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## EFFECTS OF INTERNAL CONTROL ON THE FINANCIAL INDICATORS OF COMPANIES

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The aim of the research presented in this paper is to measure the significance and importance of internal control (IC) in companies, as well as to identify differences relating to the significance and importance of IC based on the comparative analysis of the distinctive components of internal control. Thus, the research is organized in two parts. The first part includes the evaluation of the significance and importance of IC at the level of a company level, of individual transactions and of sub-processes; it also examines the impact of IC on the financial performance of a company, as well as the effects of certain IC elements related to the sub-processes on the overall significance of IC. The second part of the research is about identifying the existence of dissimilarities in terms of the significance and importance of IC in companies by the type of business entity (i.e. the legal form) and the type of business activity. In accordance with the stated objectives of the research, data analysis is performed by using the following statistical and econometric methods: regression analysis and hypothesis testing for equality of arithmetic means and proportionality. This paper presents the results of the first part of the research. Based on the created database containing the collected structural data, the results of surveys and the specified regression models, as well as the results of quantitative analyses and the derived conclusions on the statistical significance of the effects of the specified independent variables, it is possible to obtain valid information on the importance and significance of IC for a company's operations. The results and information obtained from the first part of the research and the results obtained after the application of the statistical and econometric analysis are contrasted by means of comparative analysis. The results of this research will facilitate obtaining sound scientific information to be used for strategic management, planning and decision-making at all levels of a company regarding the significance and importance of internal control.

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### 1. INTRODUCTION

Internal control (IC) can be defined in several ways (Pickett 2004, Ljubisavljević 2000, Switzer 2007). One of the best known and most often quoted definitions (the one we accepted for the purposes of research), is that established by the *Committee of Sponsoring Organizations of the Treadway*

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*Commission (COSO)*. According to the COSO, IC is defined as “a process, effected by an entity’s board of directors, management and other personnel, designed to provide reasonable assurance regarding the achievement of objectives in the following categories (1) effectiveness and efficiency of operations, (2) reliability of financial reporting and (3) compliance with the applicable laws and regulations” (Switzer 2007, p. 248). Please note that this definition is contained in the revised edition of the Internal Control-Integrated Framework, released in May, 2013 by the aforementioned Committee (Aquila 2013, p. 22).

The definition reflects certain fundamental concepts (Ratcliffe, Landes 2009; Milojević 2006):

- IC is a process, not an end in itself, but a means to an end.
- IC is affected by people. Companies can have the policies, manuals and control procedures, but it is the people functioning at all levels of the organization that make the system work.
- IC can be expected to provide only reasonable, but not the absolute, assurance that the defined objectives will be achieved.
- IC is geared to the achievement of objectives of one or more different categories, as well as overlapping categories.

In addition to the aforementioned objectives that IC is expected to ensure, it should also help to prevent errors and irregularities from occurring in a company, as well as to detect errors already committed and fraudulent activities, since they can produce very serious consequences for the company. The key activities to prevent errors and fraud are: a strong, ethical “tone at the top” that affects the corporate culture, where the board of directors and the audit committee have a key role in its establishment and monitoring; skepticism and questioning of the mindset of all stakeholders in the financial reporting system in order to enhance their professional objectivity; vigorous communication between all participants in the system (Boyle *et al.* 2012, p. 65). If there are material weaknesses in the system of internal controls, then such a system is not efficient, therefore, the identified material weakness should be disclosed. Research shows that companies that disclose their material weaknesses are usually more complex (with more reporting segments), smaller (in relation to market capitalization) and less profitable than companies that do not disclose material weaknesses (Ge, McVay 2005); that is to say that companies which have serious control deficiencies are smaller, younger and have a lower earnings quality, while companies with less serious weaknesses are financially healthier, but they are also complex, diversified and undergoing changes (Doyle *et al.* 2007).

Numerous authors (Cheng *et al.* 2013, Biddle *et al.* 2009, Skaife *et al.* 2006, Miller *et al.* 2013, Dowdell *et al.* 2013) have studied different aspects of IC. Thus, according to the mentioned authors, it is pointed out that inefficient IC over financial reporting has a significant negative effect on investment efficiency (the negative effect ceases two years after the discovery of material weaknesses); furthermore, the authors predict that the disclosure of weaknesses in internal control leads to increased monitoring by shareholders and other stakeholders and therefore results in improving the quality of financial reporting (Cheng *et al.* 2013). In this respect, it is clear that “quality financial reporting has a role in alleviating information uncertainty that impedes investment efficiency” (Biddle *et al.* 2009). Strong ICs are the building blocks of high-quality information systems and high-quality financial information. The quality of companies’ information systems, which includes IC over financial reporting, has both an indirect and direct impact on the cost of capital. Companies that disclose reports on the deficiencies in their internal control systems, show a significantly higher risk coefficient and higher cost of capital compared to companies that do not disclose the reports on IC deficiencies (Ashbaugh-Skaife *et al.* 2006). However, there are positions that weaknesses in internal control, in general, are not directly associated with a higher cost of capital (Ogneva *et al.* 2007). Those companies that disclosed weaknesses in IC are more likely to have a lower credit rating, lower profitability, lower cash flows from operating activities, net losses for the previous and current fiscal year, higher income variability and higher leverage compared to companies that did not encounter such weaknesses. In addition, the aforementioned weaknesses can lead to high costs of debt financing, lower income and lower attractiveness on the capital market (Elbannan, 2009).

With reference to the analysis of the flexibility of computerized internal controls, some authors (Yang *et al.* 2011) point out that the effective control of the reliability of financial information does not have a significant effect on the performance indicators ROA, ROE and EPS (ROA – return on assets, ROE – return on equity, EPS – earnings per share). Control of operational effectiveness and efficiency has a significant effect on ROA and ROE, but not on EPS, while the control of compliance with the laws and regulations has a significant effect on ROA, ROE and EPS. These authors add to their findings the fact that the control of the reliability of finance reporting may be relevant for external users, however, this type of control is not directly linked to internal operations, and therefore has no significant effect on them.

Compliance with the laws and regulations can increase business performance, thus reducing errors and dishonest business conduct, hence this control segment can have a direct effect on business operations. While exploring information technology (IT) internal controls, some authors believe that those companies reporting on IT internal control weaknesses have a lower accounting income compared to companies with strong IT internal controls (Stoel, Muhanna 2012, p. 280). Muraleetharan (2011) finds a positive relationship between internal control and financial performances. Shokoohi *et al.* (2015) find a significant and positive relation between the internal control system and financial performance of the Telecommunication Company of Golestan province. Kinyua *et al.* (2015) find a significant correlation between the internal control environment and financial performances of companies. Mwakimasinde *et al.* (2014) and Nyakundi *et al.* (2014) find a significant influence of the internal control on financial performance. Ejoh, Ejom (2014), *inter alia*, found that there is no significant relationship between the internal control activities and financial performance.

It is also stated that the quality of ICs has a significant impact on internal management reporting and decision-making based on such reports; it is further noted that companies with ineffective internal controls report less accurate statistical and economic management forecasts (Feng *et al.* 2009). Managers are the persons responsible for the effectiveness of internal controls within their companies, as well as the reliability of the external financial reporting. They are able to transfer wealth from shareholders to themselves by trading private information, which is, in the presence of ineffective internal control over financial reporting, significantly more extensive because of the potentially greater “noise” and bias in the financial statements. The profitability of insider trading is much greater in companies disclosing material weaknesses in internal controls over financial reporting compared to companies with effective control (Skaife *et al.* 2013).

