of financing)* reflects the ratio between the equity and the assets of a company. The higher the ratio, the greater the borrowing opportunities a company has, but only if it is able to cover the interest from the profit and loss. Financing through borrowing affects the financial risk and profitability of an undertaking.
4. The horizontal financial structure indicator *borrowing* indicates the level of indebtedness, i. e. the portion of a company's equity financed by the companies' long-term and short term liabilities and not by their own resources.
5. The *added value per employee* indicator measures the created value over a certain period. This means that the return (on production and/or services performed) is diminished by the inputs of other business systems (materials, goods, etc.). It is the gross added value, a gross return (a sum of income and change in inventories of finished products), diminished by the costs of material, goods and services as well as other costs (but not depreciation).

While processing the survey results we considered the values of scores and indicators from the period 2001–2005. The choice of the period is substantiated by the fact that certain companies featured in the sample did not have data in the IBON before 2001. The 2001–2005 period is also appropriate because, in that time period, the same accounting standards were in force (before that period, there were no unified standards).

### SAMPLING FRAME

On 1 January 2005 (Ramovš, Žemva and Gržinič 2006), in the registry of the Chamber of Commerce and Industry of Slovenia (2006), according to the criterion 'number of employees' there were 85 companies[3] with more than 50 employees according to the Standard Classification of Activities (SCA) from sectors 45.210 – General construction work and 45.230 – Construction of roads, railways, airports and sports utilities.

Five of these companies were 'undergoing bankruptcy' and were eliminated from the survey. This means that the survey included 80 companies, which at the same time represents the extent of the examined population. Based on the average number of workers, net income on sales and the extent of assets at the end of the business year, the criterion in Article 55 of the Companies Act (ZGD-1) classifies the commercial companies into micro, small, medium-sized and large enterprises. Taking into consideration the criteria of Article 55 ZGD-1, the examined population in the research comprises 18 small (22.5%), 32 medium-sized (40.0%) and 30 large enterprises (37.5%).

### LIMITATIONS OF THE SURVEY

For the purposes of research work we chose companies with more than 50 employees, which assures equal presence of commercial companies according to the criterion of Article 55 of the ZGD-1. For the purpose of commenting on the results of the empirical survey, it should be noted that the survey was implemented in a branch that was in a crisis during the examined period (Ramovš, Žemva and Gržinič 2006) and is classified among the least profitable industries in the Slovenian economy in general.

Due to the limitations of the survey regarding the examination of financial performance of the companies, the five-year period (2001–2005) and the Slovenian construction industry, the results cannot be interpreted as a general rule of financial performance.

### REALISED SAMPLE

In the process of questioning, it turned out that one small company was winded up (2005) and one small company went bankrupt, which led to two units that could not be used in the survey. Four companies declined taking part in the survey. As a result, 78 companies took part in the quantitative survey. We received 74 valid answers, i. e. we achieved a 94.87% response rate. While examining the structure of the realised sample according to the size of the construction companies, it can be observed that 15 small companies (83.33% response rate), 30 medium-sized companies (93.75% response rate) and 29 large companies (96.66% response rate) took part in the survey, which means that the highest response rate was achieved among large companies.

### REPRESENTATIVE VALUE OF THE SAMPLE

The population was divided into two groups (companies taking part in the survey and those not taking part), and arithmetic means of the scores and indicators of both groups were calculated for the period 2001–2005 (table 1).

Certain differences were discovered between both groups of companies; namely, the non-collaborating companies were better in four out of five indicators *(net profit in the business year, return on equity, financial (in)dependence* and *borrowing rate),* while the collaborating companies were only better in the *added value per employee* indicator. The only substantial deviance is the *return on equity* indicator, representing one of the most summary indications of company performance. The non-collaborating companies are obviously companies where the management staff manages the owners' equity more successfully.

