# USE OF CONTROLLING INSTRUMENTS IN CROATIAN COMPANIES DURING THE PANDEMIC


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**Abstract**

Nowadays, in times of the corona crisis, controlling is gaining much attention because it represents an effective internal mechanism that can greatly contribute to a timely and rapid response to changes. Controlling activities reflect the quality of company management at the strategic, tactical and operational levels. In doing so, controlling uses appropriate instruments and contributes to business efficiency and effectiveness. The research aims to determine the current state of controlling instrument application (operational/strategic) in companies. Furthermore, we examine the role of controlling in stabilizing business operations and adjusting business strategies that affect business performance indicators in the context of the corona crisis. The survey method was used, and data were collected from 180 companies of different sizes in the Republic of Croatia. The survey was conducted in 2021. Nonparametric techniques, the chi-square test and the Kruskal-Wallis test were used for hypothesis testing. The findings show that (i) there is a significant relationship between the role of controlling in business stabilization and business strategy redirection in times of corona crisis, thus affecting business indicators measured by liquidity, profitability and indebtedness; (ii) there is a statistically significant difference in the application of operational controlling instruments between companies that have established a controlling department and those without a controlling department; and (iii) there is no statistically significant difference in the application of strategic controlling instruments between companies that have established a controlling department and those without a controlling department. The results of the study provide insight into the application of controlling instruments in Croatian companies during the corona crisis and empirical implications for both academics and practitioners.

**Implications for Central European audience**: Nowadays, market volatility and external factors significantly influence business decisions of Central European companies. For managerial decisions to be timely and effective, controlling uses various instruments with the aim of better advising managers. To be more agile, companies have to use a combination of operational and strategic controlling instruments. In the Republic of Croatia, as a post-transition country, companies are more short-term oriented, which is visible in the significant use of operational controlling instruments, and the lesser use of strategic controlling instruments. In times of pandemic and geopolitical events, the results of the research indicate

the need for strategic orientation of companies through the application of strategic controlling instruments in the practice of Croatian companies to increase the efficiency and effectiveness of their operations.

**Keywords**: Controlling; strategic instruments; operational instruments; crisis; business stabilisation; business strategy redirection
**JEL Classification**: M1, M21

## Introduction

The pandemic caused by the COVID-19 disease and strong contractions of the global economy marked the year 2020. The pandemic represents an extreme example of a demanding situation that has confronted numerous organizations and their leaders with previously unimaginable challenges (Pureta, 2020). Faced with great uncertainty, the epidemic measures that limited people's movement required the adoption of a new business paradigm in these newly created conditions. The external and internal environment required a proactive approach which demanded the application of appropriate instruments as professional support to management in the process of rational decision-making and managing (Osmanagić Bedenik, 2017).

Management accounting supports decision-making and controlling in organizations (Rikhardsson & Yigitbasioglu, 2018, p. 1). The tools and techniques for management decision-making have evolved significantly (Alvarez et al., 2021) in the last ten years mainly due to technological development and crises in the global environment, first the financial crisis in 2008 and nowadays the pandemic and geopolitical events in Europe. The increase in digitalization and data recording due to the rise of new technologies are expected to have a disruptive impact on managers' decision-making processes and jobs of controllers, who have to advise managers under the new circumstances. Also, firms face stronger pressure regarding sustainable performance achievements (Erokhin et al., 2019), which makes the controller's job more challenging. Such an operating environment demands the firm's fast adaptation to new circumstances and changing the well-established way of doing business. In such an environment shaped by crisis, controllers must act proactively; otherwise, many company goals will not be achieved.

A recently available study by IMA and Deloitte (2018) surveyed around 800 financial professionals in the controllership function. Most of them (around 70%) answered that they do traditional tasks in their daily activities and do not have time for more strategically oriented tasks. Furthermore, the same report stressed four significant roles in the company that the controller deals with: "(i) a steward, managing risk and preserving assets, (ii) an operator, running an efficient and effective finance operation, (iii) a strategist, influencing the future direction of the company, and (iv) a catalyst, helping to drive execution" (IMA & Delloite, 2018, p. 2).

As professional support to management, i.e., a function within the management system that increases its efficiency and effectiveness, controlling can help, to a significant extent, in achieving set goals by more effective adaptation to changes inside and outside the company and by systematic and effective risk management. Already several times throughout history,


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in times of crisis, the existence of an effective and efficient internal mechanism has been confirmed. This mechanism is very important and necessary to help the corporate management make a difference and contribute to the success of the company's operations, whereby controlling represents one of the key mechanisms. The current turbulent environment and economic conditions force companies to quickly and flexibly adapt to changes. A prerequisite for this is an effective management and controlling system that leads to better and faster decisions as stated by Sedliačiková et al. (2021, p. 99): “MSEs in Central Europe, including Slovakia, currently do not often have sufficiently established tools to support management decisions”.

Having in mind controller roles and past research results, which indicated more operational-oriented tasks of the controller, our research problem is built on the fact that the COVID-19 pandemic has caused unprecedented new circumstances in the economic, financial and decision-making sense. The crisis has intensified market volatility, which represents an unexplored territory and requires new approaches to resolving problems at the strategic, tactical and operational levels of organization. Have such surroundings affected the controller’s tasks, and do they spend more time operating efficient and effective operations or rethinking the past for a better future? The role of the controller as a business partner has never come to the fore as much as it is nowadays due to the great environmental dynamics and complexity. In reality, controllers have to balance between operational and strategic tasks, but has the pandemic led controllers to think more strategically in crises?

