

IMPACTS OF IMPLEMENTED CHANGES ON BUSINESS PERFORMANCE OF SLOVAK ENTERPRISES

Sujová, A., Simanová, Ľ.

Andrea Sujová / Technical University in Zvolen, Faculty of Wood Sciences and Technology, Department of Economics, Management and Business, T. G. Masaryka 24, 960 01 Zvolen, Slovakia. Email: andrea.sujova@tuzvo.sk

Ľubica Simanová / Technical University in Zvolen, Faculty of Wood Sciences and Technology, Department of Economics, Management and Business, T. G. Masaryka 24, 960 01 Zvolen, Slovakia. Email: lubica.simanova@tuzvo.sk

Abstract

The paper aims to investigate the relationship between performing changes and business performance represented by the return on equity (ROE) indicator, and to point out the importance of changes and their management in Slovak enterprises. Relevant data from enterprises in the Slovak Republic were obtained through an online research questionnaire. The evaluation of the questionnaire was carried out using the software program STATISTICA 12 CZ – Stat Soft. Inc. (2013). Mathematical-statistical methods were used to examine and evaluate the interrelationships and the effects of individual factors in the implementation of changes on business performance. Statistical analysis was performed through pivot tables. Pearson's chi-square test of independence was used to test the significance of the contingency coefficients, and Cramer's contingency coefficient was used for the intensity of dependence between the signs. The research results show that the business performance of Slovak enterprises is directly affected by surveyed aspects of implementing changes.

Implications for Central European audience: The results of our research into the current state of the performance of Slovak enterprises in various industry fields and the determination of its dependence on the areas of change, type of change, impulses for change and indicators assessing the effects of change are the main contribution to the development of scientific knowledge in the field of change management. The synergy of theoretical knowledge and detailed research results provides practical implications on how to achieve higher profitability through successful implementation of changes and monitoring their effects.

Keywords: Change management; business performance; return on equity

JEL Classification: L16, P47, L21

Introduction

Changes in the external and internal environment affect changes in business governance. Any change is a challenge for businesses to maintain a competitive advantage. Changes require a lot of energy to implement, which arises from both direct dialogue with customers

and the exchange of views with employees within the business hierarchy who are involved in the change. An important attribute of the change initiative is business management, which creates patterns of business success. The central role in change is played by top managers, who must be clear about the vision of change, consistently represent the future direction of change and provide the necessary freedom and framework for making changes. Middle management and top managers must also be prepared to learn, develop their ideas and behaviours, and take on new roles for effective change. For successful implementation of changes, it is necessary to focus on sufficient time in the preparation and implementation of the change, on consistent information of teams and formal and informal communication between team members.

Research focused on performance, performance management systems and concepts designed to measure, manage and increase the performance of enterprises in Slovak and Czech enterprises was carried out by Tuček and Zámečník (2007). The research of Rajnoha et al. (2013) was focused on measuring and managing business performance. The implementation of management tools, including change management, was the subject of research by Rigby and Bilodeau (2015). Jarrel (2017) examined the success of implementing changes. In the area of health studies, Harrison et al. (2021) explored success factors for implementing changes in supportive and authentic leadership, sponsorship, engaged staff, multidisciplinary teamwork, collaborative approach to work, strong communication behaviour and model, conflict resolution and capable employees with the ability to engage in further development. To fill the identified gap in existing research not only in Slovakia, focused on performance in connection with change management, we decided to conduct research in this area.

The success of change implementation depends on a thorough examination of the situation and consideration of the reasons for the change, definition of the type of change, as well as indicators for assessing the effects of the change on business performance.

The article aims to identify the dependence of business performance represented by the return on equity (ROE) indicator on the area of implemented change, type of change, impulses for change and indicators assessing the effects of change as well as to point out the importance of changes and their management in Slovak enterprises.

The research findings confirm the investigated relationship. The results achieved show that the economic performance of Slovak enterprises is directly affected by various changes implemented in more areas, type of change, level of process optimization, and monitoring the effects of changes using various indicators. It can help business practitioners realize the importance of implementing changes and achieve higher profitability through successful implementation of changes and monitoring of their effects.

1 Literature Review

The business environment today is characterized by rapid technological, economic, political and social changes. Flexible adaptation of enterprises to these changes provides a significant competitive advantage. Asikhia Olalekan et al. (2021) conclude that, by improving their readiness for change, enterprises can strengthen their adaptability mechanisms and build internal competencies, face future uncertainties or situations that cause change. In practice, the relationship between management and performance is highly dependent on accounting indicators or market measures, namely return on assets (ROA), return on equity

(ROE), labour productivity (LP), return on fixed assets (ROFA) and many others (Al-Matari et al., 2014).