We can only guess that the reason why these companies were not will-

TABLE 1 Arithmetic means of scores and indicators of the collaborating and non-collaborating companies

| Scores and indicators | Collaborating | Non-collaborating |
|---|---|---|
| Net profit in the business year* | 33,148.34 | 82,268.5 |
| Return on Equity** | 0.05950 | 0.32575 |
| Financial (in)dependence** | 0.29770 | 0.31500 |
| Borrowing rate coefficient | 0.95280 | 0.83000 |
| Added value per employee* | 4,785.61 | 4,449.25 |

NOTES * Amounts are in SIT 1,000. ** Values are in percentages. Source: IBON 2006.

ing to participate in the survey is the fear of revealing those characteristics of the company that represent the source of their competitive advantage. However, since their total share of gross income in comparison to the total population is negligible, the influence of the deviation in this indicator can be neglected. On average, the non-collaborating companies have fewer employees (125) than the collaborating ones (233). Due to the small number of non-collaborating companies (only 4), there is no need to confirm the statistically definitive differences – using the Student's *t*-test is not reasonable. Notwithstanding the fact that there are certain differences between the companies, it can be confirmed that the sample is a *representative* one because the deviations are insignificant.

## Presentation of the Survey Results

### THE MANAGEMENT TOOLS

In the period 1995–2005, the examined Slovenian construction companies used on average somewhat less than 9 different management tools, which represents over a half (54.90%) of all 16 methods examined in the survey. The results do not differ significantly according to the size of the company, since both large and small companies used 9 methods on average, while the medium-sized ones used somewhat more than 8 of them. The most frequently used method of transformation was Formalized Strategic Planning, used by 77.00% of all companies in the survey.

### FACTORS FOR CHOOSING MANAGEMENT TOOLS

The interviewees used a five-grade Likert scale for deciding from 1 (completely insignificant) to 5 (very important) to evaluate the significance of thirty factors that affect the choice of the methods of management tools of construction companies. The factors were designed on the basis of the interpretation of data, collected using preliminarily implemented interviews, and a control group of six senior managers. Due to the insufficient number of units in the sample, using the *Principal Component Analysis* statistical method was not feasible for the set of all thirty factors in choosing the management tools; hence, we divided them into two groups according to the subject matter key. Following this, we implemented the principal component analysis separately for each one in the two groups.

The first group produced six dimensions, and the second group produced three dimensions, meaning that we created a total of nine *dimensions* of choosing factors for management tools (table 2). The values of

TABLE 2 Average values of the dimensions of factors in choosing management tools

| Dimension of factors for choosing management tools in construction companies | (1) | (2) | (3) |
|---|---|---|---|
| Employees | 3.2760 | 3.4270 | 3.3730 |
| Indirect economic interests | 2.9655 | 3.1583 | 2.9667 |
| Conformity with the company's strategic orientation | 3.7356 | 3.4778 | 3.3778 |
| Direct economic interests | 4.0345 | 3.9000 | 3.5333 |
| Social-economic and political interests | 2.5517 | 2.3000 | 2.1000 |
| Tendency towards planned turnover | 3.6207 | 3.6500 | 3.5667 |
| Senior management | 3.6138 | 3.5333 | 3.2133 |
| Popularity of management tools | 2.6667 | 2.8222 | 2.5556 |
| Parameters available for introduction of transformation | 3.2414 | 3.5167 | 3.4333 |

NOTES Company size according to the ZGD-1: (1) large, (2) medium, (3) small.

Cronbach coefficients (Ferligoj, Leskošek, and Kogovšek 1995) are acceptable (above 0.60), except for two dimensions which are merely composed of two statements. Due to substantive reasons, the mentioned dimensions cannot be combined with any of the other dimensions.

### DISADVANTAGES IN INTRODUCING THE METHODS OF TRANSFORMATION TO THE COMPANIES

Here, the average levels of agreement in relation to the enumerated problems and disadvantages are presented, which were encountered by the companies while introducing new methods of transformation. The evaluations of agreement ranged on the scale from 1 (I completely disagree) to 5 (I completely agree). Due to strong positive correlations between the disadvantages and the consequently high value of the Cronbach coefficient (0.92), a new combined variable, *disadvantages,* was generated, representing the average of all evaluations of agreement on the listed disadvantages (table 3).

All the companies in general partially agree that they faced disadvantages upon the introduction of changes (2.97). Small companies faced

TABLE 3 Average values of the disadvantage dimension upon introduction of methods

| Disadvantages dimension upon introducing the methods of management tools | (1) | (2) | (3) |
|---|---|---|---|
| Employees | 3.0049 | 3.0444 | 2.7270 |

NOTES Company size according to the ZGD-1: (1) large, (2) medium, (3) small.