The research contributes to the empirical controlling literature by discovering the use of controlling instruments in practice in pandemic times as well as the role of controlling in strategy redirection. This research fills the gap between operating environment reality in pandemic times and controlling reality in companies, which is analysed using controlling instruments to see whether controlling activities go in line with market dynamics.

Therefore, the aim of the paper is twofold: (i) to explore the relationship between the role of controlling in stabilization and strategy redirection of the company's operations, and its influence on the company's indicators (i.e., liquidity, indebtedness and profitability); and (ii) to determine the current state of controlling instrument application (operational/strategic) in the business practice of companies in the Republic of Croatia.

# 1 Theoretical Background

Numerous scientists have been researching crises, financial crises as well as global crises. However, the body of relevant empirical research papers related to the role of controlling in financial crises and the use of controlling instruments for efficient and effective management in unpredictable situations is extremely modest.

This chapter presents the most significant international research works that are related to the topic in both a broader and a narrower sense.

## 1.1 Role of controlling function in crisis conditions

There are two fundamental functions of controlling extending through contemporary literature: the function of effectiveness and the function of efficiency. The function of controlling effectiveness implies an organizational structure that will achieve sustainability in its environment. Furthermore, the function of controlling effectiveness represents an

economically efficient realization of goals set in the organization (Očko & Švigir, 2009). Therefore, starting from the tasks and through the application of controlling instruments, it tries to shed light on the tasks, comprehensively and meticulously. In that way, it tries to understand and propose to the management alternative solutions.

From the microeconomic aspect, i.e., from the company level, numerous authors emphasize that a business crisis calls into question the achievement of the company's primary goals, such as preserving liquidity, achieving minimum profit, creating and preserving sufficient potential for success (Osmanagić Bedenik, 2003; Schwartz, 2006). Failure to fulfil the company's primary goals can lead to the company's downfall. The COVID-19 crisis has led to partial or complete suspensions of operations for certain business areas on several occasions. Therefore, many believe that the COVID-19 crisis has had far more significant consequences than the financial crisis of 2008, which was agreed on by 69.6% of the respondents in a survey (Roška et al., 2021) where 358 enterprises from Croatia participated. In general, the COVID-19 crisis has significantly affected the business of all enterprises, regardless of whether they had business interruptions. The general conclusion is that many enterprises cannot survive without timely economic, financial and fiscal support from the state.

Previous researchers have tried to explain the significance of using management accounting tools and economic uncertainty. Adiputra et al. (2021, p. 337) stated that “the company's reliance on its resources in identifying crises is the key to management accounting innovation's success in improving financial performance”. An unpredictable environment calls for the controller’s fast reaction to overcome threats, in terms of a transparent and clear message to managers about the threats and possible solutions to those threats. In the last two years, threats came unexpectedly and in a form that had never been seen before in human history. Therefore, adaptation to such uncertainty has to be fast, innovative, efficient and effective. In such circumstances, it seems to be reasonable for controllers to shift their activities from the operational to the strategic level. Osmanagić Bedenik (2017) emphasized that in a period of business crisis in the company, adequate instruments of control are needed that offer alternative solutions to current and future problems. Amann and Petzold (2014) stated that the relationship between management and controlling is the core of business management. Their cooperation decides the success and failure of the company, even in times of business crisis.

Furthermore, Galić et al. (2021) examined the structure and function of the management control system during the pandemic in Croatian companies. The study also included an analysis of the management control system during the pandemic. The research results showed that integration is a significant predictor in the company’s crisis control model, but that integration and timeliness should have a greater connection because the uncertainty of the external environment affects the speed of business processes in companies. Despite equal integration during the pandemic crisis, remote work conditions caused a decrease in the timeliness of reporting the collected information, which requires new control models in unpredictable situations such as a pandemic. More precisely, using controlling instruments should support the management in targeted adaptation of the company to internal and external changes. It is imperative that they carefully consider which activities should be performed and how they should be performed, and inform the management promptly to help the company achieve its goals in a time of crisis characterized by limited interpersonal


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contacts and remote work. Therefore, precisely in times of crisis, the action of controlling is crucial since it represents the first line of defence that contributes to the effectiveness of the management process, and recognizes and masters risks. Also, the research findings regarding the role of controlling in Croatian companies imply that employees are aware of the fact that controlling contributed to companies' effectiveness during the corona crisis through an increase in business process efficiency, strategy reorientation and business adjustment (Roška et al., 2022).

The study of Pavlatos and Kostakis (2015) investigated the impact of the Greek economic crisis on management accounting practices. Their findings show that the use of strategic tools increased during the crisis, while the use of traditional cost accounting tools decreased. The use of ABC systems, planning and strategy increased and budgeting techniques were used equally. Furthermore, Pavlatos and Kostakis (2018) found that top management team characteristics such as educational background, tenure and creativity affect the adaptation and use of strategic management tools in times of crisis to affect financial performance in the future. Their contribution lies in proving the significance of strategic tool adoption in times of crisis since their study showed that business units affected by the crisis adopted and used strategic management tools extensively compared to companies less affected by the crisis.