The key factor in an organization's survival in the business environment is change and its dynamics. However, change is only needed if it is related to the organizational purpose and is in line with organizational values (Todnem By, 2020). Ford et al. (2021) argue that the effectiveness of leadership and the success of change is the result of the extent to which the configuration of the functions taken adequately addresses the various situations encountered by management. The need to implement changes and continuous improvement of the processing system in the enterprise is conditioned by internal and external organizational influences. Implementing change is a complex process that, on the one hand, brings a competitive advantage, but on the other hand, many enterprises do not achieve the expected results. Change is a process associated with both positive and negative effects. Several studies report that most change initiatives fail, with an estimated failure rate of 60-70% (Ashkenas, 2013; Jones et al., 2018). The identification of an appropriate model for implementing change depends on who initiates the change, how experienced teams or individuals are, and how much leadership an employee requires during the change process (Junnaid et al., 2020). While the leader's experience plays a key role in leading change, it must also be borne in mind that leaders themselves can be the beneficiaries of change. This option is especially important when leaders are not initiators of change, but rather executors, as in the case of externally imposed change (Heyden et al., 2017). At the same time, recipients of change may generally support a particular change initiative, but may also hinder its implementation in their work, as it may require complex adjustments to work behaviour and routines (Walk, 2022). Leaders can directly or indirectly influence the effects of change through their behaviour during change, their attitudes towards the content of change and their resistance to implementing change (Oreg & Berson, 2019). Managers support planned changes by applying new skills, performing new tasks effectively, purposeful and planned forms of conversation about change, as well as creating motivation to perform new tasks through the formation of employees' mental models (Blackman et al., 2019; Moon et al., 2019). Naslund and Norrman (2022) pointed out that the effects of change are reduced by a lack of commitment, involvement and support from top management, who are increasingly aware of the consequences of their lack of commitment and willingness to be more active in change projects. Errida and Lotfi (2021) cite 12 determinants of change success such as a clear vision and strategy for change, readiness for change and capacity for change, team performance change, change management activities, resistance management, effective and continuous communication, motivation of employees and agents of change, stakeholder involvement and commitment, leadership, strengthening and sustaining change, access to change and monitoring/measuring change. Mielcarz et al. (2018) demonstrate that working capital management is very important in optimizing business return on equity. Khan (2017) also argues that working capital management is a very important part of business finance, especially in the manufacturing sector, due to its direct impact on business performance, liquidity and return on equity. Prša (2020) explains that working capital management has an impact on an enterprise's wealth. Enterprises that invest more in working capital can expect lower business risk but adverse effects on return on equity and vice versa. Investment in information technology is an important factor influencing the outcome of changes concerning performance. Alghorbany et al. (2022) suggest that investing in IT technologies will bring added value that can improve business performance. Recently, appropriate investment in

information technology concerning business performance has become an obvious tool for an organization to gain a competitive advantage and survival in a dynamic business environment. Thakurta and Deb (2018) state that the right and appropriate investment in IT, which is in line with business goals, can help the enterprise improve its operational efficiency, reduce errors in the manual system, reduce costs and provide the enterprise with competitive advantages to increase business performance. From the management's point of view, performance is the desired result of the enterprise and an effective output confirming that the organization has achieved its goals. If key processes are innovative, this will affect business performance (Thennakoon et al., 2018). From this perspective, managing key processes in enterprises should be a priority for managers and enterprise owners. Gošnik and Stubelj (2022) argue that changes in business processes in less successful enterprises are subject to much greater control. Due to the limited financial situation of such enterprises, they have to be more careful when making decisions and are forced to put the financial effects of decision-making on process change as the main goal. Key performance indicators (KPIs) are related to the internal operation of the process, the setting of key input parameters of the operation, sampling, calculation, analysis and output (Gupta & Bari, 2017). It is the basis of enterprise performance management and is a quantifiable target management index that can break down top-level objectives into specific implementation and execution sub-objectives and use them to measure performance (Tao & Sijun, 2021). The ROE (return on equity) indicator is one of the complex measures of an enterprise's financial performance on which operational, investment and financial decisions depend. ROE is a basic test of how effectively enterprise management uses investors' money. ROE shows whether management is growing the enterprise's value at an acceptable rate. Also, it measures the rate of return that the firm earns on stockholders' equity (Kim, 2016). The main determinants of return on equity are the price-to-earnings ratio, i.e., the sum of asset turnover and the equity multiplier (Bunea et al., 2019). In addition, Pouraghajan et al. (2012) document a significant direct relationship between tangible assets and equity, the size of the enterprise and the turnover of total assets on the one hand, and the growth potential of the enterprise with ROE on the other. Faozi et al. (2019) found a significant positive relationship between asset management and ROE.

2 Materials and Methods

Relevant data from the field of change management and information from enterprises in various sectors of the economy in the Slovak Republic were obtained through an online research questionnaire. The initial database of enterprises was the data of the Statistical Office of the Slovak Republic, which was subsequently checked against Internet databases to select existing enterprises. The main sample for the research was a database of 524 enterprises; the sample comprised 189 manufacturing enterprises, 114 trading enterprises, 204 service enterprises and 17 distribution and transport enterprises. The enterprise size was classified based on the average number of employees. The questionnaire questions were answered by 237 enterprises with 0-10 employees, 65 enterprises with 11-20 employees, 74 enterprises with 21-50 employees, 79 enterprises with 51-250 employees, and 69 enterprises with more than 250 employees. The research aimed to investigate the aspects of change management in Slovak enterprises and to identify the relationships and impacts of changes on business performance. According to the calculation of the minimum statistical research sample via the online application at www.raosoft.com, this is a representative sample with 92% confidence and 8% standard deviation. The questionnaire

consisted of five general, classification questions and 30 business and management questions. The questionnaire was published online, and the data were collected in the first half of 2021. This paper analyses the detailed results of the questionnaire survey among Slovak enterprises. Mathematical-statistical methods were used to examine and evaluate the interrelationships and the effects of individual factors in the implementation of changes on the performance of enterprises. In the research, we used selected quantities of descriptive statistics for one variable in the analysis, such as abundances, relative proportions and cumulative abundances. The evaluation of the questionnaire was carried out using the software program STATISTICA 12 CZ – Stat Soft. Inc. (2013), where the imported database was created in MS Excel. We used pivot tables for statistical analysis. A pivot table is a method of organizing and analysing data by groups, categories or classes that allows their comparison. It combines the frequency distribution of two variables and represents an extension of a simple frequency table (Rimančík, 2007).

The results of the analysis of pivot tables consist of selected statistical indicators, namely Pearson's chi-square and the level of statistical significance "p". Pearson's chi-square is the most common test of the significance of a relationship between qualitative variables. The test is based on the calculation of expected abundances (i.e., the abundances we expected if there were no relationship between the variables). The chi-square test of independence can be used to test the significance of contingency coefficients. A precondition for the use of the chi-square test is the rule that the expected frequencies must not be very small, less than 5. The level of significance was chosen at the level of 5%:

- If the p-value is < 0.05 (5%) = H₀ is rejected, which means that there is no dependence between the characters A and B.
- If the p-value is > 0.05 (5%) = H₀ is not rejected, which means that there is a dependence between the characters A and B.

