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CHANGE IN THE WORKLOAD OF SME EMPLOYEES DURING THE PANDEMIC*

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Abstract. The article explores the workload of employees trained for selected jobs during a crisis, filling the gap in the present research. Global thinking tends to believe that recent surveys examined the means of lessening impacts caused by the pandemic rather than focusing on timely detection and prevention. Our methodology combines socio analysis, bibliometric analysis from the Web of Science database, mathematical statistics of the enterprises' database, correlation matrix, ANOVA tests, and dimensional analysis. Bibliometric analysis revealed the same frequency of the words 'impact', 'performance', and 'innovation'. Mathematical statistics showed that most enterprises did not have to cut salaries given effective government aid. Occasional wage adjustments reflected changes in the workload, seen throughout the size and sectoral differentiations. The double-axed factors, regardless of remuneration, included: 'The overall strategy of the Company' and 'Flexibility and responsiveness'. Office workers saw the most significant difference in remuneration consistency, suffering a total wage growth arrest. The top management witnessed only a weaker salary increase, while IT and marketing positions spotted no wage fluctuations. Small enterprises applied a 'work organisation' factor, which was later detected in large companies, leaving no trace in medium-sized organisations. The work concludes by proposing the synergy of digitisation and the circular economy on corporate competitiveness and employees during a crisis.

Keywords: employees; jobs; crisis; SME; organisational change and strategic business management; the impact of business change on regional development; bibliometric analysis; dimensional analysis

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1. Introduction

People are an invaluable asset to all organisations, constituting an essential tool to beat competitors. All existing companies currently face massive global changes, fierce competition, and increasing pressure on cost reduction, all of which are attributable to the success or failure of employees and their performance. Competing small and

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medium-sized enterprises must listen to and understand the needs of the changing Generation Z, which is more flexible and quicker in responding to the ever-changing environment, heavily relying on innovations and creativity. Conditions for creating flexible and individualised jobs have recently changed to align with the Czech economy's changes and global transformation. Labour market flexibility has become an integral part of modernisation and an effective way to resolve current market issues (Ndubisi, Zhai & Lai, 2020; Navickas et al., 2022). Creating flexible jobs underlies the competitiveness of the Czech economy and partly solves social problems, including the increasing unemployment rate (Kollmann et al., 2024). Individualisation and adaptation of working hours or work itself amply reward company employees, managers, and workforce management. The current Czech corporate culture follows the social trends of large corporations from Western countries, adapting to new conditions arising from the onset of the COVID-19 pandemic.

The COVID-19 outbreak disastrously impacted healthcare, spreading like wildfire through all social spheres. The follow-up global and national restrictions and measures triggered an unprecedented economic crisis, badly damaging the world (World Bank Group, 2020; James et al., 2021; Apanovych et al., 2023). Small and medium-sized enterprises overcame these obstacles through various innovations like working online to prevent the spread of the infection and giving specific jobs more flexibility. These novelties allow corporate management to ensure better working conditions for employees. Perks like half-time equivalent, home-office, online working, job-sharing or flexitime effectively combine work and family life. The crisis required companies to respond promptly to the unexpected situation, causing deep dissatisfaction among workers and massive labour turnover (Lu et al., 2021). New trends, tools, and working environments to adapt to harmed employees, creating excessive stress, leading to discontent and burn-out (Bautista et al., 2020; Boudrias, 2020; Chang et al., 2019; Hatamizadeh et al., 2019; Pollák et al., 2022). The presented article explores these burning issues.

2. Research objective and methodology

Human capital and its management underlie all successful enterprises. The last three years have witnessed a sudden twist in human resource activities triggered by the onset of the COVID-19 pandemic. The violent economic upheaval gave rise to new obstacles, making people revise their daily personal interactions, leading to newly shaped topics and trends in working with human resources. Human resource management involves deep insight into new flexible job positions and foreseeing ideal jobs for employees during the COVID pandemic. Buchanan and Denyer (2013) suggest that studies have been analysing crises since the 1980s, constituting a widely recognised up-to-date topic rather than a novelty. The surveys tackle various issues, including global financial meltdowns, natural disasters, terrorist attacks and armed global conflicts. Exploring these problems requires considerable effort, profoundly affecting people and participants throughout social strata (Celesnik, Radujkovic & Vrecko, 2018; Gazzola & Suciú, 2018; Boyd, De Nicolo & Rodionova, 2019; Dobrowolski, 2020; Flood, 2021; Wincott, Davies & Wager, 2021; Ioan-Franc & Diamescu, 2021; Petrosky-Nadeau & Zhang, 2021; O'Hara, 2021; Lee, Sung, Choi & Kim, 2021; Tilica, 2022; Rak et al. 2022; Strakova, 2024).