Horvath (2006, p. 36) emphasizes the importance of coordination in the process of planning, control and information as a key goal of controlling, which contributes to the effectiveness and efficiency of the company's operations. The last financial global crisis seems to have had a key role in management accounting change (Endenich, 2014) and is still developing over time and technological change. Auditing poses new challenges that require proactive action by predicting all possible scenarios of the impact of disruptive events on the company's operations and innovative customized solutions for a particular situation (Tušek, 2020).

Even though many companies have disaster recovery plans and business continuity plans in place, no plan could foresee a situation such as the COVID-19 pandemic. In this situation, the problem was not in the lack of infrastructure, but the human factor as a key resource that had, in an extremely short period, to switch to the online mode of operation. The controlling of human resource management as professional support to the management faced a new challenge of how to increase the efficiency and effectiveness of human resources in new conditions. No less important is the fact that many companies in times of crisis use strategies of stability, survival or defensive strategies, which most often require controlling (and internal auditing) to provide proactive advisory engagements focused on the search for expedient strategies, concentration of forces and development of the company's future success potential which would help solve current problems in business (Tušek et al., 2018, p. 265).

The goal of controlling is to support management in increasing the ability to anticipate, adapt and adjust to changes (Eschenbach & Siller, 2009) as well as to become a driver of change in today’s complex environment. Therefore, based on the extensive literature review, we formulate our first hypothesis:

*H1: In conditions of the corona crisis, the controlling function contributes to better business performance indicators through business stabilization and business strategy redirection.*

## 1.2 Controlling instruments

When the company reaches an unfavourable period, controlling looks at what is important and analyses the consequences of certain decisions, that is, looks at the future. That is why crisis-controlling instruments exist to make decisions easier for managers. Also, instruments are important because of the view into the company's future. Different controlling instruments are used for different purposes, and very often the possibility of using them is related to the knowledge of using these instruments, business management settings, as well as the very level of internally developed business processes and systems. The implementation of controlling instruments is precisely the management and controlling task to ensure better management of the company (Vollmuth, 2008, p.14).

The use of each instrument has a different purpose and depends on the goal to achieve; they also use different dimensions (Losbichler et al., 2020). According to Meter (2017), the use of controlling instruments (Meter, 2017) is carried out through the concept of PAŽ (P-existing state, A-activities, Ž-desired state). This concept includes environmental analysis (market, economic and social trends), company analysis (weaknesses, strengths, resources), determination of strategic directions, selection of optimal strategies, creation of strategic plans and monitoring of the implementation of planned activities.

Controlling instruments are usually divided into operational and strategic instruments corresponding to the organizational planning level. Also, planning can be divided according to strategic, tactical and operational levels. Then the use of strategic, tactical and operational controlling instruments is appropriate. Also, controlling instruments are standard procedures or methods that contribute to business transparency, a clearer view of business as it is (operational instruments) and business as it could be (strategic and normative instruments). Management and controlling are the core of business management, their cooperation decides the success and failure of the company (Amann & Petzold, 2014, p. 3).

Different controlling instruments are used for achieving different goals. The level of controlling instrument application tells a lot about the company's orientation to achieve short-term or long-term company goals. Therefore, the use of operational instruments more than strategic ones states the company's short-term goal orientation, while the use of strategic instruments is aimed at building the potential for future business results (Losbichler et al., 2020). Weber and Schäffer (2008) state that a key controlling goal is increasing the rationality of management.

Strategic controlling provides professional support to management to increase the level of business effectiveness. In contrast, the basic task of operational controlling is to provide professional support to management in increasing the level of the organization's potential, such as raising profitability and economics and preserving substance and liquidity. It contributes to increasing business efficiency. The basic instruments used by strategic controlling are: strategic planning instruments (strategic success factors, experience curve concept, product life cycle, SWOT analysis, strategic balance sheet, portfolio analysis, strategic budget, etc.), controls (strategic control), information (silent signals, strategic radar), organizing (shaping the organizational process and organization following the business strategy), human resource management (derivation of the human resource management strategy from the company's business strategy). Operational controlling instruments are: operational planning (comparative cost accounting, coverage contribution account, scoring


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models, investment budget, operating budget, calculation prices, etc.), controls (operational control, analysis of causes and deviations), information (operational information and reporting, ABC analyses, indicators and indicator systems, etc.), organizing (operational harmonization of the organizational process and structure) and human resource management (alignment of the reward system with the system of further education, career shaping and work structuring) (Osmanagić Bedenik 2003, 2017).

Based on all of the above, the analysis of tools most used in practice sheds light on the management's focus on the efficiency or effectiveness of operations.

For example, Rashid et al. (2020) did a literature review on the adoption of strategic management accounting practices in developing and developed countries. Their research indicates that benchmarking and strategic pricing are used most often in the United States, the United Kingdom, Australia and New Zealand, while Slovenia and Italy use customer-oriented techniques and there is a tendency to increase the usage of different techniques in the future. Furthermore, the authors found a very low adoption rate of these techniques in developing countries.

The research of Ayedh and Eddine (2015) in the case of Malaysian companies showed that those companies have increased performance by adopting strategic analytical instruments such as BSC and benchmarking into their practice.

Dobrovic et al. (2018) found that only 20% of SMEs in Slovakia use the BSC framework in their decision making, which is an unsatisfactory percentage in today's business circumstances. Most of the time, every business relies on financial data; however, modern environment has imposed the importance of monitoring and reporting non-financial indicators. Furthermore, Petera and Šoljaková (2020) analysed the level of adoption of strategic controlling instruments in the Czech Republic. The results indicate greater use of strategic planning and budgeting, customer accounting and target costing, while integrated performance measurement systems, strategic pricing and activity-based costing are less used.