The comparison of found and theoretical frequencies is the basic idea of the χ^2 test of good agreement. The null hypothesis:

H₀: There is no dependence (contingency) between the categorical features A and B compared to the alternative hypothesis.

H₁: There is a dependence (contingency) between the categorical features A and B and we verify it with a test characteristic called a square contingency:

$$\chi^2 = \sum_{j=1}^s \sum_{i=1}^r \frac{(O_{ij} - E_{ij})^2}{E_{ij}} \quad (1)$$

where: E_{ij} - expected abundances

O_{ij} - observed abundances

Pearson contingency coefficient:

$$C = \sqrt{\frac{\chi^2}{n + \chi^2}} \quad (2)$$

where x^2 is the calculated test criterion and n is the total number of measurements.

It follows from the relationship that for the zero value of a square contingency, the Pearson contingency coefficient acquires a value of zero. The value of the contingency coefficient approaching 1 indicates an increasing intensity of the dependence between the characters A and B. Cramer's contingency coefficient, so-called Cramer's V, is given by:

$$V = \sqrt{\frac{x^2}{n \cdot h}} \quad (3)$$

where x^2 is the calculated test criterion, h is the minimum of numbers $(r-1)$ and $(s-1)$, and n is the total number of measurements.

As a guide, Cramer's V values between 0 and 0.3 indicate a weak relationship between A and B, values between 0.3 and 0.8 indicate a moderate dependence, and values between 0.8 and 1.0 are classified as a strong relationship between the characters A and B (Pacáková et al., 2018).

The following hypotheses established in the research were tested by the mentioned methods:

Ha: There is a statistically significant relationship between the types of changes realized over the last 10 years and the level of return on equity.

Hb: There is a statistically significant relationship between the level of process optimization and the level of return on equity.

Hc: There is a statistically significant dependence between the impulses or reasons that led to the change and the level of return on equity.

Hd: There is a statistically significant dependence between the impact assessment indicators of the changes and the level of return on equity.

3 Results

The basis for the analysis of the research results was a questionnaire survey on the issue of process changes and their impact on the performance of selected enterprises in the Slovak Republic.

Table 1 analyses and evaluates question E: "In which industry does your enterprise operate?" in relation to question D: "What was the return on equity (ROE) of your enterprise achieved in 2020?"

Table 1 | Pivot table for industry and ROE

Industry	ROE						Sum	RF*
	<0%	0-2%	2-4%	4-7%	7-10%	>10%		
Wood processing industry	6 13.64%	21 16.54%	13 10.32%	26 22.61%	13 24.07%	3 5.17%	82	15.65%
Building industry	5 11.36%	20 15.75%	22 10.32%	12 10.43%	6 11.11%	9 15.52%	74	14.12%
Engineering, automotive, and electrical industry	2 4.55%	9 7.09%	10 7.94%	10 8.70%	2 3.70%	9 15.52%	42	8.02%
Other industries	2 4.55%	4 3.15%	12 9.52%	12 10.43%	6 11.11%	6 10.34%	42	8.02%
Retail	3 6.82%	16 12.60%	23 18.25%	17 14.78%	8 14.81%	15 25.86%	82	15.65%
Services	24 54.55%	50 39.37%	42 33.33%	38 33.04%	18 33.33%	16 27.59%	188	35.88%
Agriculture	2 4.55%	7 5.51%	4 3.17%	0 0.00%	1 1.85%	0 0.00%	14	2.67%
Sum	44	127	126	115	54	58	524	

Source: Own processing

*RF = relative frequency

Table 1 shows that service and trade enterprises have the best performance > 10%. In the group of enterprises with an efficiency of 7-10%, these were service enterprises and enterprises in the wood processing industry. Service enterprises were the most represented in the groups with a performance from 2-4% and from 4-7%. Of the enterprises in the group with a performance of <0%, service enterprises achieved a share of up to 54.55%. It follows that service enterprises have the highest percentage representation in all ROE groups. Wood processing enterprises achieved the highest values within the ROE groups of 4-7%, and ROE from 7-10% was mostly reached in the building industry. The engineering, automotive and electrical industry achieved the highest percentage share in the group above 10% ROE. We can state that 480 enterprises out of the 524 surveyed enterprises achieved positive profitability.

Table 2 analyses and evaluates question 3: "In which areas have the changes been implemented in the last 10 years?" in relation to D: "What was the return on equity (ROE) of your enterprise achieved in 2020?"

Table 2 | Pivot table for areas of change and ROE

Areas for change	ROE						Sum	RF*
	<0%	0-2%	2-4%	4-7%	7-10%	>10%		
Organizational structure	27	61	46	63	31	33	261	23.97%
Production programme	18	40	49	51	30	28	216	19.83%
Production technologies	6	39	43	48	21	17	174	15.98%
Management system and methods	9	23	22	35	16	12	117	10.74%
Business processes	8	18	14	28	17	11	96	8.82%
Information System	16	28	38	32	21	26	161	14.78%
No changes made	7	19	17	5	1	6	55	5.05%
Other	2	2	3	0	0	2	9	0.83%
Expected value	p = 0.05			chi-square test: 0.03905				
Areas for change	ROE						Sum	RF*
	< 0%	0-2%	2-4%	4-7%	7- 10%	>10%		
Organizational structure	22.29	55.12	55.60	62.79	32.83	32.36	261	23.97%
Production programme	18.45	45.62	46.02	51.97	27.17	26.78	216	19.83%
Production technologies	14.86	36.75	37.07	41.86	21.89	21.57	174	15.98%
Management system and methods	9.99	24.71	24.93	28.15	14.72	14.50	117	10.74%
Business processes	8.20	20.28	20.45	23.10	12.08	11.90	96	8.82%
Information System	13.75	34.00	34.30	38.73	20.25	19.96	161	14.78%
No changes made	4.70	11.62	11.72	13.23	6.92	6.82	55	5.05%
Other	0.77	1.90	1.92	2.17	1.13	1.12	9	0.83%
Expected value	93	230	232	262	137	135	1089	
Relative frequency	9%	21%	21%	24%	13%	12%		100%
Expected value is lower than real one				Expected value is higher than real one				