TABLE 4 Average values of dimensions of undesirable consequences to transformation

| Dimensions of undesired consequences of construction companies' transformations | (1) | (2) | (3) |
|---|---|---|---|
| Decrease in worker's performance | 2.0000 | 2.1667 | 2.0167 |
| Decrease in workers' confidence in transformation | 2.6034 | 2.6000 | 2.0667 |
| Hindered management process | 2.6379 | 2.8000 | 2.5000 |
| Redundancy | 2.1379 | 2.5667 | 1.4000 |
| Average of undesirable consequences dimensions | 2.3448 | 2.5330 | 1.9960 |

NOTES Company size according to the ZGD-1: (1) large, (2) medium, (3) small.

fewer disadvantages (2.73). One of the possible reasons for this derives from the fact that small companies tend to be more flexible and are in a position to implement the desired changes more rapidly.

### UNDESIRABLE CONSEQUENCES OF CONSTRUCTION COMPANIES' TRANSFORMATIONS

On the scale from 1 (completely disagree) to 5 (completely agree), the companies evaluated their level of agreement with the nine undesirable consequences of transformation. The interviewed companies did not face many undesirable consequences upon the introduction of new management tools since the average combined mark totals to only 2.31. Based on the statistical method of the Principal Component Analysis, nine statements were combined into four dimensions whose average values are presented in table 4.

The values of Cronbach coefficients are acceptable (above 0.60), except for the dimension *hindered management process* which is merely composed of two statements. Due to substantive reasons, this dimension cannot be combined with any of the other dimensions. The *redundancy* statement could not be classified in any of the dimensions due to its low correlation with the other statements, and was handled as a separate dimension.

## Analysis of the Influence on Companies' Financial Performance

In this chapter, different influences on companies' financial performance in the Slovenian construction industry are analysed. In the course of analysis, we were restricted to only the influence of the dimensions of transformation of companies, the influence of disadvantages upon their introduction, and the influence of dimensions of undesirable consequences of transformation, while any influence analysing the effects of

TABLE 5 Correlation matrix between the dimensions of undesirable consequences of transformation and the scores and indicators of construction companies' financial performance

| | | Indicators[1] | | | | Trends | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 5 | 1 | 2 | 3 | 4 | 5 |
| (a) | $r$ | −0.018 | −0.080 | 0.051 | 0.018 | 0.004 | −0.162 | −0.004 | 0.149 | −0.066 |
| | $\alpha^2$ | 0.878 | 0.500 | 0.665 | 0.879 | 0.971 | 0.168 | 0.975 | 0.205 | 0.575 |
| (b) | $r$ | −0.088 | −0.206 | −0.022 | 0.031 | −0.032 | −0.067 | −0.023 | 0.165 | −0.047 |
| | $\alpha^2$ | 0.457 | 0.078 | 0.853 | 0.791 | 0.789 | 0.573 | 0.844 | 0.161 | 0.693 |
| (c) | $r$ | −0.040 | −0.076 | 0.086 | −0.111 | −0.054 | −0.008 | 0.065 | 0.081 | −0.145 |
| | $\alpha^2$ | 0.736 | 0.520 | 0.467 | 0.346 | 0.648 | 0.944 | 0.584 | 0.491 | 0.217 |
| (d) | $r$ | 0.107 | 0.084 | −0.082 | 0.233* | 0.065 | 0.184 | −0.026 | 0.136 | 0.328** |
| | $\alpha^2$ | 0.364 | 0.477 | 0.488 | 0.046 | 0.583 | 0.117 | 0.829 | 0.247 | 0.004 |

NOTES Dimensions of indicators: (a) decrease in workers' performance, (b) decrease in workers' confidence, (c) hindered management process, (d) redundancy.
[1] Average accounting scores and indicators of companies in the period 2001–2005. [2] Dual test. * Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed).

these factors would not be reasonable from the methodological point of view; in case these influences do exist, they can only be circumstantial. Based on the five-year time period (2001–2005), the related trends for accounting scores and indicators of financial performance were calculated.

While examining the relation of accounting scores and indicators from the period 2001–2005 with the methods, factors, disadvantages and undesirable consequences of transformation, the quantitative indicator *borrowing rate* proved inappropriate since it should be handled in the context of other indicators, such as *return on equity,* for example. In simple words, in case a company shows a high profitability rate, it can afford a higher borrowing rate in return – without jeopardizing its business. Since the mentioned indicator only partialy reflects the economic independence of a company, it was eliminated in the further stages of the survey and the trend of the indicator *borrowing rate* was maintained.