Some authors have examined the positions of the professors of accounting and professors of management on the issue related to identifying the entity that bears the ultimate responsibility for establishing and maintaining IC over financial reporting. One such study showed a statistically significant difference of opinion between these two groups of professors. A large number of the surveyed professors of management assign this responsibility to internal auditors rather than to management (Miller *et al.* 2013). Bearing in mind that the report of the external auditor, *inter alia*,

states that the management is responsible for IC since the management is considered necessary for the preparation of such financial statements that are free from material misstatement(s) whether due to fraud or error, a position stating that it is the management who has the primary responsibility for IC and not the internal audit might be more acceptable. Internal audit can be seen as “measuring the performance of internal control systems, as well as product and service quality systems” (Andrić *et al.* 2009, p. 290). Responsibility of the executive management varies depending on the organizational structure and specific features of the company, hence the CEO has the greatest responsibility since he/she sets the “tone at the top” that affects the integrity, ethics and other factors of a positive control environment. Naturally this does not exclude the board of directors, internal audit and other personnel in the company from responsibility, because IC, to a certain extent, is the responsibility of everyone in the organization and as such should be an explicit or implicit part of each and every job description. The analysis of the relationship between market liquidity and IC efficiency shows that market liquidity is lower for companies that have disclosed inefficient internal control over financial reporting relative to companies with effective control. However, the consistency of results has not been confirmed by two alternative measures: trading volume and market quality index (Dowdell *et al.* 2013). In any case, the transparency of financial reporting is the thing that counts since any concealment of information and IC weaknesses, false financial statements and other manipulations can have a negative impact on the share price of a company. In this regard, a research conducted by the Stanford Law School under the auspices of the Financial Executives Institute, is considered important. The research included 141 companies that had disclosed material weakness in the internal controls over financial reporting in the period between November 2003 and October 2004. It was found that the companies that disclosed the mentioned weaknesses recorded a smaller decline in the stock prices than those companies that covered up their weaknesses (Agami 2006).

The subject of the research presented in this paper concerns general data on 99 companies (89 from the Republic of Serbia and 10 from the countries in the region), including general questions on internal control and data on the internal controls per certain transactions, respectively per several types of assets.

The aim of the paper is to assess the following, based on the opinion of the respondents:

- significance and importance of IC at company level,
- significance and importance of IC at the level of particular transactions/sub-processes,
- effect of the IC on the financial performance of the company, and
- effect of IC over particular sub-processes on the overall importance of IC. The following main null hypotheses are tested in the paper:
- Hypothesis 1 ( $H_1$ ): There is no statistically significant effect of the independent variables: assessment of IC over sales, assessment of IC over procurement, assessment of IC over fixed assets, assessment of IC over inventory and assessment of IC over cash handling on the dependent variable overall assessment of IC in the company.
- Hypothesis 2 ( $H_2$ ): There is no statistically significant effect of the independent variables: assessment of IC over sales, assessment of IC over procurement, assessment of IC over fixed assets, assessment of IC over inventory and assessment of IC over cash handling on dependent variable cost-efficiency.
- Hypothesis 3 ( $H_3$ ): There is no statistically significant effect of the independent variables: assessment of IC over sales, assessment of IC over procurement, assessment of IC over fixed assets, assessment of IC over inventory and assessment of IC over cash handling on the dependent variable profitability.
- Hypothesis 4 ( $H_4$ ): There is no statistically significant effect of independent variables: assessment of IC over sales, assessment of IC over procurement, assessment of IC over fixed assets, assessment of IC over inventory and assessment of IC over cash handling on the dependent variable productivity.

Furthermore, in terms of the applied statistical and econometric methods, specific hypotheses were formulated referring to testing for multicollinearity, heteroskedasticity, autocorrelation, and the random errors assumption and its arithmetic mean.

## 2. RESEARCH METHODOLOGY

A survey was conducted from April to September 2013. The aim of the survey was to determine the effect of certain ICs over particular segments on the overall IC in a company, as well as the impact of IC on the financial performance of companies. It included 99 companies (89 from the Republic of Serbia and 10 from countries in the region) and was carried out by directing questionnaires to the chief accountants, bookkeepers, business

owners and managers of the surveyed companies, belonging to different management levels (see questionnaire in the Appendix). The questionnaire consisted of three main sections. The first section included four questions on the basic company information. The second section included eight general questions on internal controls, which were intended to reflect the position of respondents on their company's ICs. The scale used in this section of the questionnaire ranges from 0 (not having an opinion) to 4 (strongly agree). Other researchers have used similar scales. For example, Shokoohi *et al.* (2015) used a scale from 1 to 5 (from very low to very high). Ejoh, Ejom (2014) used a scale from 'strongly agree' to 'disagree' and they asked some similar questions compared to our questionnaire. Kinyua *et al.* (2015) and Mwakimasinde *et al.* (2014) used a scale from 'strongly disagree' to 'strongly agree'. The third section of the questionnaire looked into an assessment of the importance of ICs over certain transactions, i.e. the importance for the company's operations; for this purpose a scale from 1 (not at all) to 5 (very much) was developed. As far as the questions targeting internal control over sales, procurement, fixed assets, inventory and cash handling are concerned, a scale from 0 (not at all) to 3 (yes, absolutely) was used. This scale is used for independent variables, i.e. evaluation of IC over individual areas (sale, procurement, fixed assets, inventory and cash). The information provided by the questionnaire and that scale show the level of the internal control implementation. The mark 0 means that certain IC is not implemented in the certain company (never), while mark 3 means that certain IC is fully implemented in the certain company. The collected data on the surveyed companies are stored in the IBM SPSS Statistics 19 database and Microsoft Excel 2007 spreadsheet software. The confidence level of  $\alpha = 0.05$  was used for determining statistical significance.

### **3. RESEARCH RESULTS**

#### **3.1. Basic company information**

These data are grouped into the following questions: name and seat of the company; type of business activity; legal form of the company and number of employees; total revenues; total assets; total costs; profit or loss; and the volume of production (sales or services) in 2012. Table 1 presents the surveyed companies by their type of activity, while Table 2 shows the surveyed companies by their legal form (type of business entity).

Table 1  
Surveyed companies per activity type

| Type of activity | Number of companies | Structure in % |
|------------------|---------------------|----------------|
| Manufacturing    | 52                  | 52.53          |
| Services         | 20                  | 20.20          |
| Trade            | 27                  | 27.27          |
| Total            | 99                  | 100.00         |

Source: survey data.

Table 2  
Surveyed companies per legal form

| Legal form                | Number of companies | Structure in % |
|---------------------------|---------------------|----------------|
| Joint stock company       | 19                  | 19.19          |
| Limited liability company | 67                  | 67.68          |
| Limited partnership       | 0                   | 0              |
| Partnership company       | 1                   | 1.01           |
| Family business           | 2                   | 2.02           |
| Public company            | 10                  | 10.10          |
| Total                     | 99                  | 100.00         |

Source: survey data.

### 3.2. General issues on internal control

The first question of the first section of the questionnaire relates to the manner of setting up the ICs in companies. Based on the answers the following results are obtained:

- in 52 surveyed companies, representing 52.53% of the respondents, IC is carried out by senior executive(s),
- in 36 surveyed companies (36.36 % of the respondents) IC is carried out by the accounting managers/departments,
- in only 6 companies (6.06% of respondents) IC is organized as an independent organizational unit, and
- 5 companies (5.05% of the respondents) did not provide an answer to this question.