Source: Own processing

*RF = relative frequency

Table 2 shows that enterprises that have made changes in more than one area perform better than enterprises that have made changes in only one area or none at all. The table shows the expected values that the individual groups of ROE enterprises should have achieved by answering the questions in which areas the change has been implemented in the last 10 years. With the organizational structure, it is possible to see the largest deviation of the expected frequencies from the actual ones in the group of enterprises with ROE from

2 to 4%, where it was statistically expected that in this ROE group the change in organizational structure would be implemented in 56 enterprises. In fact, it was implemented only in 46 enterprises. The data also show that in the option “we did not make any changes”, it was statistically expected that more changes would be made by enterprises with ROE > 4% than by enterprises with ROE < 4%. The statistical significance of the data and results in the table was evaluated based on the chi-square test, from which we obtained the p-value. The achieved p-value ($p = 0.03955$) is less than 0.05, which means that the relationship between the achieved ROE and the area in which the change was made is significant. This makes it possible to reject hypothesis H0 and accept hypothesis H1, which argues that there is a statistically significant relationship between the achieved return on equity and the area of implementation of change over the last 10 years. The average number of answers to a multiple-choice question per enterprise was 2.07. The results of the analysis of the relationship between various areas of change implementation and achieved ROE provide enterprises with evidence that the implementation of more changes in more areas significantly affects the profitability of enterprises and thus their performance.

Table 3 analyses and evaluates question 4: "What types of changes have been made in the last 10 years?" in relation to D: "What was the return on equity (ROE) of your enterprise in 2020?"

Table 3 | Pivot table for type of change and ROE

Type of change	ROE						Sum	RF*
	<0%	0-2%	2-4%	4-7%	7-10%	>10%		
Financial restructuring	8	22	25	24	11	21	111	16.20%
Transformation change	1	9	9	14	6	6	45	6.57%
Reengineering change	2	8	3	10	4	7	34	4.96%
Gradual optimization	26	55	65	72	34	29	281	41.02%
Emergent changes	6	32	18	34	6	17	113	16.50%
No changes	10	32	29	11	10	9	101	14.74%
Expected frequencies				p = 0.05		chi-square test: 0.02472		

Type of change	ROE						Sum	RF*
	< 0%	0-2%	2-4%	4-7%	7-10%	>10%		
Financial restructuring	8.59	25.60	24.14	26.74	11.51	14.42	111	16.20%
Transformation change	3.48	10.38	9.79	10.84	4.66	5.85	45	6.57%
Reengineering change	2.63	7.84	7.40	8.19	3.52	4.42	34	4.96%
Gradual optimization	21.74	64.81	61.12	67.69	29.13	36.51	281	41.02%
Emergent changes	8.74	26.06	24.58	27.22	11.71	14.68	113	16.50%
No changes	7.81	23.30	21.97	24.33	10.47	13.12	101	14.74%
Sum	53	158	149	165	71	89	685	
Relative frequency	8%	23%	22%	24%	10%	13%		100%
Expected value is lower than a real one			Expected value is higher than a real one					

Source: Own processing

*RF = relative frequency

Table 3 shows that the changes were most often made in enterprises with a positive value of over 10% and a value of 4 to 7%. On the contrary, the least changes were made in enterprises with a positive return on equity of 2 to 4% and a negative ROE. The most common changes that were made were gradual optimization changes. Enterprises that did not implement any changes at all achieved the lowest levels of performance. Table 3 shows that the largest differences between expected and actual values are found for all ROE groups in the response "we did not make any changes". The above results show that changes in the expected extent did not materialize in the groups of enterprises with ROE from <0 to 4% and, conversely, the groups of enterprises with ROE from 4 to 10% made more changes than statistically expected. We can observe similar facts mainly with the possibility of transformational and financial restructuring changes, which were expected to be realized more in enterprises with ROE of less than 4%. Based on the chi-square test, the value $p = 0.02472$ was calculated, which allows accepting hypothesis H1: There is a statistically significant relationship between the achieved ROE and the type of change in the enterprise over the last 10 years, and to reject H0. The average number of answers to the question about the type of changes with the possibility of multiple answers per enterprise was 1.31. The results of the analysis confirmed that the type of implemented changes, mainly financial restructuring and gradual optimization, was positively reflected in the value of ROE in the surveyed enterprises.

Table 4 analyses the relationship between the process optimization level and the ROE.

Table 4 | Pivot table for level of process optimization and ROE

Level of process optimization	ROE						Sum	RF*
	< 0%	0 - 2%	2 - 4%	4 - 7%	7-10%	> 10%		
Optimization options are identified	24	65	56	45	19	24	233	44.47%
A mathematical model is built to quantify the total costs up to the delivery of goods	1	2	5	7	6	9	30	5.73%
Employees have access to modern technologies to create efficient business processes	3	17	18	15	8	7	68	12.98%
Business standards and processes are linked to the enterprise's identified success factors and customer requirements	3	13	18	18	8	6	66	12.60%
A change management program is created to ensure employee loyalty	1	9	10	15	5	3	43	8.21%
None of these options apply	12	22	19	15	7	9	84	16.03%
Expected frequencies	p = 0.05			chi-square test: 0.0480				
Level of process optimization	ROE						Sum	RF*
	< 0%	0 - 2%	2 - 4%	4 - 7%	7-10%	>10%		
Optimization options are identified	19.60	56.70	56.30	51.40	24.10	25.90	234	44.47%
A mathematical model is built to quantify the total costs up to the delivery of goods	2.50	7.30	7.20	6.60	3.10	3.30	30	5.73%
Employees have access to modern technologies to create efficient business processes	5.70	16.50	16.40	14.90	70	7.50	68	12.98%
Business standards and processes are linked to the enterprise's identified success factors and customer requirements	5.50	16,00	15.90	14.50	6.80	7.30	66	12.60%
A change management program is created to ensure employee loyalty	3.60	10.40	10.30	9.40	4.40	4.80	43	8.21%
None of these options apply	7.00	20.10	20.00	18.20	8.60	9.20	83	16.03%
Sum	44	127	126	115	54	58	524	
Relative frequency	8%	24%	24%	22%	10%	11%		100%
Expected value is lower than a real one				Expected value is higher that a real one				