The COVID crisis radically changed the discourse and discussed topics on companies paralysed in their business activities, emerging HR trends, job perks and home office (Alashhab et al., 2021). Many changes in human resource management also occurred, which grew in importance during the COVID-19 pandemic, facing new tasks and challenges (Lehnert et al., 2017; AlShamsi & Ajmal, 2018; Antony & Gupta, 2019). Yousfi et al.(2019) list multiple effective methods and techniques to improve the HR process, like lean manufacturing, Kaizen, Benchmarking, Six Sigma, ISO 9000, etc. The COVID-19 outbreak led to hybrid teams, ensuring online cooperation between staff and managers and following specific online communication rules. Online conversations have become essential for many enterprises and their management, raising questions about cybersecurity, data protection, and the need for digital literacy. Most authors agree that digital know-how underpins the successful transition to the home office (Vytásková, 2020).

The COVID-19 pandemic impacted various industries, substantially boosting the productivity of IT, media and technologies (Boogaard & Moller, 2020). The IT sector immediately felt the effects of the outbreak when companies had to allow employees to work from home to prevent the infection from spreading (Alashhab et al., 2021). The transition to the online environment placed enormous pressure on developing and supporting digital

technologies. By introducing digital transformation, many enterprises increased corporate productivity, stimulated innovation, reduced costs and facilitated business processes (Greer & Payne, 2014; Hamouche, 2020; Borowiecki et al., 2021). On the flip side, digital technologies cause discomfort and increased stress to specific groups. The immense complexity of the working environment requires analysing major determinants, including a new approach to exploring jobs and human capital. All posts produce idiomatic cultures different from 'omnipresent' macro-level corporate culture (Wolonciej, 2018; Sharma & Singh, 2018; Bulut et al., 2019; Ivani, Muchtar & Rasyid, 2019; Rahmat et al., 2020; Alagarsamy, Mehrolia & Aranha, 2020).

The Covid-19 pandemic put the global labour market to a severe endurance test of corporate sustainability and ability to adapt to the new situation (Sharma & Singh, 2018; Akgunduz, Alkan & Gok, 2018; Emery et al., 2019; Alagarsamy, Mehrolia & Aranha, 2020). Tuzovic and Kabadayi (2020) explore three vital personality factors to cope with crises: abilities and competencies to perform the job and access to indispensable tools (technologies, social support, etc.). The pandemic also put increased pressure on work management and the uniqueness of each employee, like temperament, personality traits and habits (Bartsch et al., 2020). Based on previous emergencies, Hamouche (2020) frames insecurity and a fear of infection as the main stressors. The outbreak aroused deep anxiety (Brooks et al., 2020), a fear of the unknown and information overload (Bontcheva et al., 2013; Gao et al., 2020; Elsafty & Ragheb, 2020). Adequate care of employees and keeping them updated on the situation and its consequences for the company have come a long way (Smith et al., 2007; Greer & Payne, 2014). The management had to impart information only from relevant sources to encourage a friendly and team environment (Brooks et al., 2018).

Restriction of movement involves another significant stressor, threatening people's mental health and workers' financial stability (Hawryluck et al., 2004; Xiang et al., 2020; Brooks et al., 2020). Economic insecurity and fear of job loss comprise negative impulses towards employees and sole traders, who have had to suspend or terminate their business. Many studies revealed that small and medium-sized enterprises faced enormous challenges handling the situation (Tuzovic & Kabadayi, 2020; Kochhar & Barroso, 2020; Braverman, 2020; Ghosh, 2020; Brooks et al., 2020; Msosa et al., 2024).