Teplická et al. (2019) compared the use of managerial instruments for performance management in 100 industrial companies in Slovakia (50 companies) and the Czech Republic (50 companies). Regarding the use of controlling in their performance management, 24% of Slovakian companies used controlling in their companies, and so did 30% of Czech companies, which represents a low usage level. Furthermore, parallel to the usage of controlling, the research indicates a low level of BSC framework usage (22% in Slovakia, 25% in Czechia). For example, the ABC method – the most common operational instrument of controlling – is used only in 16% of companies in both countries. Furthermore, the research indicates a perception in industrial companies in Slovakia that those instruments represent a current fad and are unnecessary.

Alvarez et al. (2021) analysed the use of management accounting techniques in the hotel industry in Buenos Aires. The results indicate that companies who use the most tools increase business performance and are open to implementing new strategic tools, while companies who have not adopted management accounting tools are oriented towards traditional tools such as budgeting and cost accounting systems.

Therefore, we formulate our second and third hypotheses:

*H2: There is a statistically significant connection between companies with and without controlling departments in the use of operational controlling instruments.*

*H3: There is a statistically significant connection between companies with and without controlling departments in the use of strategic controlling instruments.*

# 2 Methodology and Data Collection

To achieve the set research goal and confirm the set hypotheses, a questionnaire was made and an online survey was conducted in May 2021 throughout the Croatian Chamber of Commerce base. The survey questionnaire was sent to 500 e-mail addresses. Out of those, 180 respondents (36%) answered the survey questions. The questionnaire consisted of two parts: a general part that referred to respondents' characteristics and use of instruments, and a second part that related to the role of controlling during the corona crisis. The first part consisted of eight questions that referred to respondents' characteristics such as activity, size, ownership and territorial affiliation, and twelve questions about the controlling function and the use of controlling instruments. The second part of the research was developed based on the questions of Losbichler et al. (2020) and had eight questions. A five-point Likert scale was used where 1 represented no contribution of controlling at all, and 5 presented a valuable contribution of controlling. Respondents had to rate how they perceived the controlling contribution to the survival, maintenance and stabilization of the business during the corona crisis. To confirm the set hypotheses, the Kruskal-Wallis H-test was used. In the analysis of the results for testing hypothesis H1, 101 companies were included that declared that they had a controlling department. For testing H2 and H3, the non-parametric chi-square test technique was used. For testing hypotheses H2 and H3, all 180 respondents were analysed regardless of the controlling department's status.

## 2.1 Research results

Most of the respondents, (30%) are from the City of Zagreb, 18% are from Koprivnica-Križevci County, 9% from Varaždin County, and 5% each from Virovitica-Podravina County and Dubrovnik-Neretva County. The lowest response rate is from Lika-Senj County, Osijek-Baranja County and Šibenik-Knin County (0.6% each).

The size of the enterprise was determined based on the Accounting Act (2020), Article 5 (Figure 1). The sample included 13% of micro-enterprises, 30% of small enterprises, 26% of medium-sized enterprises, and 31% of large enterprises.


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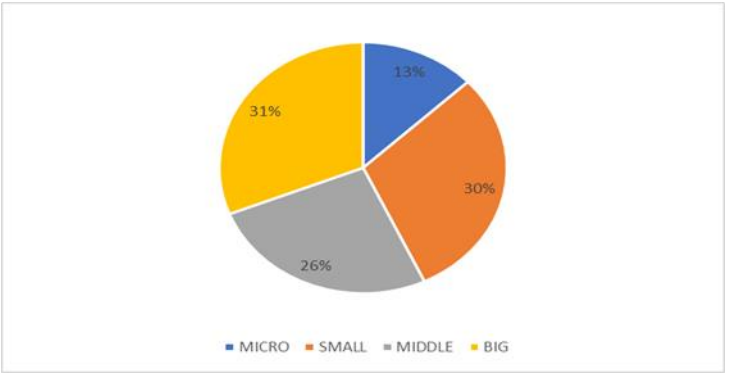
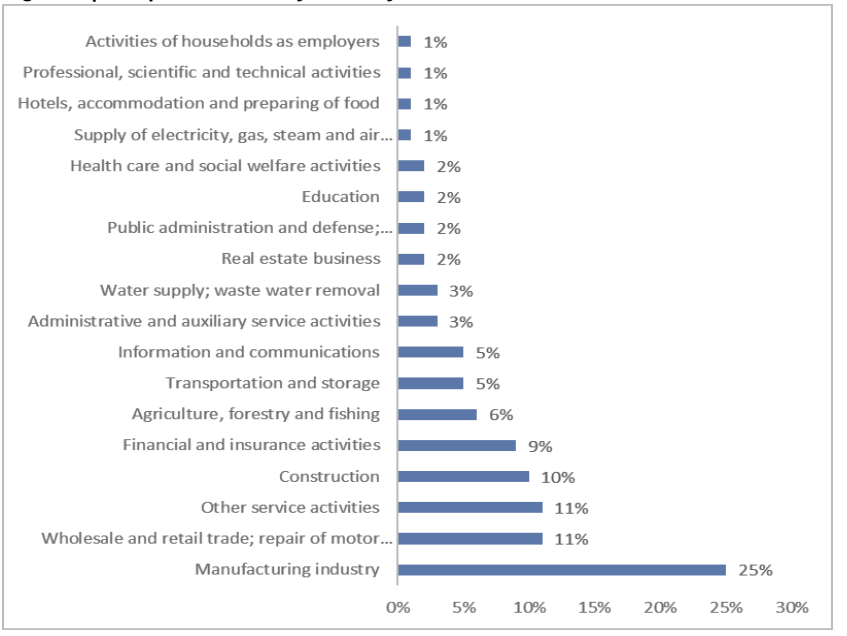
**Figure 1 | Size of enterprises**