Source: Own processing

*RF = relative frequency

Table 4 shows that enterprises with ROEs from 4 to 10% or more are at a better level of process management. It can be assumed that these enterprises are better at removing bottlenecks because they already have optimized processes or already know about the processes that can be optimized. Enterprises that have a negative ROE value have either not used any of these tools or are aware of problems with their processes but are not taking any action to eliminate them. By comparing the expected and actual frequencies of enterprises with ROEs ranging from 4 to 10% and above, these enterprises are at a better level of process management because the observed value of the answer "Optimization options are identified (we know where there is room for improvement)" is higher than expected. Given the positive return on investment, the first option is more likely to have been applied: processes have already been optimized. Enterprises with ROEs ranging from 4 to 7% and from 7 to 10% are at a higher level than others, as the results suggest that these enterprises experienced higher frequencies than expected at 4 different levels of process optimization. The calculated p-value for this table was $p = 0.0480$, so it is possible to determine this dependence as statistically significant, reject hypothesis H_0 and accept H_1 . It can also be stated that optimization tools and their use have a different but significant impact on the ROE value of the enterprise. Enterprises that have a negative ROE value have either not used any of these tools or are aware of problems with their processes but are not taking any action to eliminate them.

Table 5 analyses and evaluates question 8: "What were/are the impulses (reasons) for implementing the change?" in relation to D: "What was the return on equity (ROE) of your enterprise achieved in 2020?"

Table 5 | Pivot table for impulses to change and ROE

ROE								
Impulses to change	< 0%	0-2%	2-4 %	4-7%	7-10%	>10%	Sum	RF*
Financial problems	21	41	18	23	8	5	116	10.56%
Low production efficiency and quality	6	24	19	18	15	8	90	8.19%
Non-functioning processes	8	21	9	18	12	11	79	7.19%
Customer dissatisfaction	4	13	14	23	9	10	73	6.64%
Legislative changes	6	22	23	17	19	19	106	9.65%
Competitive pressure	14	53	64	52	18	21	222	20.20%
Change in customer needs and requirements	21	57	60	60	21	32	251	22.84%
Existence of a market opportunity	16	35	25	35	17	18	146	13.28%
Other	4	2	2	5	2	1	16	1.46%
Expected frequency	p = 0.05			chi-square test: 0.00057				
ROE								
Impulses to change	<0%	0-2%	2-4%	4-7%	7-10%	>10%	Sum	RF*
Financial problems	10.56	28.29	24.70	26.49	12.77	13.19	116	10.56%
Low production efficiency and quality	8.19	21.95	19.16	20.56	9.91	10.24	90	8.19%
Non-functioning processes	7.19	19.26	16.82	18.04	8.70	8.99	79	7.19%
Customer dissatisfaction	6.64	17.80	15.54	16.67	8.04	8.30	73	6.64%
Legislative changes	9.65	25.85	22.57	24.21	11.67	12.06	106	9.65%
Competitive pressure	20.20	54.14	47.27	50.70	24.44	25.25	222	20.20%
Change in customer needs and requirements	22.84	61.21	53.44	57.33	27.64	28.55	251	22.84%
Existence of a market opportunity	13.28	35.60	31.09	33.34	16.07	16.61	146	13.28%
Other	1.46	3.90	3.41	3.65	1.76	1.82	16	1.46%
Sum	100	268	234	251	121	125	1099	
Relative frequency	9%	24%	21%	23%	11%	11%		100%
Expected value is lower than a real one			Expected value is higher that a real one					

Source: Own processing

*RF = relative frequency

Based on the results from Table 5, we can see that enterprises with ROE value of up to 2% had more financial problems, and conversely, enterprises with ROE value > 2% had fewer

such problems. Enterprises with ROEs from 2 to 7% had positive reasons for the change, namely changes in customer requirements and competitive pressure. Enterprises with ROE from 7 to 10% more frequently recorded a higher rate of customer dissatisfaction as well as legislative changes. Enterprises with ROE ranging from 0 to 4% had more market opportunities than other enterprises. For this analysis, the p-value is 0.00057, which indicates a high significance of the results and it is therefore possible to reject hypothesis H0 and accept H1. At the same time, we can state that there is a statistically significant dependence between the achieved profitability of ROE and the impulses that led enterprises to implement changes. The average number of answers to question 8 with the possibility of multiple answers per enterprise was 2.10. The analysis of the results shows that constantly increasing customer demands and dissatisfaction, as well as competitive pressure together with legislative changes, are exactly those impulses that enterprises should be aware of and start implementing changes that would lead to an increase in their profitability.

Table 6 analyses the relationship between ROE and indicators evaluating the effect of the implemented change.