The correlation analysis of the association of quantitative indicators with the dimensions of the factors in choosing management tools showed *no* strong connection between those mentioned. The results of the analysis show that there is essentially *no* connection between the dimensions of undesirable consequences of transformation and the companies' financial performance (table 5).

The relation between the *redundancy* dimension and the trend added

TABLE 6 Descriptive statistics of scores and indicators according to use of method 12

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| (a) | Yes | 54 | 76,747.518 | 128,369.899 | 17,468.9306 |
| | No | 20 | −84,569.45 | 369,641.082 | 82,654.2587 |
| (b) | Yes | 54 | 0.07872 | 0.238133 | 0.032406 |
| | No | 20 | 0.0076 | 0.282181 | 0.063098 |
| (c) | Yes | 54 | 0.3048 | 0.18091 | 0.02462 |
| | No | 20 | 0.2785 | 0.18164 | 0.04062 |
| (d) | Yes | 54 | 4,943.35 | 3,180.387 | 432.796 |
| | No | 20 | 4,359.7 | 2,320.741 | 518.933 |
| (e) | Yes | 54 | 29,222.944 | 61,996.8812 | 8,436.70693 |
| | No | 20 | −67,907.85 | 299,136.003 | 66,888.8437 |
| (f) | Yes | 54 | −0.02057 | 0.191891 | 0.026113 |
| | No | 20 | −0.0559 | 0.13349 | 0.029849 |
| (g) | Yes | 54 | −0.0054 | 0.09945 | 0.01353 |
| | No | 20 | −0.028 | 0.0709 | 0.01585 |
| (h) | Yes | 54 | −0.1291 | 0.93368 | 0.12706 |
| | No | 20 | −0.04 | 0.1464 | 0.03273 |
| (i) | Yes | 54 | 639.96 | 1,250.081 | 170.114 |
| | No | 20 | 14.85 | 698.204 | 156.123 |

NOTES (1) use of method, (2) number of units; descriptive statistics: (3) average, (4) standard error, (5) standard error of the average. Scores and indicators: (a) net profit in the business year (in SIT 1,000), (b) return on equity (%), (c) financial (in)dependence (%), (d) added value per employee (in SIT 1,000), (e) net profit in the business year trend (in SIT 1,000), (f) return on equity trend (%), (g) financial (in)dependence trend (%), (h) borrowing rate coefficient trend, (i) added value per employee trend (in SIT 1,000).

value per employee should be mentioned ($r = 0.30$, $\alpha < 0.01$), where it is a fact that by discharging redundant workers, the added value trend increases. Based on the *t*-test, which we used to test the difference between the financial scores and indicators and their trends according to the usage of the chosen method of transformation, the difference *cannot* be confirmed for fourteen methods. In these cases, methods which indicate the effect of introduction in the long-term accounting period and in other fields of business are in question. The two remaining methods of transformation are of explicitly financial nature. These are: method 12 (optimisation of costs by activities of business process) and method 16 (balance scorecard). The latter two proved to be directly linkable to

construction companies' financial performance. Those companies (54) that *did* use method 12 do not show in terms of financial performance, a statistically significant difference in relation to the companies (20) that *did not* use this method; however, their trend in the economic indicator 'financial structure added value per employee' is growing more rapidly (table 6).

Based on the 5-year trend, we can expect *added value per employee* in these companies to increase by SIT 639,960 (EUR 2,670.51) every year, contrary to other companies where increases in *added value per employee* can be expected to amount to only SIT 14,850 (EUR 61.97). The difference is statistically significant in the case of 0.05 level ($t = 2.11$; $\alpha < 0.05$; Sig. (2-tailed) = 0.04).

A difference in trends is also evident in the first economic indicator, *return on equity* ($\alpha = 0.07$). In the case of companies that *did* introduce method 12, it can be concluded from the 5-year trend that their return on equity would increase by SIT 29,222,944 (121,945.19 EUR) every year, while return on equity in companies that did not use this method would probably decrease on average by SIT 67,907,850 (EUR 283,374.44 ).