The aforementioned facts are presented in Figure 1. Forty-four companies, i.e. 44.44% of respondents, strongly agreed that the established organizational structure was of great importance for defining the lines of



authority and responsibility and gave a rating of 4; also forty-four companies chose a rating of 3 for this statement, which means that they support this position; two companies, i.e. 2.02% of respondents gave a rating of 2, which means that they disagree, while one company, i.e. 1.01% of respondents, gave a rating of 1, which indicates strong disagreement with the aforementioned statement. Two companies, i.e. 2.02% of respondents, opted for a rating of 0, which means that they have no opinion on this particular matter. 6.06% of respondents did not provide any answer.

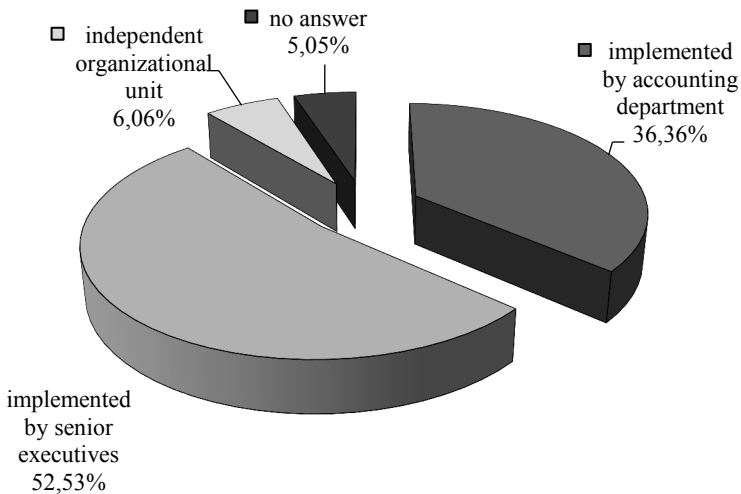


Figure 1. Setting up IC in companies

Source: survey data.

Most of the companies surveyed support the position that the existence of the transaction limits, in accordance with the hierarchical position in the company, represents a significant control measure. This is confirmed by the number of respondents who said that they agreed or completely agreed with the mentioned position (in total 87 companies, i.e. 87.88% of respondents). Five companies, i.e. 5.05% of respondents disagreed, while also five companies declared that they had no opinion on the mentioned issue, while two companies, i.e. 2.02% of respondents, chose not to give their opinion.

A large number of respondents strongly agreed or agreed that the separation of duties regarding transaction authorization, physical protection

of assets and documenting and accrual of transactions contributed to the reliability of financial reporting (80 companies, i.e. 80.81% of respondents); six companies, i.e. 6.06% of respondents disagreed or strongly disagreed with this statement; ten companies, i.e. 10.10% of respondents, did not have opinion in this regard, while three companies, i.e. 3.03% of respondents, did not provide an answer.

Fifty-seven companies, i.e. 57.58% of respondents, disagreed or strongly disagreed with the view that mandatory paid vacations/leave for accounting and finance staff represented a good control measure regarding detecting illegal activities, since it is supposed that such activities could only be discovered provided that relevant employees are absent from work for some time. Eighteen companies, i.e. 18.18% of respondents, agreed with this, while ten, i.e. 10.10% of respondents, strongly agreed; twelve companies, i.e. 12.12% of the respondents, had no opinion on this matter, and two companies, i.e. 2.02% of respondents, did not provide an answer.

Thirty companies, i.e. 30.30% of the respondents, strongly agreed with the position that a separate chart of accounts may be an important control instrument, therefore, they gave a rating of 4; thirty-nine companies, i.e. 39.40% of respondents, agreed with this position and opted for a score of 3; fifteen companies, i.e. 15.15% of respondents disagreed with the position and gave a rating of 2, while three companies, i.e. 3.03% of respondents, strongly disagreed and chose a score of 1; eleven respondents (11.11%) did not have opinion in this regard, and only one company did not provide answer to this question.

Eighty-four companies, i.e. 84.85% of respondents, agreed or strongly agreed with the fact that the rulebook for accounting and financial reporting regulated the functioning of the accounting department in their companies, three companies, i.e. 3.03% of the respondents, disagreed, two companies, i.e. 2.02% of the respondents, expressed their strong disagreement with this statement, while seven companies, i.e. 7.07% of the surveyed companies, did not have any opinion on this matter. Three companies, i.e. 3.03% of respondents, chose not to answer.

The following are specified as the three most important control measures implemented in the surveyed companies:

- regular and special censuses,
- compliance between sub-ledger and general ledger accounts,
- control of documentation.

### 3.3. Financial performance indicators of the surveyed companies

Out of 99 companies surveyed, 75 reported a net profit in their financial statements for 2012, i.e. they were profitable, while the remaining 24 companies reported a loss. Table 3 shows the ranking of companies by their rate of return that shows amount earned from each RSD 100 invested. The rate of return is calculated as:  $(\text{profit}/\text{net assets employed}) \times 100$ .

Table 3  
Surveyed companies by rate of return

| Rate of return (%) | Number of companies | Structure in % |
|--------------------|---------------------|----------------|
| 0.05 and less      | 1                   | 1.33           |
| 0.306 – 8.3794     | 50                  | 66.67          |
| 8.3795 – 16.7283   | 14                  | 18.67          |
| 16.7284 – 25.0772  | 6                   | 8.00           |
| 25.0773 and more   | 4                   | 5.33           |
| Total              | 75                  | 100.00         |

Source: survey data.

Cost-efficiency is expressed by the ratio of total revenue to total costs. This ratio shows how many monetary units of revenue are generated from one monetary unit of costs. This is the indicator of total business cost-efficiency. There are also partial indicators of cost-efficiency which put into the relation some narrow categories of revenues and costs (see more in: Žager *et al.* 2008, pp. 260–261). Table 4 shows the rankings of companies surveyed by this indicator. Please note that for four companies we did not have sufficient data available for calculating this ratio.

Table 4  
Surveyed companies per cost-efficiency

| Cost-efficiency | Number of companies | Structure in % |
|-----------------|---------------------|----------------|
| 0.9423 and less | 14                  | 14.74          |
| 0.9424 – 1.0043 | 14                  | 14.74          |
| 1.0044 – 1.0115 | 13                  | 13.68          |
| 1.0116 – 1.0242 | 14                  | 14.74          |
| 1.0243 – 1.0392 | 13                  | 13.68          |
| 1.0393 – 1.1220 | 14                  | 14.74          |
| 1.1221 and more | 13                  | 13.68          |
| Total           | 95                  | 100.00         |

Source: survey data.

Only twenty-one companies (21.21% of respondents) completed the information related to the volume of production, i.e. realized sales or services according to the company's type of business activity. The rest of the companies that did not want to fill in the information mainly justified such position by the confidentiality of data, while some companies attributed this to the lack of information. Table 5 shows the ranking of companies by productivity which is measured as the ratio of the volume of production/sales/services (depending on company's type of business activity) and the number of employees in a particular company. A more appropriate indicator for productivity measurement is the ratio of the volume of production to total expended labor or the ratio of total expended labor to the volume of production (see more in: Jovetić 2006, p. 23; Stojković 2001, pp. 898–899). An increase of the first ratio means an increase in productivity, while an increase of the second ratio means a decrease in productivity, and vice versa. However, we did not have information about total expended labor. This is the reason why we had to use the volume of production (sale or services) per one employee. We will try to eliminate this limitation in our further research.