Table 6 | Pivot table for indicators evaluating effect of implemented change on ROE

Indicator of change efficiency	ROE						Sum
	<0%	0-2%	2-4%	4-7%	7-10%	>10%	
Production productivity index	4 9.09%	30 23.62%	31 24.60%	31 26.95%	17 31.48%	13 22.41%	126
Production equipment utilization index	3 6.82%	9 7.08%	16 12.70%	13 11.30%	6 11.11%	7 12.07%	54
Input quality index	1 2.27%	12 9.45%	11 8.73%	12 10.43%	11 20.37%	5 8.62%	52
Customer satisfaction index	14 31.81%	47 37.01%	53 42.06%	48 41.74%	23 42.59%	27 46.55%	212
Liquidity and profitability indicators	6 6.82%	15 11.81%	11 8.73%	18 15.65%	8 14.81%	8 13.79%	66
Changes in financial results (sales and profit)	16 36.36%	61 48.03%	48 38.09%	56 48.69%	18 33.33%	23 39.65%	222
We do not monitor	17 38.63%	20 15.74%	21 16.67%	12 10.43%	5 9.26%	12 20.69%	87
Other	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1 1.85%	0 0.00%	1
Sum	61	194	191	190	89	95	820
Relative frequency	7.44%	23.66%	23.29%	23.17%	10.85%	11.59%	100%

Source: Own processing

*RF = relative frequency

Table 6 shows that the most used indicator is the change in financial results (222 out of 820, which represents 27.07%), followed by the customer satisfaction indicator (212 out of 820, which represents 25.85%) and the third significant indicator is the production productivity index (126 out of 820, representing 15.36%). The percentage indicator change in financial results is mostly used by enterprises with ROE from 4 to 7% with a share of 48.69% of all

the surveyed enterprises in this group. As the results indicate, the customer satisfaction index is an important indicator for all groups of enterprises, as evidenced by a high percentage of more than 30%. This indicator is mostly used by enterprises with ROE > 10. From the results, it can be stated that monitoring the effects of changes using various indicators has an impact on the ROE of the enterprise and will ensure the measurability of goals that the company sets when implementing changes in any area. This statement is also confirmed by the fact that for enterprises with a negative ROE, we record the highest percentage of the answer "We do not monitor". The average number of answers to question 24 with the possibility of multiple answers per enterprise was 1.56.

Table 7 shows the results of the chi-square test for questions D: "What was the return on equity (ROE) of your enterprise achieved in 2020?" and 24: "What indicators do you monitor when evaluating the effects of the implemented changes?"

Table 7 | Chi-square test results for questions D and 24

	Chi-square	Degrees of freedom (df)	p-value
Pearson's chi-square	15.84696	df = 5	p = 0.00729
Contingency coefficient	0.1713317		
Cramer's V	0.1739031		

Source: Own processing

For this analysis, the p-value is 0.00729, which indicates a high significance of the results and it is therefore possible to reject hypothesis H0 and accept H1. At the same time, we can state that there is a statistically significant dependence between the achieved profitability of ROE and the indicators used to evaluate the effects of the implemented changes. The average number of answers to question 8 with the possibility of multiple answers per enterprise was 2.10.

4 Discussion

At present, the priority of the company, i.e., owners and managers, is the management of change processes, the elimination of risks in the management of change processes and the resulting performance. Sumiati (2020) states that the more changes and innovations a company makes, the more likely it is to improve its performance. In this study, we tried to point out the interdependencies of ROE, which assessed the performance of enterprises in terms of areas, types of change, impulses for change and monitoring of indicators to assess the effects of change. These relationships were examined using pivot tables and subsequently verified and evaluated by the selected statistical indicator Pearson's chi-square test and level of statistical significance "p". From the obtained and evaluated results of the questionnaire survey focused on change management in Slovak enterprises, we can state that statistically significant dependencies were found. It was found that enterprises that implemented changes in several areas performed better than enterprises that implemented changes in only one area or not at all. Based on the research results, it was also found that the changes were most often implemented in enterprises with a positive value of over 10% and a value of 4 to 7%. On the contrary, the least changes were made in enterprises with a positive return on equity of 2 to 4% and a negative ROE. The most common changes that were made were gradual optimization changes. Enterprises that did not implement the changes at all achieved the lowest levels of performance. Enterprises with ROEs ranging

from 4 to 10% and above were found to be at a better level of process management and we can therefore assume that these enterprises are better at removing bottlenecks because they already have optimized processes or already know about processes that can be optimized. Effective change management requires timely capture of the impulse for change, creation of a favourable force field, preparation for the implementation of a change project and monitoring of the achieved effects of change (Sujová et al., 2018). The results focused on impulses or reasons for implementing the change, and it was found that enterprises with ROE value of up to 2% had more financial problems, and conversely, enterprises with ROE value > 2% had fewer such problems. Enterprises with ROE from 2 to 7% had positive reasons for the change, namely changes in customer requirements and competitive pressure. Enterprises with ROE from 7 to 10% recorded a higher rate of customer dissatisfaction as well as legislative changes. Enterprises with ROE ranging from 0 to 4% had more market opportunities than other enterprises. To successfully manage the change, it is necessary to determine the reasons for the change, develop a detailed strategic analysis of the company and its surroundings, define achievable goals, determine the appropriate method for implementation and determine appropriate indicators to evaluate the effects of the changes. From the research results, we can state that the most used indicator is the change in financial results (27.07%), followed by the customer satisfaction index (25.85%) and another significant indicator is the production productivity index (15.36% of 820 possible answers). In connection with corporate performance, the percentage indicator change in financial results is mostly used by enterprises with ROE from 4 to 7%, and the customer satisfaction index is an important indicator for all groups of enterprises, as evidenced by a high percentage of more than 30%. From the results, it can be stated that monitoring the effectiveness of changes using various indicators has an impact on the company's ROE. For enterprises with a negative ROE, the highest percentage of answers "We do not monitor" was found.

Conclusion

The research benefits lie in identifying the current state of performance of enterprises in various branches of industry in the Slovak Republic and its dependence on aspects of implementing changes: areas of change, type of changes, impulses for change and monitoring of indicators to assess the effects of changes. By evaluating the results of the primary research and their statistical processing, the relationships between the quantities were examined using pivot tables, and the existing dependencies were subsequently verified and evaluated. This was the main contribution to the development of scientific knowledge in the field of change management in Slovak enterprises.