Those companies (20) which *did* use method 16 *do not* differ in regard to the four accounting scores and indicators statistically significant from the companies (54) that *did not* use this method. A statistically significant difference (table 7) is indicated only in the trend of the third indicator *financial (in)dependence (ownership of financing).*

Based on the 5-year trend, it can be expected that the ratio between the equity and assets of those companies which *did* use method 16 (balance scorecard) would increase by 0.03 every year in favour of equity, which normally increases borrowing possibilities. For the companies that did not use this method, it can be predicted that their ratio would decrease by 0.03 ($t = 2.17$; $\alpha < 0.05$, Sig. (2-tailed) = 0.03). Studying the association of arithmetic means of the accounting indicators and scores with the disadvantages of introducing the management tools for the period 2001–2005 indicated that a connection between them *does exist* (table 8).

On the basis of the correlations analysis a conclusion was made that if the number of disadvantages diminishes the first indicator *equity* ($r = -0.25$; $\alpha < 0.05$; Sig. (2-tailed) = 0.03), the second indicator *return on equity* ($r = -0.23$; $\alpha < 0.05$; Sig. (2-tailed) = 0.05) and the trend of the first indicator *equity* ($r = -0.26$; $\alpha < 0.05$; Sig. (2-tailed) = 0.03) would increase. In the reverse direction, by increasing the number of disadvantages, the trend of the fourth indicator, *borrowing rate,* increases

TABLE 7 Descriptive statistics of scores and indicators according to use of method 16

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| (a) | Yes | 20 | 41,193.95 | 84,555.24504 | 18,907.1275 |
| | No | 54 | 30,168.481 | 264,632.7222 | 36,011.9521 |
| (b) | Yes | 20 | 0.0679 | 0.259577 | 0.058043 |
| | No | 54 | 0.05639 | 0.249908 | 0.034008 |
| (c) | Yes | 20 | 0.2865 | 0.16129 | 0.03606 |
| | No | 54 | 0.3019 | 0.18803 | 0.02559 |
| (d) | Yes | 20 | 4,681.2 | 4,112.547 | 919.593 |
| | No | 54 | 4,824.28 | 2,463.866 | 335.29 |
| (e) | Yes | 20 | 12,465.7 | 44,308.90808 | 9,907.77305 |
| | No | 54 | −545.037 | 194,344.2953 | 26,446.9087 |
| (f) | Yes | 20 | −0.0478 | 0.24471 | 0.054719 |
| | No | 54 | −0.02357 | 0.14807 | 0.02015 |
| (g) | Yes | 20 | 0.026 | 0.14583 | 0.03261 |
| | No | 54 | −0.0254 | 0.05901 | 0.00803 |
| (h) | Yes | 20 | −0.006 | 0.07687 | 0.01719 |
| | No | 54 | −0.1417 | 0.93511 | 0.12725 |
| (i) | Yes | 20 | 621.9 | 1,381.421 | 308.895 |
| | No | 54 | 415.13 | 1,071.998 | 145.88 |

NOTES (1) use of method, (2) number of units; descriptive statistics: (3) average, (4) standard error, (5) standard error of the average. Scores and indicators: (a) net profit in the business year (in SIT 1,000), (b) return on equity (%), (c) financial (in)dependence (%), (d) added value per employee (in SIT 1,000), (e) net profit in the business year trend (in SIT 1,000), (f) return on equity trend (%), (g) financial (in)dependence trend (%), (h) borrowing rate coefficient trend, (i) added value per employee trend (in SIT 1,000).

TABLE 8 Correlation matrix between the disadvantages upon introduction of management tools and the scores and indicators of companies' financial performance

| | | Indicators[1] | | | | Trends | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 5 | 1 | 2 | 3 | 4 | 5 |
| (a) | *r* | −0.249* | −0.232* | 0.055 | −0.175 | −0.257* | −0.105 | −0.044 | 0.332** | −0.149 |
| | $\alpha^2$ | 0.032 | 0.046 | 0.643 | 0.135 | 0.027 | 0.375 | 0.711 | 0.004 | 0.207 |

NOTES Dimensions of indicators: (a) disadvantages upon introduction of the methods. [1] Average accounting scores and indicators of companies in the period 2001–2005. [2] Dual test. * Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed).

($r = -0.33$; $\alpha < 0.01$; Sig. (2-tailed) = 0.004). This can be interpreted by the fact that it is inevitable for the companies to finance the elimination of disadvantages that occurred upon the introduction of individual management tools, which, as a consequence, forces them into additional borrowing.