Table 5  
Surveyed companies per productivity

| Productivity            | Number of companies | Structure in % |
|-------------------------|---------------------|----------------|
| 65.7439 and less        | 4                   | 19.05          |
| 65.7440 – 1351.4487     | 4                   | 19.05          |
| 1351.4487 – 9200.3854   | 3                   | 14.29          |
| 9200.3855 – 24666.6667  | 4                   | 19.05          |
| 24666.6668 – 81528.1934 | 3                   | 14.29          |
| 81528.1935 and more     | 3                   | 14.29          |
| Total                   | 21                  | 100.00         |

Source: survey data.

### 3.4. Statistical/econometric model

The statistical/econometric model used in this paper is a multiple regression model (Jovetić, Milanović 2007, pp. 524–533), since we assumed that a larger number of independent variables can affect the dependent variable. The average score of the assessment of the importance of IC in companies on a scale from 1 (not important at all) to 5 (very important) is 4.3636. The information is obtained from the responses of 44 respondents.

The average score of the importance of IC over sales is 4.50, based on the responses of 52 persons, representing 52.53% of respondents. The section of the questionnaire on internal control over sales contained six questions. The average score regarding the importance of IC over procurement is 4.64 and is derived from the answers of 53 persons (53.54% of respondents). The section of the questionnaire on IC over procurement contained five questions. Based on the responses of 55 persons (55.56% of respondents), the average score of the importance of IC over fixed assets is 4.45. The section of questionnaire on internal control over fixed assets contained six questions. The answers from 53 persons (53.54% of respondents) on the importance of IC over inventory made an average score of 4.51. The section of the questionnaire on IC over inventory included five questions. The average score concerning the importance of IC over cash handling is 4.68, based on the responses provided by 54 respondents, representing 54.54% of the total population. The section of the questionnaire on IC over cash handling contained five questions. The dependent variable in the model is the overall assessment of IC in a company, while the independent variables are: overall assessment of IC over sales per respondent, overall assessment of IC over procurement per respondent, overall assessment of IC over fixed assets per respondent, overall assessment of IC over inventory per respondent and overall assessment of IC over cash handling per respondent. The average scores given to IC for all sub-processes are almost the same (sales = 2.5531; procurement = 2.4367; fixed assets = 2.5636; inventory = 2.3806; cash = 2.3396); therefore the overall score was obtained by adding the scores of the sub-processes. In addition to the abovementioned regression model, three other models are specified where the dependent variables are cost-efficiency, profitability and productivity, while the independent variables are the same as in the first regression model.

The aim of the specified statistical/econometric model is to determine the shape, the type and the direction of the functional agreement between the dependent variable – overall assessment of IC in a company ( $y_1$ ) and the independent variables:

- overall assessment of IC over sales ( $x_1$ ),
- overall assessment of IC over procurement ( $x_2$ ),
- overall assessment of IC over fixed assets ( $x_3$ ),
- overall assessment of IC over inventory ( $x_4$ ), and
- overall assessment of IC over cash handling ( $x_5$ );

that is, between dependent variable cost-efficiency ( $y_2$ ), profitability ( $y_3$ ) and productivity ( $y_4$ ) and the already mentioned independent variables. Hence,

we tested four regression models:  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$ , respectively. The zero hypotheses tested in the regression model are (Johnston, 1972, pp. 106–108):

- Functional dependences of the multi-dimensional smooth hypersurfaces are not statistically significant.
- The effects of individual independent variables are not statistically significant.
- There is no multicollinearity between the independent variables.
- There is no heteroskedasticity.
- There is no first-order autocorrelation.
- Random errors follow a normal distribution with expected value zero, and have constant variance, i.e.,  $\varepsilon: N(0, \sigma^2)$ .

A statistical/econometric analysis was used in the paper. In the first phase of the analysis, multivariate linear and nonlinear models were tested in order to determine the form of the effect of independent variables on the dependent variable. The following models were tested: multiple linear regression model, multiple log-log model, multiple linear-log model, multiple log-linear model and the multiple hyperbolic model. A stepwise regression was used for specifying the multidimensional regression model, which means that variables with the most significant effect on the dependent variable are selected at each step of the stepwise regression procedure (Tabachnick, Fidell 2014, p. 174; Jovetić, Jankovic 2012, p. 520). The bottom line is that in the last step of the procedure, the F-statistics of all variables in the model must be above the lower critical value (3.84), while for all the variables that were not introduced in the model the F-statistics must be below the lower critical value (2.71), according to the IBM SPSS Statistics 19 software. Multicollinearity, heteroskedasticity, autocorrelation and random errors assumption were tested in the steps described further on in the text.

#### **3.4.1. Regression model $R_1$ : dependent variable overall assessment of IC in a company**

In the first step we experimented with the abovementioned regression curves (Jovetić, Janković 2012, p. 522). Concerning the regression model  $R_1$ , a multiple linear regression model was selected since it produced the values in terms of coefficient of determination ( $R^2 = 0.946$ ) and Snedecor's F-statistic ( $F = 320.659$ ,  $p = 0.000$ ) had the highest values ( $F_{\text{lin-lin}} = 320.659 > F_{\text{log-log}} = 303.298 > F_{\text{log-lin}} = 277.570 > F_{\text{lin-log}} = 244.637 > F_{\text{hyp}} = 135.563$ ). Since  $F_{\text{lin-lin}} = 320.659 > F_{0.05;5;93} = 2.3123$  and since  $p = 0.000 < \alpha = 0.05$ ,

this means that the selected regression curve is statistically significant. All independent variables remain in the model because they have a statistically significant effect on the dependent variable, i.e. the values of the Student's t-statistic are greater than the theoretical value  $t_{(v;\alpha/2)}$  and  $p = 0.000 < \alpha = 0.05$ . The area of rejecting null hypothesis and accepting the alternative one is  $|t| > t_{(v;\alpha/2)}$  and  $p \leq 0.05$ . Thus, the model has the following form:

$$y_1 = 0.104 + 1.153x_1 + 0.873x_2 + 0.839x_3 + 0.946x_4 + 1.120x_5.$$

Heteroskedasticity was detected in the model, i.e. there was a functional relationship between the absolute value of the residual  $|e|$  and the independent variables overall assessment of IC over fixed assets ( $x_3$ ), i.e.  $|e| = f(x_3)$  – which gives us the following form of dependence: log-log,  $F = 15.829 > 4$  and  $p = 0.000 < \alpha = 0.05$ . All the variables were divided by the absolute value of the model's residual. Heteroskedasticity was eliminated by regression. After eliminating heteroskedasticity, the model showed a very high value of variance inflation factor – VIF (Pallant, 2011, p. 160; Tabachnick, Fidell 2014, pp. 122–125), which indicated that there was a high correlation between the independent variables. By the gradual elimination of independent variables from the model, VIF decreased, however its value still remained greater than the critical value, thus there still existed a high degree of correlation between the independent variables. In this regard, we specified two-dimensional regression models (Jovetić, Milanović 2007, pp. 478–492). We had to reformulate the first main hypothesis. In the other words, we have formulated the five following hypotheses:

1. *Null*: There is no statistically significant effect of the independent variable – the assessment of IC over sales on the dependent variable – the overall assessment of IC in the company. *Alternative*: There is a statistically significant effect of the independent variable – the assessment of IC over sales on the dependent variable – the overall assessment of IC in the company.
2. *Null*: There is no statistically significant effect of the independent variable – the assessment of IC over procurement on the dependent variable – the overall assessment of IC in the company. *Alternative*: There is a statistically significant effect of the independent variable – the assessment of IC over procurement on the dependent variable – the overall assessment of IC in the company.
3. *Null*: There is no statistically significant effect of the independent variable – the assessment of IC over fixed assets on the dependent

variable – the overall assessment of IC in the company. *Alternative:* There is a statistically significant effect of the independent variable – the assessment of IC over fixed assets on the dependent variable – the overall assessment of IC in the company.