The results of research focused on change implementation and its effects, presented in the paper, showed that most Slovak enterprises in the surveyed sample achieve profitability in the range of 2 to 7%. The research sample consisted mainly of small enterprises, which implemented gradual optimization and incremental changes, mainly in organizational structures, production programmes and information systems, where they had identified optimization options. The main reasons/impulses for change were identified in relation to customer needs and requirements and competitive pressure. These reasons were also transformed into indicators for evaluation of the effects of implemented changes, where change in financial results and the customer satisfaction index prevailed.

The research findings confirmed the relationship between performing changes and business performance represented by the return on equity (ROE) indicator. The results showed that the economic performance of Slovak enterprises is directly affected by various changes implemented in more areas, type of change, level of process optimization, and monitoring the effects of changes using various indicators.

Surveyed enterprises with the best business performance (ROE values) implemented the most changes in more areas, had positive reasons for the implementation of changes (customer requirements/dissatisfaction and competitive pressure), the prevailing types of changes were financial restructuring and gradual optimization, the processes had been optimized and effects of changes were monitored using more than one indicator.

The above-mentioned findings can help business practitioners realize the importance of implementing changes and to improve the management of changes in the creation of change model variants, proposals of methods and indicators evaluating the effects of implemented changes, which should bring a positive effect on the business profitability.

The combination of theoretical knowledge and detailed results of primary research offers the possibility of further research aimed at investigating the causes and consequences affecting successful implementation and the results of implemented changes in various industries of the Slovak Republic.

Acknowledgement

The authors are grateful for the support of the VEGA agency – project 1/0333/22, the KEGA agency, Slovakia – project no. 005TU Z-4/2020, and this publication is the result of the project “Progressive research of performance properties of wood-based materials and products (LignoPro)”, ITMS: 313011T720 (10%) supported by the Operational Programme Integrated Infrastructure (OPII) funded by the ERDF.

References

- Alghorbany, A., Che-Ahmad, A., & Obdulmaik, S. O. (2022). IT investment and business performance: Evidence from Malaysia. *Cogent Business & Management* 9(1) <https://doi.org/10.1080/23311975.2022.2055906>.
- Al-Matari, E. M., Al-Swidi, A. K., & Bt Fadzil, F. H. (2014). The Measurements of Firm Performance's Dimensions. *Asian Journal of Finance & Accounting*, 6(1), 24. <http://dx.doi.org/10.5296/ajfa.v6i1.4761>.
- Ashkenas, R. (2013). *Change management needs to change*. [https:// hbr.org/2013/04/change-management-needs-to-cha](https://hbr.org/2013/04/change-management-needs-to-cha).
- Asikhia Olalekan U, Nneji Ngozi E., Olafenwa Abiodun T., & Owoeye Oladipo, A. (2021). Change Management and Organizational Performance: A Review of Literature. *International Journal of Advances in Engineering and Management*. 3(5), 67-79. <https://doi.org/10.35629/5252-03056779>.
- Blackman, D. A., Buick, F., O'Flynn, J., O'Donnell, M., & West, D. (2019). Managing expectations to create high performance government. Review of Public Personnel. *Administration*, 39(2), 185–208. <https://doi.org/10.1177/0734371X17701544>.

- Bunea, O. I., Corbos, R. A., & Popescu, R. I. (2019). Influence of some financial indicators on return on equity ratio in the Romanian energy sector - A competitive approach using a DuPont-based analysis. *Energy*, 189, 116251. <https://doi.org/10.1016/j.energy.2019.116251>.
- Errida, A., & Lotfi, B. (2021). The determinants of organizational change management success: Literature review and case study. *International Journal of Engineering Business Management*, 13, 184797902110162, 1–15. <https://doi.org/10.1177/18479790211016273>.
- Faozi, A. Almaqtari, F. A., Al-Homaidi E. A., Tabash, M. I., & Farhan, N. H. (2019). The determinants of return of equity of Indian commercial banks: A panel data approach. *International Journal of Finance & Economics*, 24(1), 168-185. <https://doi.org/10.1002/ijfe.1655>.
- Ford, J., Ford, L., & Polin, B. (2021). Leadership in the Implementation of Change: Functions, Sources, and Requisite Variety. *Journal of change management reframing leadership and organizational practice*, 21(1), 87–119. <https://doi.org/10.1080/14697017.2021.1861697>.
- Gošnik, D. & Stubelj, I. (2022). Business process management and risk-adjusted performance in SMEs. *Kybernetes*, 51(2), 659-675. <https://doi.org/10.1108/K-11-2020-0794>.
- Gupta, N., & Bari, A. (2017). Fuzzy multi-objective optimization for optimum allocation in multivariate stratified sampling with quadratic cost and parabolic fuzzy numbers *Journal of Statal Computation & Simulation*, 87(12). 2372-2383.<https://doi.org/10.1080/00949655.2017.1332195>.
- Harrison, R., Fischer, S., Walpola, R. L., Chauhan, A., Babalola, T., Mears, S., & Le-Dao, H. (2021). Where Do Models for Change Management, Improvement and Implementation Meet? A Systematic Review of the Applications of Change Management Models in Healthcare. *Journal Healthc Leadersh*, 13, 85-108. <https://doi.org/10.2147/JHL.S289176>.
- Heyden, M. L. M., Fourné, S., Werkman, R., & Ansari, S. (2017). Rethinking 'Top-Down' and 'Bottom-Up' Roles of Top and Middle Managers in Organizational Change: Implications for Employee Support. *Journal of management studies*, 54(7), 961-985. <https://doi.org/10.1111/joms.12258>.
- Jarrel, T. (2017). *Success factors for implementing change at scale* [Presentation]. McKinsey & Co, Behavioral Science & Policy Association, New York, NY. <https://vimeo.com/264699380>.
- Jones, J., Firth, J., Hannibal, C., & Ogunseyin, M. (2018). Factors Contributing to Organizational Change Success or Failure: A Qualitative Meta-Analysis of 200 Reflective Case Studies. In R. Hamlin, A. Ellinger, & J. Jones (Eds.), *Evidence-Based Initiatives for Organizational Change and Development*, 155-178. IGI Global. <https://doi.org/10.4018/978-1-5225-6155-2.ch008>.
- Junnaid, M. H., Miralam, M. S., & Jeet, V. (2020). Leadership and Organizational Change Management in Unpredictable Situations in Responding to Covid-19 Pandemic. *International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies*, 11(16), 1-12. <http://doi.org/10.14456/ITJEMAST.2020.322>.
- Khan, M. (2017). Z-Score. Analysis on Efficiency of Working Capital Management: An Evidence of Selected Indian Food Processing Enterprises Listed in NSE. *Pacific Business Review International*, 10(1), 106-113. http://www.pbr.co.in/2017/2017_month/July/11.pdf.
- Kim, H. S. (2016). A Study of Financial Performance using DuPont Analysis in Food Distribution Market. *Culinary Science & Hospitality Research*, 22, 52–60. <https://doi.org/10.20878/cshr.2016.22.6.005>.
- Mielcarz, P., Osiiuchuk, D., & Wnuczak, P. (2018). Working Capital Management through the Business Cycle: Evidence from the Business Sector in Poland; *Contemporary Economics*, 12(2), 223-236. <https://doi.org/10.5709/ce.1897-9254.273>.