The European Commission considers small and medium-sized enterprises (SMEs) providers of economic growth, innovations, and job vacancies (European Commission, 2020). SMEs ensure European competitiveness, prosperity, economic or technological sovereignty and resistance to external shocks (European Commission, 2021). The Covid-19 crisis has considerable potential to go down in history as a catalyst in various public and private spheres, irreversibly disturbing the labour market. Having incurred tremendous financial losses, SMEs must learn to respond to imminent threats to survive the shakeout. The crisis profoundly impacted the labour market, differentiating it according to demographic groups, territory, economic sectors, and industries (Sostero et al., 2020; Musil & Kocmanova, 2024). The presented article explores how the pandemic affected the working environment in the Czech Republic, reflecting global changes in the labour market. The literary research outlines the repercussions of COVID-19 on companies and employees to address the current social demand, suggesting the following hypotheses and research questions.

- H1: Addressing impacts of the pandemic on companies, the current scientific community has been using the words 'pandemic' and 'impact' with the highest frequency for the last two years.
- H2: The Covid-19 pandemic affected corporate subjects regarding their market life, the main field of business (NACE), the main scope of the company and the business size.
- H3: The change in the workload impacted the remuneration.
- RQ1: Is there a differentiation by which we can prove that the COVID-19 pandemic affected certain enterprises more than others?
- RQ2: Which factors mostly contributed to the change (RQ2A) / consistency (RQ2B) in the remuneration regarding the size differentiation?

We use Bibliometric Analysis and Visualization, One-Factor Analysis of Variance (ANOVA), Dimensional Analysis - Scale Reliability and Correlation Analysis to answer the research questions and hypotheses. We also included Bibliometric Analysis and Visualisation qualitative methods to assess the quality of the studies. Selected topics and mathematical modelling allowed a network graph, including the intensity of the adopted and interconnected criteria (Szomszor et al., 2021). The evaluation reflects the quality of the studies and critical

research areas, predicting the focus of future examinations. All essential works (articles) are available on online databases like the Web of Science, Scopus, Dimensions, Lens and PubMed, involving visual analytical tools for representing numerical data. VOSviewer software analyses the imported input, creating maps containing items (points of interest) such as publications, keywords, authors, etc. The connection or relationship between any pair of components forges a link, including related links between publications. The map usually contains only one type of item and references. An intensity expressed in positive numbers determines the relation between the pairs, growing closer with higher values. The links and items form a network comprising clusters on the map. One article relates only to one assemblage, marked Cluster 1, 2, 3, etc. The items may have different features, including weight or score expressed in numerals. The item weight refers to significance (the weight scales with the item's significance), and the score represents the year of publication and citation rate. Essential items (according to the weight) stand over the less significant (lower weight) (Van Eck & Waltman, 2022). The size of 'hubs' suggests the occurrence frequency, while curves show the joint occurrence of both words in the same publication, growing with the shorter distance between the hubs (Donthu et al., 2020).

The one-factor analysis of variance (ANOVA) is another method for finding two significant dependent variables, including their intensity. The ANOVA mathematical model explores the relationship between dependent ratios of the interval variable and other variables (factors). We distinguish between one-factor and multi-factor analysis of variance containing more determinants. The one-factor examination tests hypotheses on the equality of means for more than two samples, surveying whether the differences in multiple selection groups are statistically significant or random. The analysis of variance provides an ANOVA table informing on the p-value. We accept the hypothesis if the significance level exceeds 0.5 (p-value > 0.05), which means no significant difference. On the other hand, we reject the theory if the significance is lower or equal to 0.05 (p-value ≤ 0.05), which indicates a huge difference.