4. *Null:* There is no statistically significant effect of the independent variable – the assessment of IC over the inventory on the dependent variable – the overall assessment of IC in the company. *Alternative:* There is a statistically significant effect of the independent variable – the assessment of IC over the inventory on the dependent variable – the overall assessment of IC in the company.
5. *Null:* There is no statistically significant effect of the independent variable – the assessment of IC over cash handling on the dependent variable – the overall assessment of IC in the company. *Alternative:* There is a statistically significant effect of the independent variable – the assessment of IC over cash handling on the dependent variable – the overall assessment of IC in the company.

For the purpose of the first two-dimensional regression model, where the dependent variable is  $y_1$ , and the independent variable  $x_1$  (overall assessment of IC over sales), the linear-linear model was selected. Snedecor's F-statistic is 86.551 and is greater than the theoretical value  $F_{0.05;1;96} = 3.9402$ , and its statistical significance is  $p = 0.000 < \alpha = 0.05$ , which tells us that the two-dimensional curve is statistically significant. The independent variable has the effect on the dependent variable since the absolute value of the Student's t-statistic (9.3030) is greater than the theoretical value (1.9850), and  $p = 0.000$ . The coefficient of determination  $R^2 = 0.4740$ , which means that 47.40% of the total variation is explained by the variations of the independent variable overall assessment of IC over sales. The model has the following form:  $\hat{y}_1 = 4.405 + 3.053x_1$ . Statistics related to this regression model are presented in Tables 6, 7 and 8.

Table 6  
Statistics of the first two-dimensional regression model (I)

**Model summary<sup>b</sup>**

| Model | R                 | R square | Adjusted R square | Std. error | Durbin-Watson |
|-------|-------------------|----------|-------------------|------------|---------------|
| 1     | .689 <sup>a</sup> | .474     | .469              | 1.2411898  | 1.907         |

Notes: <sup>a</sup> Predictors: (Constant). IC over SALES; <sup>b</sup> Dependent variable: overall assessment of the importance of IC in a company

Source: survey data.



Table 7  
Statistics of the first two-dimensional regression model (II)

| ANOVA <sup>b</sup> |            |                |    |             |        |                   |
|--------------------|------------|----------------|----|-------------|--------|-------------------|
|                    | Model      | Sum of squares | df | Mean square | F      | Sig.              |
| 1                  | Regression | 133.337        | 1  | 133.337     | 86.551 | .000 <sup>a</sup> |
|                    | Residual   | 147.893        | 96 | 1.541       |        |                   |
|                    | Total      | 281.230        | 97 |             |        |                   |

Notes: <sup>a</sup> Predictors: (Constant). IC over SALES; <sup>b</sup> Dependent variable: overall assessment of the importance of IC in a company

Source: survey data.

Table 8  
Statistics of the first two-dimensional regression model (III)

| Coefficients <sup>a</sup> |               |                             |            |                           |       |      |
|---------------------------|---------------|-----------------------------|------------|---------------------------|-------|------|
|                           | Model         | Unstandardized coefficients |            | Standardized coefficients | t     | Sig. |
|                           |               | B                           | Std. error | Beta                      |       |      |
| 1                         | Constant      | 4.405                       | .847       |                           | 5.200 | .000 |
|                           | IC over SALES | 3.053                       | .328       | .689                      | 9.303 | .000 |

Note: <sup>a</sup> Dependent variable: overall assessment of the importance of IC in a company

Source: survey data.

*Testing for heteroskedasticity.* In terms of heteroskedasticity testing, Geisler's method was applied, which means that the absolute value of the residuals is regressed against the independent variable (Mladenović, Petrović 2011, pp. 169–178). We experimented with all the above mentioned curves. The log-linear curve was found to be most suitable. The value of its F-statistic is 2.5020, which is less than 4, wherein  $p = 0.117 > \alpha = 0.05$ . This leads to the conclusion that there is no heteroskedasticity.

*Testing for first-order autocorrelation.* The Durbin-Watson d-statistic was calculated and its value is 1.9070. Since  $d > d_g$  ( $1.9070 > 1.6900$ ), it can be concluded that there is no positive first-order autocorrelation. Bearing in mind that  $d < 4 - d_g < 4 - d_a$  ( $1.9070 < 2.3100 < 2.3500$ ), it is evident that there is no negative first-order autocorrelation in the model.

*Random errors assumption.* Because the size of the sample is greater than 50 ( $n = 99$ ), testing the assumptions on the normality of random errors was carried out by using the Kolmogorov–Smirnov test (Tabachnick and Fidell 2014, pp. 198–203, Pallant 2011, pp. 61–65). Bearing in mind that  $p = 0.030$

$< \alpha = 0.05$ , the empirical distribution of random errors cannot be approximated with normal distribution. However, since the size of the sample is greater than 30, we conclude, based on the central boundary theorem, that the distribution of random error can be approximated with the normal distribution. The expected value of the random error is zero.

*Coefficient of elasticity.* The elasticity coefficient was determined in the following way:

$$Ex_i(y_i) = \frac{b_1 x_1}{b_0 + b_1 x_1}. \quad (1)$$

In our case, elasticity coefficient is 0.64, which means that if the overall assessment of IC over sales will increase/decrease by 1%, the overall assessment of IC in a company will change in the same direction by 0.64%.

In the second two-dimensional regression model, where the dependent variable is  $y_1$ , and the independent variable  $x_2$  (overall assessment of IC over procurement), a log-linear model was selected. Snedecor's F-statistic is 60.718 and is greater than the theoretical value  $F_{0.05;1;96} = 3.9402$ , and its statistical significance is  $p = 0.000 < \alpha = 0.05$ , which means that the two-dimensional regression curve is statistically significant. The independent variable has an effect on the dependent variable, since the absolute value of the Student's t-statistic (7.7920) is greater than the theoretical value (1.9850) and  $p = 0.000$ . The coefficient of determination  $R^2 = 0.387$ . The model has the following form:  $\hat{y}_1^* = 0.885 + 0.081x_2$ , where  $\hat{y}_1^* = \log y_1$ .

*Testing for heteroskedasticity.* Since Snedecor's F statistic is 3.3910, which is less than 4, and  $p = 0.069 > \alpha = 0.05$ , this means that there is no heteroskedasticity.

*Testing for first-order autocorrelation.* The Durbin-Watson d-statistic was determined and its value is 1.3810. Since  $d < d_d < d_g$ , we conclude that first-order autocorrelation is present in the model. Then we continued our testing by eliminating correlation. We transformed both the dependent and the independent variable in the following way:  $y_{1t}^* = y_{1t} - \rho y_{1,t-1}$ ,  $x_{2t}^* = x_{2t} - \rho x_{2,t-1}$ , where  $\rho$  stands for the estimate of the autocorrelation coefficient (Mladenović, Petrović 2011, pp. 178–189; Johnston 1972, pp. 192–199). After that, the Durbin-Watson d-statistic was determined which was 2.001 ( $d > d_g$  which meant that autocorrelation had been eliminated). After eliminating autocorrelation, the model was in the following form:  $\hat{y}_1^* = 6.139 + 9.027x_2^*$ . The value of the F-statistic increased (from 60.718 to 62.572), while  $p=0.000$ . A slight increase in Student's t-statistic was also observed (from 7.7920 to 7.910), while  $p=0.000$ . The coefficient of determination

equals 0.395 and this indicates that 39.5% of the dependent variable ( $y_1$ ) variation is explained by variations of the independent variable overall assessment of the IC over procurement.