- Moon, K., Guerrero, A. M., Adams, V. M., Biggs, D., Blackman, D. A., Craven, L., Dickinson, H., & Ross, H. (2019). Mental models for conservation research and practice. *Conservation Letters*, 12, 3. <https://doi.org/10.1111/conl.12642>.
- Naslund, D., & Norrman, A. (2022). A Conceptual Framework for Understanding the Purpose of Change Initiatives. *Journal of Change Management*, 22(3), 292–320. <https://doi.org/10.1080/14697017.2022.2040571>.
- Oreg, S., & Berson, Y. (2019). Leaders' impact on organizational change: Bridging theoretical and methodological chasms. *The Academy of Management Annals*, 13(1), 272–307. <https://doi.org/10.5465/annals.2016.0138>.
- Pacáková, V., Labudová, V., Sipková, L., Šoltés, E., & Vojtková, M. (2018). *Statistical Methods for Economists*. Iura Edition.
- Pouraghajan, A., Malekian, E., Emamgholipour, M., Lotfollahpour, V., & Bagheri, M. M. (2012). The relationship between capital structure and firm performance evaluation measures: Evidence from the Tehran Stock Exchange. *International Journal of Business and Commerce*, 1(9), 166–181.
- Prša, D. (2020). The impact of working capital management on the return of equity of Croatian manufacturing SMEs. *Econviews - Review of Contemporary Business, Entrepreneurship and Economic Issues*, 33(2), 371–382. Retrieved from <https://hrcak.srce.hr/ojs/index.php/ekonomski-vjesnik/article/view/9789>.
- Rajnoha, R., Drábek, J., Sujová, A., Merková, M., Simanová, L., & Volčko, I. (2013). *Measurement and management of business performance*. Technical University of Zvolen.
- Rigby, D., & Bilodeau, B. (2015). *Management Tools & Trends 2015*. Bain & Enterprise, Inc., 17. [cit. 2022.04.04.]. <http://www.bain.com/publications/articles/management-tools-and-trends-2015.aspx>.
- Rimančík, M. (2007). *Statistic for practice*. Marián Rimančík.
- Stat Soft. Inc. 2013. STATISTICA (data analysis software system), version 12. www.statsoft.com.
- Sujová, A., Simanová, L., & Gejdoš, P. (2018). *Change management based on a process approach*. Technical University of Zvolen.
- Sumiati, S. (2020). Improving Small Business Performance: The Role of Entrepreneurial Intensity and Innovation. *Journal of Asian Finance, Economics and Business*, 7(10), 211–218. <https://doi.org/10.13106/jafeb.2020.vol7.n10.211>.
- Tao, Z., & Sijun, B. (2021). Enterprises Performance Optimization Management Decision-Making and Coordination Mechanism Based on Multiobjective Optimization. *Mathematical Problems in Engineering*, 1–12. <https://doi.org/10.1155/2021/5510362>.
- Thakurta, R., & Deb, S. G. (2018). *Impact of IS/IT investments on firm performance in the Indian context: A plan of inquiry*. PACIS 2018 Proceedings. 2. Yokohama, Japan. <https://aisel.aisnet.org/pacis2018/2>.
- Thennakoon, D., Bandara, W., French, E., & Mathiesen, P. (2018). What do we know about business process management training? Status of related research and a way forward. *Business Process Management Journal*, 24(2), 478–500. <https://doi.org/10.1108/BPMJ-09-2016-0180>.
- Todnem By, R. (2020). Organizational Change and Leadership: Out of the Quagmire, *Journal of Change Management*, 20(1), 1–6. <https://doi.org/10.1080/14697017.2020.1716459>.
- Tuček, D., & Zámečník, R., (2007). *Management and performance evaluation of business processes in practice*. Technical University of Zvolen.

Walk, M. (2022). Leaders as change executors: The impact of leader attitudes to change and change-specific support on followers. *European Management Journal* (article in press). <https://doi.org/10.1016/j.emj.2022.01.002>.

The research article passed the review process. | Received: 15 August, 2022; **Revised:** 10 October, 2022; **Accepted:** 11 November, 2022; **Pre-published online:** 13 January, 2023; **Published in the regular issue:** 19 July, 2023.