Source: Authors' work

Regarding the sample structure according to the industry (Figure 2), 25.6% of the companies are from the manufacturing industry, 11.1% from the service industry, 11.1% from the wholesale and retail and motor vehicle repair industry, 10.6% from the construction, 8.9% from finance and insurance, 5.6% from the agriculture, forestry and fishing industry, 5.6% from transport and storage, 5.0 % from information and communication, 3.3% from the administrative and support service industry, and other industries have less than 3%. Furthermore, 81% of the companies are privately owned, 11% are state-owned, 5% are in mixed ownership with more than 50% private ownership, and 3% are companies in mixed ownership with more than 50% state ownership.

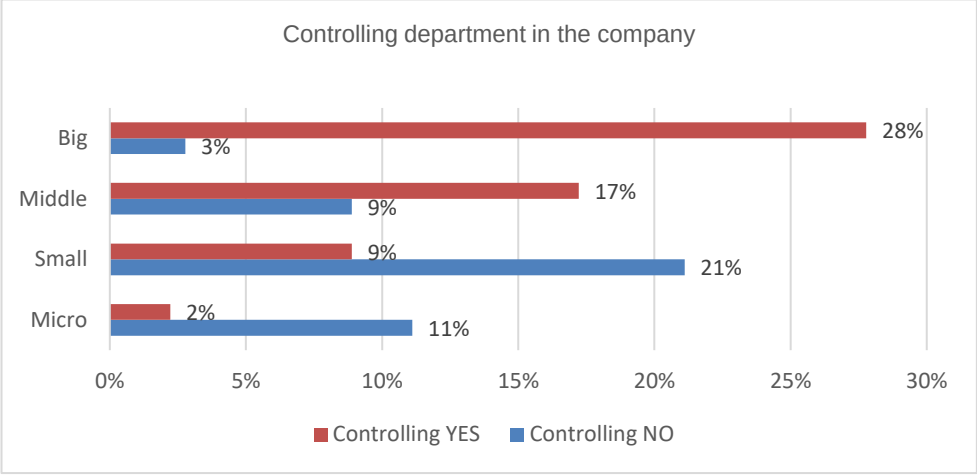
**Figure 2 | Sample structure by industry**




Source: Authors' work

In the total sample, 56% of the organizations have an organized controlling department, while 44% do not have an organized controlling department. Besides, 28% of the surveyed large companies and only 2% of the surveyed micro companies have an organized controlling department, as shown in Figure 3.

**Figure 3 | Implemented controlling department in company**




Source: Authors' work

## 2.2 Hypothesis testing

To test hypothesis H1, a non-parametric test, Kruskal-Wallis H-test, was used because the conditions for using a parametric test (normality of data distribution) were not met. A Likert scale from 1 to 5 was used to prove hypothesis H1, that controlling in the conditions of the corona crisis, through business stabilization and adjustment of the business strategy, contributes to better business indicators. Respondents had to rate on a Likert scale from 1 (not contributing at all) to 5 (invaluable contribution) how much controlling contributed to the adjustment of the company's business strategy during the corona crisis. They also had to assess the contribution of controlling to maintaining business and its stabilization during the corona crisis and contributing to business continuity after restrictions, having in mind liquidity, indebtedness and profitability of the business. The questions were created based on the work of Losbichler et al. (2020). A total of 140 respondents answered the test questions.

Descriptive statistics of the examined variables are shown in Table 1, where STAB indicates business stabilization, PRLS indicates adaptation to the business strategy and POKP indicates business indicators, i.e., indicators of liquidity, indebtedness and profitability of the business.

**Table 1 | Descriptive statistics for H1**

| Instrument | STAB | PRLS | POKP |
|---|---|---|---|
| N | 140 | 140 | 140 |
| Mean | 3.27 | 3.44 | 3.41 |
| Std. deviation | 0.995 | 0.976 | 1.025 |
| Min | 1 | 1 | 1 |
| Max | 5 | 5 | 5 |
| 25$^{th}$ percentile | 3.00 | 3.00 | 3.00 |
| 50$^{th}$ percentile | 3.00 | 4.00 | 3.00 |
| 75$^{th}$ percentile | 4.00 | 4.00 | 4.00 |

Source: Authors' work

The results of the Kruskal-Wallis H-test (Table 2) show that the significance of the test is less than 0.01 for the variables STAB (sig=0.000) and PRLS (sig=0.000) where the dependent variable is POKP (business indicators). Based on the results, we can confirm hypothesis H1, since there is a statistically significant relationship ($p<0.001$) between the role of controlling in business stabilization and business strategy redirection and business performance indicators (liquidity, indebtedness and profitability) in times of the corona crisis.