**Conclusions**

For the purposes of the *second* part of the survey which was discussed in this article[4] in detail, data were collected on the five utmost relevant accounting indicators and scores for the construction industry. The analysis of the companies' business performance indicated that in the period 2001–2005, somewhat more than a fifth (21.60%) of the companies had negative average *equity,* which is expected to grow with the size of the company. Almost one fourth (24.30%) of the examined companies has an average *return on equity,* with small companies prevailing (49%). A solid fifth (21.60%) of all companies achieved up to a 0.12 mark of *financial (in)dependence.*

The highest share is once again indicated among small enterprises (33.30%). Medium-sized enterprises have the highest share (26.70%) among the companies with the value of this indicator above 0.47. One fifth (20.30%) of construction companies have a borrowing rate above 1.07; and among these, small enterprises have the highest share (26.70%). *Added value per employee* increases with the size of the company. Almost one third (31.00%) of large companies attain over SIT 6,300 thousand (EUR 26,289.43) *added value per employee.* The share among small enterprises amounts to 6.70%.

While examining the relationship of accounting scores and indicators from the period 2001–2005 with the methods, factors, disadvantages and undesirable consequences of transformation, the quantitative *borrowing rate* indicator proved inappropriate since it should be considered in the context of other indicators, such as *return on equity* (ROE), for example. In simple words, in the case that a company shows a high profitability rate, it can afford a higher borrowing rate in return without jeopardizing its business.

Since this indicator only partially reflects the economic independence of a company, it was eliminated in the further stages of the survey, and only the trend of the indicator *borrowing rate* was maintained. The analysis of the association of quantitative indicators with the dimensions of the factors for choosing management tools showed *no* strong connection

among those addressed. The analysis shows that there is essentially *no* connection between the dimensions of unwanted consequences of transformation and the financial performance of the companies. The relation of the redundancy dimension with the added value per employee trend should be mentioned, where the fact exists that by discharging (redundant) workers, the added value trend improves. Based on verification as to whether the difference between financial scores and indicators and their trends differs according to the usage of the chosen method of transformation, the difference *cannot* be confirmed for fourteen methods. This case, namely, is about methods, the introduction effect of which is shown in the long-term accounting period as well as in other fields of business. The other two methods of transformation, the 'optimization of costs by activities of a business process' and the 'balance scorecard' are of explicitly financial nature. The latter two proved to be directly related to the financial performance of construction companies.

Studying the association of arithmetic means of the accounting indicators and scores with the disadvantages of introducing the management tools for the period 2001–2005 indicated that a connection between them *does exist.* The survey results indicated that with the increasing number of disadvantages, the first indicator, *equity,* the second indicator, *return on equity,* and the trend of the first indicator, *equity,* tend to decrease. In the reverse direction, by increasing the number of disadvantages, the trend of the fourth indicator, *borrowing rate,* increases. The reason for this lies in the fact that it is inevitable for the companies to finance the elimination of disadvantages that occur upon introduction of individual management tools, which, in consequence, forces them into additional borrowing.

**Notes**

1 According to the Slovenian Accounting Standard no. 29 (Slovenski računovodski standard 29 2002) a score is an absolute number predicting or indicating the situation, or pointing out the development of something; it is, normally, a piece of accounting data and differs from the indicator.

2 An indicator is a relative number, acquired by the comparison of two magnitudes; it holds a cognitive power which enables the creation of an opinion about business operation. Considering the nature of the compared magnitudes, it can be an index, a coefficient or a rate of participation (Slovenski računovodski standard 29 2002).

3 Considering the selected number of construction companies in the survey, the construction companies in the 2001–2005 period on average

posted net profit for the financial year of 148,837.09 EUR, net return on equity of 0.073%, financial independence of 0.299%, borrowing rate coefficient of 0.947, and added value per employee of 19,898.01 EUR. The non-participating companies (4) in the survey have fewer employees on average (125.25) than the participating companies (233.53).

4 The survey studies only: (1) the existence and strength of influences caused by the size of companies, in accordance with the criterion referred to in Article 55 of the Companies Act (ZGD-1), on their financial performance; (2) the existence of influence and strength of connection (correlation) of the transformation process (methods factors, deficiencies and unwanted consequences) with quantitative financial indicators – substantial consequences and results of these influences are therefore not a subject of the study.

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