*Random error assumption.* Because the sample is greater than 50 ( $n = 99$ ), testing the assumptions on the normality of random errors was carried out by using the Kolmogorov–Smirnov test. Considering that  $p = 0.012 < \alpha = 0.05$ , the empirical distribution of random error cannot be approximated with the normal one. However, since the sample is greater than 30, based on the central boundary theorem, we conclude that the distribution of random error can be approximated with normal one. The arithmetic mean of the random error is zero.

*Coefficient of elasticity.* We used formula (1) to calculate this coefficient. In our case the coefficient of elasticity is 0.27 and this indicates that if the overall assessment of IC over procurement will increase by 1%, the overall assessment of the IC in a company will increase by 0.27%, and also if the overall assessment of IC over procurement will decrease by 1%, the overall assessment of the IC in a company will decrease by 0.27%.

In the third two-dimensional regression model, where the dependent variable is  $y_1$ , and independent variable  $x_3$  (assessment of IC over fixed assets), a linear-linear model was selected:  $\hat{y}_1 = 5.772 + 2.507x_3$ . Heteroskedasticity was not detected in this model. As for the positive autocorrelation, the test is undefined since test  $d_d \leq d < d_g$ . From  $d < 4 - d_g < 4 - d_d$  we conclude that there is no negative autocorrelation. The assumption on random error is confirmed. Coefficient of elasticity was calculated by using formula (1), as in all previous cases. In this case, coefficient of elasticity is 0.53. Hence, if the average assessment of the IC over fixed assets increases/decreases by 1%, the overall assessment of IC in a company would follow the same direction and increase/decrease by 0.53%.

In the fourth two-dimensional regression model, where  $y_1$  is the dependent variable, and  $x_4$  the independent variable (assessment of IC over inventory), a linear-linear model was chosen:  $\hat{y}_1 = 6.330 + 2.465x_4$ . Regarding positive autocorrelation, the test proved undefined since  $d_d < d < d_g$ . Also the negative autocorrelation was not detected. The assumption on the random error is confirmed. Coefficient of elasticity, calculated by the formula (1) is 0.48, which means that if the average assessment of IC over inventory will change by 1%, the overall assessment of IC in a company will also be changed in the same direction by 0.48%.

Concerning the last, fifth, two-dimensional regression model where the dependent variable is  $y_1$ , and the independent variable  $x_5$  (assessment of IC

over cash handling), a linear-linear model was selected:  $\hat{y}_1 = 7.128 + 2.168x_5$ . There is no heteroskedasticity in this two-dimensional regression model. In addition, there is no positive first-order autocorrelation, as well as no negative first-order autocorrelation. The assumption on the random error is confirmed. The coefficient of elasticity is 0.42, therefore if the average assessment of cash internal control increases by 1%, the overall assessment of IC in a company will increase by 0.42%, and also if the average assessment of IC over cash handling decreases by 1%, the overall assessment of the IC in a company will decrease by 0.42%.

Based on the conducted analysis, it can be concluded that all the specified independent variables have a statistically significant effect on the dependent variable overall assessment of IC in a company, therefore all the five reformulated alternative hypothesis are confirmed.

### 3.4.2. Regression model $R_2$ – dependent variable cost-efficiency

By examining the functional interdependence between cost-efficiency as the dependent variable, and the average scores of the overall assessments of internal controls over sales, purchasing, fixed assets, inventory and cash handling as independent variables, we concluded that none of the regression curves were statistically significant, and that the effect of individual independent variables was not statistically significant because all the values of F-statistic were lower than the critical value and their probability was  $p > \alpha$ . Furthermore, the absolute values of Student's t-statistic were lower than the theoretical values, while their probabilities were  $p > \alpha$ . In this case, the second main null hypothesis  $H_{20}$  is confirmed. This means that there is no statistically significant effect of the independent variables: assessment of IC over sales, assessment of IC over procurement, assessment of IC over fixed assets, assessment of IC over inventory and assessment of IC over cash handling on dependent variable cost-efficiency.

### 3.4.3. Regression model $R_3$ – dependent variable rate of return

In this case the linear regression model was chosen (linear-linear), since it showed the highest Snedecor's F-statistic. As  $F_{\text{lin-lin}} = 3.381 > F_{0.05;2;71} = 3.1258$  and since  $p = 0.0400 < \alpha = 0.05$ , the main alternative hypothesis is accepted which further indicated that the selected regression curve is statistically significant. The variables  $x_4$  (assessment of IC over inventory) and  $x_5$  (assessment of IC over cash handling) remained in the model and

have a statistically significant effect on the dependent variable. Consequently, we had to reformulate the third main hypothesis in the following way:

- *Null*: There is no a statistically significant effect of the independent variables – assessment of IC over inventory and assessment of IC over cash handling on the dependent variable – profitability.
- *Alternative*: There is a statistically significant effect of the independent variables – assessment of IC over inventory and assessment of IC over cash handling on the dependent variable – profitability.

It was confirmed that there is heteroskedasticity in the model, i.e. that there is a functional relationship between the absolute value of the residual  $|e|$  and the independent variable overall assessment of IC over cash handling ( $x_5$ ), i.e.  $|e| = f(x_5)$  – where the shape of dependence is a hyperbola:  $F = 9.0760 > 4$  and  $p = 0.0040 < \alpha = 0.05$ . All variables were divided by the absolute value of the residual in order to eliminate heteroskedasticity. After the heteroskedasticity had been eliminated, only one independent variable remained in the model –  $x_4$  (overall assessment of IC over inventory). The regression line is statistically significant ( $F = 27.0360$ ;  $p = 0.000$ ). The coefficient of determination is  $R^2 = 0.273$  and this indicates that 27.3 % of the variability of assessment of IC over profitability is explained by the variability of the assessment of IC over the inventory. The final model used for purposes of statistical analysis has the following form:  $\hat{y}_3^* = 2.288 + 0.5890x_4^*$ . Based on the conducted analysis and obtained results, the alternative hypotheses formulated in this model can be partially supported because only IC over inventory have statistically significant effect on the profitability.

There is neither a positive nor a negative first-order autocorrelation in the model. The random error assumption is confirmed, while the coefficient of elasticity calculated by using formula (1) is:  $Ex_4(y_3) = 0.39$ , which means that a 1% change in the average assessment of IC over inventory induces a 0.39% change in profitability in the same direction.

#### 3.4.4. Regression model R<sub>4</sub> – dependent variable productivity

By examining the functional interdependence between productivity as the dependent variable and the overall assessments of internal controls over sales, purchasing, fixed assets, inventory and cash handling, as independent variables, we concluded that linear-linear, log-log, linear-log and hyperbolic regression curves were not statistically significant. In addition the effect of

individual independent variables was also not statistically significant since all the values of F-statistic were less than the critical value and the absolute value of the Student's t-statistic was less than the theoretical value. In the case of the log-linear regression curve, we noted the following: in the second iteration, after the elimination of independent variable with the lowest t-statistic, the empirical value of Snedecor's F-statistic ( $F = 2.4330 < F_{0.05;4;16} = 3.0069$ ;  $p = 0.0900 > \alpha = 0.05$ ) was lower than the theoretical one, which means that the regression line is not statistically significant. However, there was a statistically significant effect of variable  $x_4$  (overall assessment of IC over inventory) on the dependent variable ( $|t| = 2.8630 > t_{(v;\alpha/2)} = 2.4729$ ;  $p = 0.0110 < \alpha = 0.05$ ). The remaining independent variables did not have a statistically significant effect. We had to reformulate the fourth main hypothesis in the following way:

- *Null*: There is no statistically significant effect of the independent variable – the assessment of IC over inventory on the dependent variable – productivity.
- *Alternative*: There is a statistically significant effect of the independent variable – the assessment of IC over inventory on the dependent variable – productivity.