**Table 2 | Kruskal- Wallis H-test**

**Test statistics[a,b]**

| | STAB | PRLS |
|---|---|---|
| Kruskal-Wallis H | 69.142 | 69.567 |
| Df | 4 | 4 |
| Asymp. Sig. | 0.000 | 0.000 |

Notes: [a.] Kruskal Wallis Test; [b.] grouping variable: POKP

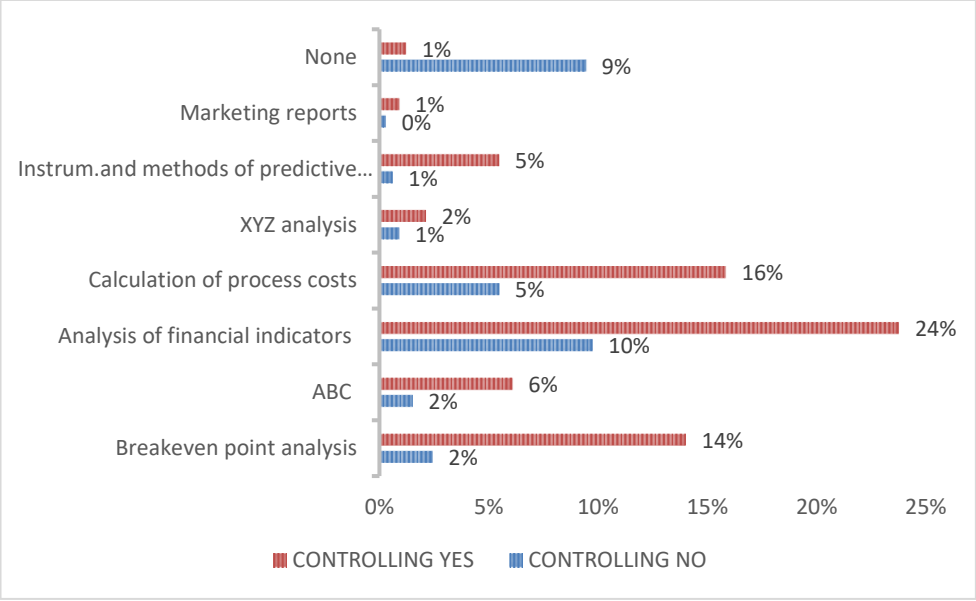
Source: Authors' work

For testing hypotheses H2 and H3, we compared the use of operational and strategic controlling instruments in organizations that have a controlling department and those that do not have one. Respondents could choose multiple answers regarding the use of operational and strategic controlling instruments. Out of 180 respondents, 328 responses were received regarding the use of operational controlling instruments. Interestingly, 30% of the answers about the use of operational controlling instruments came from companies that do not have a controlling department. As the variables were not normally distributed, the chi-square test was applied to find connections between the groups and confirm hypotheses H2 and H3. Two assumptions for the chi-square test were satisfied, our categorical variables are nominal and the variables have two or more categorical, independent groups. However, for two special questions regarding the use of XYZ and marketing report instruments (operational instruments) and strategic instruments (pestle analysis and EVA) and the non-use question, the sample size was too small and few people answered those questions. Therefore, as in once cell, the expected count was less than 5, and thus the condition of the chi-square test was not met, so we did not take these into further analysis.

Figure 4 provides a comparative view of the application of operational controlling instruments in companies that have a controlling department and those that do not. The data show that companies that have an organized controlling department mostly use analysis of financial indicators (24%) and calculation of process costs (16%). In companies that do not have a

controlling department, 31% use operational controlling tools, mostly analysis of financial indicators (10%).

**Figure 4 | Use of operational controlling instruments in surveyed companies**




Source: Authors' work

For every controlling instrument, a chi-square was calculated based on a 2x2 table (using/not using the specified tool and status of controlling department (yes/no)) and the assumption of the chi-square test was satisfied for every instrument except the aforesaid ones that were left out from further analysis.

The chi-square test of independence showed a significant relationship between the use of specific operational controlling instruments and the status of controlling departments in companies (Table 3). This connection was significant at $p<0.05$ for all operational instruments, that is: break-even point analysis, ABC analysis, analysis of financial reports, calculation of process costs, instruments and methods of predictive analytics and data mining, and for not using any instrument.


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**Table 3 | Chi-square results for use of operational controlling instruments and symmetric measures (Phi)**

| Instrument | $X^2$ | Df | P value | Phi coefficient |
|---|---|---|---|---|
| Break-even point | 26.479[a] | 1 | 0.0000* | 0.384 |
| ABC analysis | 6.728[b] | 1 | 0.0095* | 0.193 |
| Analysis of financial reports | 25.152[c] | 1 | 0.0000* | 0.374 |
| Calculation of process costs | 15.364[d] | 1 | 0.0001* | 0.292 |
| Instruments and methods of predictive analytics and data mining | 10.493[e] | 1 | 0.0012* | 0.241 |
| None | 35.224[f] | 1 | 0.0000* | -0.442 |