Dimensional analysis

Dimensional analysis (Dimensional analysis - Scale reliability) involves analysing problems to explore more viewpoints, including the heart of the matter, the circumstances and dimensions. Its implementation tackles questions representing individual dimensions (Texocotitla et al., 2020). The reliability coefficient ranges from 0 to 1 with no fixed bottom limit, presuming that the closer the coefficient α is to 1.0, the higher consistency of the items we achieve (Gliem & Gliem, 2003). Bathgate et al., 2015; Shemwell, Chase & Schwartz, 2015; Wild, 2015; Griethuijsen, 2014; Plummer & Tanis Ozcelik, 2015 use multiple qualitative descriptors for interpreting calculated α values. Taber (2017) considers ($\alpha \geq 0.9$) excellent, ($0.9 > \alpha \geq 0.8$) good, ($0.8 > \alpha \geq 0.7$) acceptable ($0.7 > \alpha \geq 0.6$) questionable, ($0.6 > \alpha \geq 0.5$) poor and ($0.5 > \alpha$) unacceptable. The general rule states that α (0.6-0.7) indicates an acceptable confidence level and 0.8 and better or excellent levels. Values higher than 0.95 do not always have to be favourable as they may suggest redundancies (Hulin, Netemeyer and Cudeck, 2001) Alfa coefficient comprises an essential and decisive statistic factor in V&V, including its construction and use (Cortina, 1993), (Schmitt, 1996).

Correlation analysis

Correlation analysis involves the last research method, comprising a background for the ANOVA technique, which specified the previous results. The correlation analysis explores the intensity of interrelationships between selected random variables of the statistical dataset calculated by various correlation coefficients. We generally use two of them: the Pearson and Spearman Correlation Coefficient. Our article applies the Pearson coefficient using R Software (Senthilnathan, 2019) to measure the relationships between X and Y variables. The formula is as follows:

$$R = \frac{n \cdot (\sum X \cdot Y) - (\sum X) \cdot (\sum Y)}{\sqrt{n \cdot (\sum X^2) - (\sum X)^2} \cdot \sqrt{n \cdot (\sum Y^2) - (\sum Y)^2}}$$

where: n = number of observations; X = measures of Variable 1; y = portions of Variable 2; $\sum X \cdot Y$ = Sum of the product of respective variable quotas; $\sum X$ = Sum of the scopes of Variable 1; $\sum Y$ = Sum of the parts of Variable 2; $\sum X^2$ = Sum of squared values of the measures of Variable 1; $\sum Y^2$ = Sum of squared values of the portions of Variable 2. The Pearson correlation coefficient ratio (r or R) measures the intensity of linear relationships between variables. Correlation coefficients (rP) acquire values, while X and Y variables are entirely independent.

According to the measured magnitude, the interpretation of the correlation coefficient may be as follows:

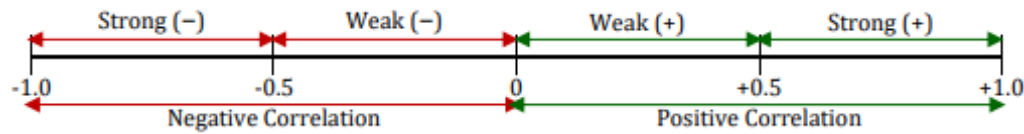


Figure 1. Interpretation of correlation coefficient

Source: Gogtay & Thatte (2017)

Levels of significance in a range of $-3.5 \leq R \leq +3.5$ find use in social sciences, indicating high statistical significance.