The coefficient of determination  $R^2 = 0.378$  showing that 37.8% of the variation in productivity was determined by the variations in the overall assessment of IC over inventory. In the last iteration, when the all the variables that have not an effect were eliminated from the model, the independent variable overall assessment of IC over inventory remained without a statistically significant effect ( $(|t| = 1.623 < t_{(v;\alpha/2)} = 2.4729$ ;  $p = 0.121 > \alpha = 0.05$ ). Furthermore, the regression also did not have a statistically significant effect  $F = 2.634 < F_{0.05;4;16} = 3.0069$ ;  $p = 0.121 > \alpha = 0.05$ ). However, since in the second iteration the independent variable overall assessment of IC over inventory had a statistically significant effect, and the observed statistics were close to the limit, we decided to use the specified model for further statistical inference. We specified a two-dimensional log-linear regression. This model has the following form:  $\hat{y}_4^* = 5.901 - 0.9360x_4$ , where  $\hat{y}_4^* = \log \hat{y}_4$ .

There is no heteroskedasticity in the model. As far as the autocorrelation is concerned, there is neither a positive nor a negative first-order autocorrelation.

The coefficient equals  $-2.23$ , indicating that if the average score of IC over inventory increases/decreases by 1%, the productivity logarithm will change in the opposite direction by 2.23%.

### 3.5. Summary of the research findings

Based on the research findings, the following can be concluded:

- In an ideal case, a company gets the following scores: cost-efficiency 4, profitability 60.3843%, productivity 1185714.2850, overall assessment of the importance of IC in a company 15, score of IC over sales 3, score of IC over procurement 3, score of IC over fixed assets 3, score of IC over inventory 3 and score of IC over cash handling 3. The score regarding the assessment of the overall importance for the company's operations is 5, and the score regarding the assessment of the importance of IC over individual sub-processes is approximately 5.
- In terms of an average company, its cost-efficiency is 1.0339, profitability 7.7832%, productivity 101577.2065, while the overall score of the importance of IC in a company is 12.1991, the score of IC over sales 2.5531, the score of IC over procurement 2.4367, the score of IC over fixed assets is 2.5636, the score of IC over inventory 2.3806 and the score of IC over cash handling 2.3396. The score regarding the assessment of the overall importance for the company's operations is 4.3636, and the score regarding the assessment of the importance of IC over individual sub-processes is approximately 4.50.
- Concerning the company with the poorest scores, we obtained the following results: cost-efficiency 0.2117, profitability 0.0305%, productivity 5.5250, overall importance of IC in a company 6.8333, IC over sales 1.3333, IC over procurement 0.8000, IC over fixed assets 1.3333, IC over inventory 1.2, and IC over cash handling 1. The score regarding the assessment of the overall importance for the company's operations is 1, and the score regarding the assessment of the importance of IC over individual sub-processes is approximately 1.
- All the independent variables have a statistically significant effect on the overall assessment of the importance of IC in a company, yet, according to the elasticity coefficients, the greatest statistically significant effect is exerted by the IC over sales ( $Ex_1(y_1)=0.64$ ) and IC over fixed assets. ( $Ex_3(y_1)=0.53$ ).
- The results of other available studies show the positive relationship between internal control and financial performances (Muraleetharan 2011; Shokoohi *et al.* 2015), the significant influence of internal control on financial performance (Mwakimasinde *et al.* 2014; Nyakundi *et al.* 2014), and the significant correlation between internal control environment and financial performances of companies (Kinyua *et al.*

2015). There are also research results that there is no significant relationship between internal control activities and financial performance (Ejoh, Ejom 2014). The research results presented in this paper show that none of the assessments of the ICs over sub-processes have a statistically significant effect on cost-efficiency. Only the assessment of IC over inventory has a statistically significant effect on both profitability and productivity.

- The coefficient of elasticity shows that if the score of IC over inventory increases/decreases by 1%, the profitability of the company will increase/decrease by 0.30%; also if the score IC over inventory increases/decreases by 1%, the productivity logarithm will decrease/increase by 2.23%. The explanation for the negative value of the coefficient of elasticity is that besides cash, inventory is also particularly vulnerable to theft and various forms of manipulation. The high level of inventory protection requires, in addition to costs, the commitment of a large number of employees, which can lead to a reduction in production volume due to their involvement in the control, and therefore result in a decline in productivity.

## CONCLUSION

Based on the conducted research, the analysis of the survey and the results of the statistical/econometric analysis, the recommended follow-up measures, activities and directions of further analysis are as follows:

- Appropriate measures and actions should be taken to inform the managers of the surveyed companies as well as the financial officers, about the obtained results, i.e. the significance and importance of internal control and its effects on the specified business results. Such information should also be disseminated to the overall business sector.
- All the surveyed companies should be informed about their results obtained by means of comparative analysis; the achieved level in terms of the overall assessment of the importance and significance of IC, as well as the IC of each process, should also be communicated. Furthermore, the measures and activities aimed at improving overall IC and IC over sub-processes should be recommended.
- The authors will conduct further analysis which will include a comparative analysis of the responses to individual questions, i.e. the analysis of arithmetic means concerning the scores given by individual



companies per their legal form and per type of activity, as well as risk analysis in terms of these two mentioned features.

- An analysis of the effect of the overall assessment of the importance of IC in a company on the selected performance elements, as well as testing the differences between the individual regression curves specified for companies by their legal form and type of activity will be carried out. This will allow for defining the measures and actions to improve IC, its sub-processes and its effect on the company's performance.
- Our further research should also include some other components of internal control (e.g. monitoring and risk assessment) and some other financial indicators (e.g. liquidity ratios, solvency ratios, efficiency ratios and investment ratios).

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## APPENDIX (Questionnaire)

### QUESTIONNAIRE ABOUT INTERNAL CONTROL

#### GENERAL QUESTIONS ABOUT COMPANY

1. Name and head office of company: .....
2. Type of business: a) manufacturing      b) service      c) trade
3. Legal form of company:
  - a) joint stock company
  - b) ltd.
  - c) limited partnership
  - d) partnership company
  - e) family business
  - f) public utility company
4. Further information:
  - a) number of employees in 2012
  - b) total revenues in 2012
  - c) total assets in 2012
  - d) total costs in 2012
  - e) profit/loss in 2012
  - f) volume of production/sale/services in 2012

#### GENERAL QUESTIONS ON INTERNAL CONTROL

Mark 1-5 the importance of organizing internal control in your company, (1-not at all, 5-very much) ....., then answer the following questions:

- 1.1. Internal control is carried out according to one of the following ways:
  - a) as an independent organizational unit
  - b) by the senior executive(s)
  - c) by the accounting managers/departments
  - d) .....