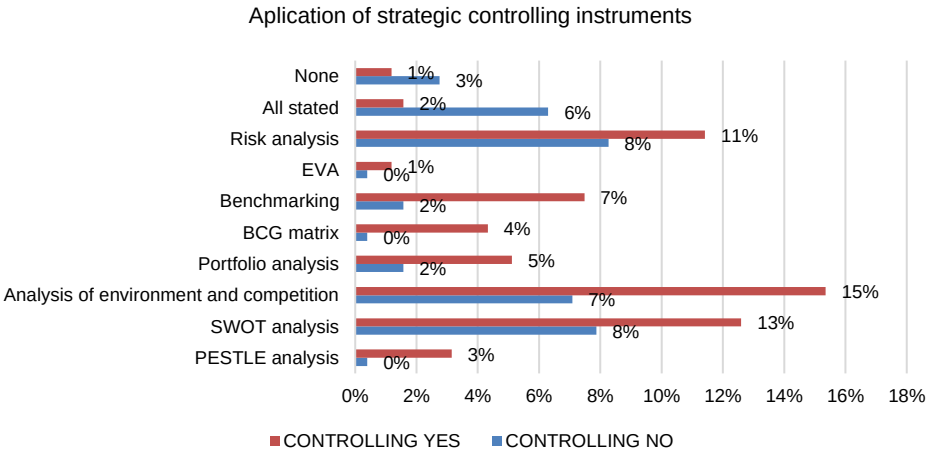
Notes: [a.] 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 23.70.
[b.] 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 10.97.
[c.] 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 30.72.
[d.] 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 30.72.
[e.] 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 8.78.
[f]. 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 15.36.
* significant at p<0.05

Source: Authors' work

Furthermore, to determine the strength of the significant connection between the use/non-use of operational controlling instruments and the status of controlling departments in companies, we look at the phi coefficient presented in Table 3. Based on a general rule of thumb for the break-even point and analysis of financial report instruments, there is a moderate positive relationship. Otherwise, phi coefficients between +0.2 and +0.29 show a weak positive relationship, which in our case is for the calculation of process costs and instruments and methods of predictive analytics and data mining. For ABC analysis, there is a statistical but negligible positive relationship since the phi is below +0.2. Also, in the case where respondents answered that they do not use any of the stated instruments, there is a strong negative relationship. Based on the results of the chi-square test and the phi coefficient, we can confirm hypothesis H2 that there is a statistically significant connection between companies with and without controlling departments in the use of operational controlling instruments.

Companies that have an organized controlling department use all strategic controlling instruments, most often environment and competition analysis (15%) and SWOT analysis (13%). Of companies that do not have an organized controlling department, 44% use strategic controlling instruments, such as risk analysis as well as SWOT analysis (8%), and environment and competition analysis (7%) (Figure 5).

**Figure 5 | Use of strategic controlling instruments in surveyed companies**




Source: Authors' work

The chi-square test of independence showed a significant relationship between the use of some strategic instruments and the status of the controlling department in companies (Table 4). This connection was significant at $p<0.05$ for the use of environment and competition analysis, BCG matrix, benchmarking, and for the question "all stated". No significant connection was found for SWOT analysis, portfolio analysis and risk analysis.

**Table 4 | Chi-square results for use of strategic controlling instruments and phi coefficient**

| Instrument | $X^2$ | Df | P value | Phi coefficient |
|---|---|---|---|---|
| Swot analysis | 0.875[a] | 1 | 0.350 | 0.169 |
| Environment and competition analysis | 5.133[b] | 1 | 0.023* | 0.169 |
| Portfolio analysis | 3.160[c] | 1 | 0.075 | 0.132 |
| BCG matrix | 6.600[d] | 1 | 0.010* | 0.191 |
| Benchmarking | 7.518[e] | 1 | 0.006* | 0.204 |
| Risk analysis | 0.100[f] | 1 | 0.751 | 0.024 |
| All stated | 11.914[g] | 1 | 0.001* | -0.257 |

Notes: [a.] 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 10.97.
[b.] 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 25.02.
[c.] 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 7.46.
[d.] 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 10.09.
[e] 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 10.09.
[f] 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 21.94.
[g] 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 8.78.
* significant at p< .05

Source: Authors' work

Furthermore, to determine the strength of the significant connection between the use/non-use of strategic controlling instruments and the status of the controlling department in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companies, we look at the phi coefficient presented in Table 4. Based on a general rule of thumb for the environment and competition analysis, there is a negligible positive relationship, as for the BCG matrix (phi = 0.191). Only the phi coefficients for benchmarking (+0.204) show a weak positive connection.

Based on the results of the chi-square test and the strength of the connection (phi coefficient), we cannot confirm hypothesis H3 that there is a statistically significant connection between companies with and without controlling departments in the use of strategic controlling instruments.

# 3 Discussion

Past research indicates dominant use of operational controlling instruments in Croatian companies over the years (Meter, 2017). Due to the corona crisis and uncertainty, many external factors have changed drastically. Therefore, our study explored the use of operational and strategic controlling instruments in companies with and without controlling departments to find whether a shift in the usage of controlling instruments has occurred in companies due to environmental changes caused by the pandemic. As stated by Osmanagić Bedenik (2017), when a crisis occurs the use of adequate instruments is needed for alternative solutions that may address current and future problems.

Firstly, we found that controlling in Croatian companies has played a significant role in business stabilization and business strategy redirection. This has significantly influenced business performance indicators (liquidity, indebtedness and profitability) in times of the corona crisis. This may imply that companies with controlling departments, in times of crisis, are faster and more precise in making decisions, due to application of different instruments for analysing the current situation and adopting alternative solutions.