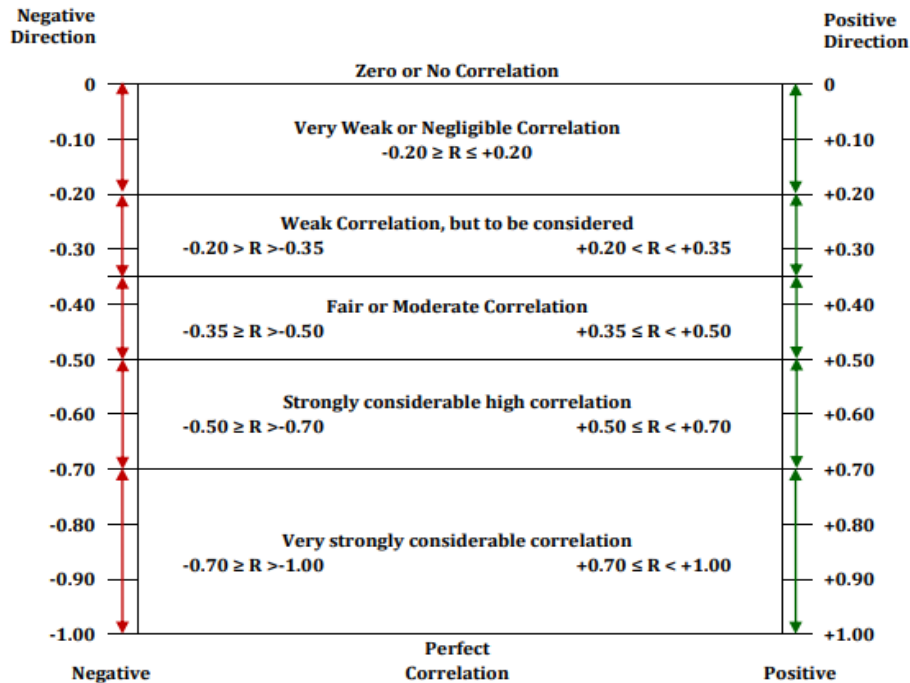


Figure 2. Interpretation of the correlation coefficient in social sciences

Source: Senthilnathan (2019)

Given the inconsistency of observed parameters, Senthilnathan (2019) suggested an innovative scale, giving a new interpretation of the correlation coefficient for social sciences (see Figure 2). The scale will expound upon the dependent variables in the presented study.

3. Results

The global pandemic profoundly affected topics of scientific publication, giving rise to many studies that allow us to conduct bibliometric analysis. We researched worldwide literature published on the Web of Science between 2020 and 2022, using the VOSviewer program to visualise the keywords (see Figure 3). The survey involved 9,825 publications, from which we used only 4,500 pieces. We also included the number of articles published in specific years, including 480 (25%) articles in 2022, 4,554 (46%) articles in 2021 and 2,791 articles (28%) in 2020. Most publications came from the USA (2,258), England (1,100) and China (1,042) from periodicals like the Journal of Asian Finance Economics and Business (299), Journal of Business Research (239) and Journal of Business Ethics (128). The literature explores three widely discussed issues of Economics, Business and Management. The bibliometric analysis involved keywords like 'Home-Office', 'Crisis period', 'SME', 'Organisational changes', 'Pandemic', 'Job positions', 'Workforce', 'Regional development' and 'Employee' comprising all relevant publications. The analysis encompassed all keywords occurring in the articles at least five times, covering only 1,435 from 14,858 words due to the failure to meet the requirements. The term 'Covid-19' showed 5,904 references, indicating the most frequent keyword in the research with a strong relation to the 'performance' and 'impact'. The VOSviewer allowed a survey of the joint occurrence of the

keywords to reveal the thematic structures of research areas, suggesting intellectual topics and systems of scientific spheres.