To continue filling the questionnaire, you need to use additional explanation:

- 0 – means "NOT HAVING AN OPINION"  
 1 – means "STRONGLY DISAGREE"  
 2 – means "DISAGREE"  
 3 – means "AGREE"  
 4 – means "STRONGLY AGREE"

|                                                                                                                                                                                                                                                                                             |   |   |   |   |   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|
| 1.2. Establishing organizational structure was of great importance for defining the lines of authority and responsibility.                                                                                                                                                                  | 0 | 1 | 2 | 3 | 4 |
| 1.3. Existence of the transaction limits, in accordance with the hierarchical position in the company, represents a significant control measure.                                                                                                                                            | 0 | 1 | 2 | 3 | 4 |
| 1.4. Separation of duties regarding transaction authorization, physical protection of assets and documenting and accrual of transactions contributed to the reliability of financial reporting.                                                                                             | 0 | 1 | 2 | 3 | 4 |
| 1.5. Mandatory paid vacations/leave for accounting and finance staff represented a good control measure regarding detecting illegal activities, since it is supposed that such activities could only be discovered provided that the relevant employees are absent from work for some time. | 0 | 1 | 2 | 3 | 4 |
| 1.6. Separate chart of accounts may be an important control instrument.                                                                                                                                                                                                                     | 0 | 1 | 2 | 3 | 4 |
| 1.7. Rulebook for accounting and financial reporting regulated the functioning of the accounting department in your companies.                                                                                                                                                              | 0 | 1 | 2 | 3 | 4 |

1.8. Specify main types of controls implemented in your company:

- a) .....
- b) .....
- c) .....

## QUESTIONS ABOUT INTERNAL CONTROLS OF SPECIFIED TRANSACTIONS AND TYPES OF ASSETS OF COMPANY

### 2. SALES

Mark 1-5 the importance of internal control over sales for your company (1-not at all, 5-very much) ....., then answer the following questions:

|                                                                                                                           |            |        |                |                 |
|---------------------------------------------------------------------------------------------------------------------------|------------|--------|----------------|-----------------|
| 2.1. Do you keep records about transportation (shipping)?                                                                 | NOT AT ALL | RARELY | YES, PARTIALLY | YES, ABSOLUTELY |
| 2.2. Is the document about shipping controlled by a person responsible in order to ensure invoicing of every dispatching? | NOT AT ALL | RARELY | YES, PARTIALLY | YES, ABSOLUTELY |
| 2.3. Do you balance analytically and synthetically records of customers?                                                  | NOT AT ALL | RARELY | YES, PARTIALLY | YES, ABSOLUTELY |

|                                                                        |            |        |                |                 |
|------------------------------------------------------------------------|------------|--------|----------------|-----------------|
| 2.4. Do you send monthly information to your customers for balancing ? | NOT AT ALL | RARELY | YES, PARTIALLY | YES, ABSOLUTELY |
| 2.5. Are invoices previously numbered?                                 | NOT AT ALL | RARELY | YES, PARTIALLY | YES, ABSOLUTELY |
| 2.6. Are the customers records and payments segregated?                | NOT AT ALL | RARELY | YES, PARTIALLY | YES, ABSOLUTELY |

### 3. PROCUREMENT

Mark 1-5 the importance of internal control over procurement for your company (1-not at all, 5-very much) ....., then answer the following questions:

|                                                                              |            |        |                |                 |
|------------------------------------------------------------------------------|------------|--------|----------------|-----------------|
| 3.1. Do only some persons have the authority to send an order?               | NOT AT ALL | RARELY | YES, PARTIALLY | YES, ABSOLUTELY |
| 3.2. Is there a limit on amount of money for ordering?                       | NOT AT ALL | RARELY | YES, PARTIALLY | YES, ABSOLUTELY |
| 3.3. Is there place of delivery on the purchase order?                       | NOT AT ALL | RARELY | YES, PARTIALLY | YES, ABSOLUTELY |
| 3.4. Is there an indication on the purchase order where to send the invoice? | NOT AT ALL | RARELY | YES, PARTIALLY | YES, ABSOLUTELY |
| 3.5. Are documents about ordering previously numbered?                       | NOT AT ALL | RARELY | YES, PARTIALLY | YES, ABSOLUTELY |

### 4. FIXED ASSETS

Mark 1-5, mark importance of internal control over fixed assets for your company (1-not at all, 5-very much) ....., then answer the following questions:

|                                                                                                                     |            |        |                |                 |
|---------------------------------------------------------------------------------------------------------------------|------------|--------|----------------|-----------------|
| 4.1. Is there analytical evidence from every types of fixed assets?                                                 | NOT AT ALL | RARELY | YES, PARTIALLY | YES, ABSOLUTELY |
| 4.2. Is the responsibility of assets bookkeeping separate from the responsibility for physical control over assets? | NOT AT ALL | RARELY | YES, PARTIALLY | YES, ABSOLUTELY |

|                                                                                                                   |            |        |                |                 |
|-------------------------------------------------------------------------------------------------------------------|------------|--------|----------------|-----------------|
| 4.3. Is access for assets and usage of assets limited to an authorized person?                                    | NOT AT ALL | RARELY | YES, PARTIALLY | YES, ABSOLUTELY |
| 4.4. Are assets protected from occurrence of damage and theft?                                                    | NOT AT ALL | RARELY | YES, PARTIALLY | YES, ABSOLUTELY |
| 4.5. Does the procedure of purchase of fixed assets require permission from the board of directors or management? | NOT AT ALL | RARELY | YES, PARTIALLY | YES, ABSOLUTELY |
| 4.6. Are there established procedures for determining depreciation method and evaluation of useful life?          | NOT AT ALL | RARELY | YES, PARTIALLY | YES, ABSOLUTELY |

## 5. INVENTORIES

Mark 1-5, mark importance of internal control over inventories for your company (1-not at all, 5-very much) ....., then answer the following questions:

|                                                                                                                                     |            |        |                |                 |
|-------------------------------------------------------------------------------------------------------------------------------------|------------|--------|----------------|-----------------|
| 5.1. Are the inventories reasonably protected from damage and theft?                                                                | NOT AT ALL | RARELY | YES, PARTIALLY | YES, ABSOLUTELY |
| 5.2. Is staff control over inventories separate from purchase, entrance, delivery and bookkeeping?                                  | NOT AT ALL | RARELY | YES, PARTIALLY | YES, ABSOLUTELY |
| 5.3. Does the staff for controlling inventories have responsibility for controlling the entrance and exit from warehouse?           | NOT AT ALL | RARELY | YES, PARTIALLY | YES, ABSOLUTELY |
| 5.4. Do you physically count inventories at least once a year?                                                                      | NOT AT ALL | RARELY | YES, PARTIALLY | YES, ABSOLUTELY |
| 5.5. Are the documents issued by staff independently from delivery, entrance, bookkeeping, production and control over inventories? | NOT AT ALL | RARELY | YES, PARTIALLY | YES, ABSOLUTELY |

## 6. CASH

Mark 1-5 the importance of internal control over cash for your company (1-not at all, 5-very much) ....., then answer the following questions:

|                                                                                                                                                      |               |        |                   |                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------|-------------------|--------------------|
| 6.1. Is there segregation of duties in order to ensure that person who makes the list of payments does not to do other activities regarding payment? | NOT<br>AT ALL | RARELY | YES,<br>PARTIALLY | YES,<br>ABSOLUTELY |
| 6.2. Is payment carried out by authorized person(s)?                                                                                                 | NOT<br>AT ALL | RARELY | YES,<br>PARTIALLY | YES,<br>ABSOLUTELY |
| 6.3. Do you prepare cash projections?                                                                                                                | NOT<br>AT ALL | RARELY | YES,<br>PARTIALLY | YES,<br>ABSOLUTELY |
| 6.4. Is the cash in the cash desk adequately secured?                                                                                                | NOT<br>AT ALL | RARELY | YES,<br>PARTIALLY | YES,<br>ABSOLUTELY |
| 6.5. Is balancing bank's accounts performed by persons who are not responsible for handling cash?                                                    | NOT<br>AT ALL | RARELY | YES,<br>PARTIALLY | YES,<br>ABSOLUTELY |