Secondly, we explored the connection between companies with and without controlling departments and the application of operational and strategic controlling instruments. Companies with a controlling department in Croatia use strategic and operational controlling instruments to a greater extent than companies without a controlling function. We found that there was a significant connection for all the analysed operational instruments, that is: break-even point analysis, ABC analysis, analysis of financial reports, calculation of process costs, instruments and methods of predictive analytics and data mining. The connection was stronger for the use of break-even point analysis and analysis of financial reports, while there was a weak positive relationship for predictive analytics and data mining tools and process cost calculation. The surprising result was for the use of ABC analysis, since this tool is very simple to use and can be applied to many different areas of business. The connection was significant but very few respondents with or without the controlling department are using this instrument. Two questions were left out from the analysis since the sample was too small to analyse, indicating that XYZ analysis and marketing report tools are used by respondents' companies very rarely or not at all. Furthermore, three questions were left out from the analysis of using strategic controlling instruments since the sample was too small to analyse (under 5 answers), indicating that PEST analysis reports and EVA are used by respondents' companies very rarely or not at all. Also, very few answered that they do not use any of the stated instruments. A significant connection was found for only three instruments: environment and competition analysis, BCG matrix and benchmarking instruments; however, the connection was negligible for BCG and environment analysis, and weak for

benchmarking. A significant but negative weak connection was found for the question where respondents answered that they use all the stated instruments. Also, in the case where respondents answered that they use all the stated instruments, there is a strong negative connection between all instrument use and controlling department, indicating very rare application of all the stated strategic instruments. Overall, since very few significant connections were confirmed in the use of strategic instruments but negligible relationships, we cannot confirm that companies that have controlling departments differ in the use of strategic instruments from those that do not have a controlling department.

Our results are in line with the findings of the research done by Petera and Šoljaková (2020), who hypothesized that an uncertain environment would affect the use of strategic management accounting techniques in the Czech Republic. However, they did not find a significant relationship between perceived uncertainty and an increase in the use of strategic tools. The findings of our research indicate that controllers use more traditional controlling instruments (analysis of financial reports, cost analysis) in practice rather than strategic instruments. The reason might be insufficient knowledge and education about the use of strategic instruments or certain top management team characteristics (educational background of managers, tenure, creativity) that were found significant in the research of Pavlatos and Kostakis (2018) in the Greek sample. Teplická et al. (2019) and Dobrovic et al. (2018) found similar results in the case of Czech and Slovak companies with low use of controlling instruments in their performance management. The research findings of Alvarez et al. (2021) differ from the results, where practising of management accounting instruments increased performance and those companies are more open to adopting new strategic techniques in contrast to those that have not implemented management accounting instruments. Also, opposite results were found in the study of Pavlatos and Kostakis (2015), where Greek companies showed an increase in the use of strategic management accounting instruments during the financial crisis in relation to traditional application of such instruments.

Therefore, our research findings indicate that in times of the corona crisis, there is still a trend of using traditional operational instruments more than strategic instruments and that connection is significant for operational instruments in the sample of Croatian companies. Furthermore, the research shows slight indications that strategic instruments are important; however, this is still very small compared to operational instrument use and findings which are not significant.

Many researchers have confirmed the positive impact of the use of strategic management accounting instruments on their performance; however, it seems from the literature that countries such as Slovakia, the Czech Republic and Croatia are falling behind the developed countries in increasing the level of usage of strategic management instruments. However, to be able to respond to everyday problems in times of crisis, implementation and use of strategic instruments would enable managers to gain better insight into the situation that results from external factors and affects business decisions, which would enable them to make quicker and more precise decisions.

## Conclusions

Complex situations occurring in the world in the last two years have influenced every business. Managers have to make decisions in circumstances of high uncertainty, and


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controlling departments can represent a cornerstone for quality consulting in the decision-making process.

Our research results are in line with previous research conducted before the pandemic (Osmanagić Bedenik, 2017) in the field of controlling, where it can be seen that companies in Croatia are still dominant in the use of operational controlling instruments. It was expected that the pandemic and the circumstances that companies faced during the pandemic would force them to make a shift from short-term to long-term thinking.

Besides, our study differs from other similar studies in terms of analysing the use of controlling instruments not only in companies with implemented controlling departments but also addressing companies without formal controlling departments. This adds to the new practical knowledge supported with statistical evidence, where a conclusion can be drawn that both types of companies (with and without controlling departments) are familiar with traditional and strategic management accounting instruments but logically the application is seen to a greater extent in companies with implement controlling. Also, a statistically significant impact of controlling was found on business performance indicators, through business stabilization and business strategy redirection.

One of the main limitations of this research is the limited number of respondents. Furthermore, seven operational and eight strategic management accounting instruments were examined which can be perceived as another limitation of the study since there are other tools available in the literature. The third limiting factor may be the applied survey method, where deeper insights about the role of controlling in times of crisis and its impact on stabilization and business strategy redirection could be gained with the case study method.

This research is the basis for future analyses concerning the role of controlling in times of crisis, not only in pandemic crises but also in crises caused by wars, such as the war in Ukraine. The invasion of Ukraine and sanctions against Russia have worsened global expectations for global growth and inflation. It can be concluded that the estimates of future economic, political, social and technological trends are changing daily and because of that, the application of contemporary management accounting tools is needed in everyday managerial decisions. This helps managers cope with the great uncertainty in business and secures an agile and quick decision-making process. Managers together with controllers will have to reorientate themselves to a long-term way of thinking because the dominance of short-term thinking often leads to crucial mistakes that are irreversible. In that way, the benefits are for managers in achieving planned goals and assuring long-term performance, and for controllers in increasing creativity and new knowledge through the application of controlling instruments.

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