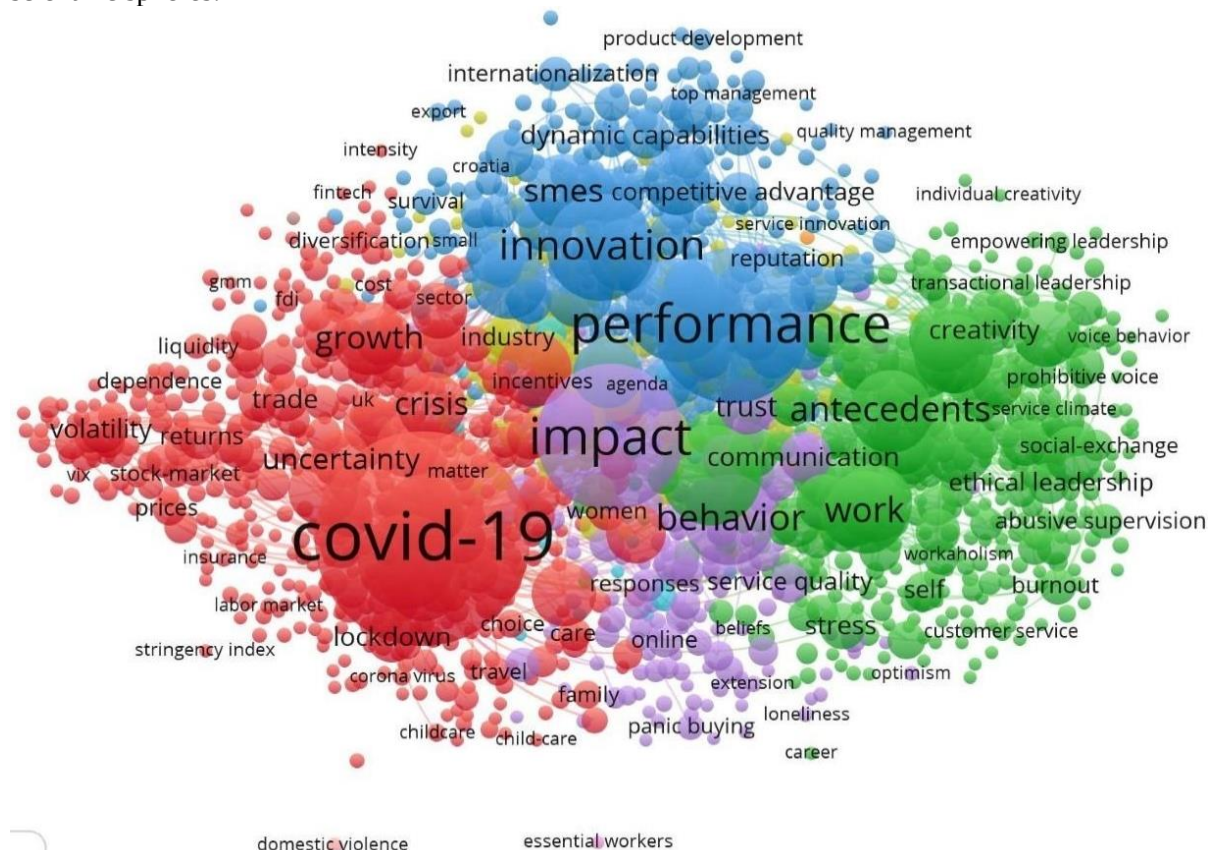


Figure 3. Bibliometric analysis of keywords – Network Visualisation.

Source: the authors

Figure 3 suggests ten analysed clusters. Five of them are dominant, showing great intensity and strong relationships. The remaining five form subgroups of less than 20 items. The separate clusters contain the predominant research category. Cluster (No. 1) 'Business' includes 512 components obtained from 2,439 articles from the WOS database. Its documents focus on the impact of the COVID-19 pandemic on business and its sustainability in various sectors.

Table 1. Results from 4,500 publications from the Web of Science

	COLOUR	ITEMS	FIELD	RECORD COUNT	% OF 4 500
CLUSTER 1	Red	512	Business	2 439	54,20
CLUSTER 2	Green	372	Working Environment	2 288	50,84
CLUSTER 3	Blue	248	Management	913	20,29
CLUSTER 4	Yellow	146	Business Finance	197	4,38
CLUSTER 5	Purple	136	Environmental Studies	172	3,82

Source: the authors

Cluster 2 'Working Environment' encompasses 372 keywords from 50.84% of articles. The studies explore how employees view the working environment. Cluster 3 'Management' embodies 248 keywords from 913 documents, analysing corporate management and its changes in the Covid-19 and the post-Covid-19 era. Clusters 4 and 5 contain 146 and 136 keywords from less than 200 journals, examining impacts, behaviour, sustainability and resistance to adverse effects on subjects.

The achieved outcomes reject H1: *Addressing impacts of the pandemic on companies, the current scientific community has been using the 'pandemic' and 'impact' with the highest frequency for the last two years.* Although the sociometric analysis revealed that 'COVID-19' was the most frequent term in the inspected studies,

the word 'performance' takes second place. The high occurrence of the latter proves that scientists eagerly delved into the corporate behaviour, considering the challenges managers had to face. The term 'impact' ranked third, indicating the current state of the ongoing pandemic crisis where we can monitor, evaluate and quantify its impact on corporate management and its workforce.

Table 2. Results from the correlation matrix

	Field	Size	Relations	Age	Location	Region	Position	Workload change	Remuneration change	Members unprovided for
Field	1									
Size	0.21	1								
Relations	0.13	0.08	1							
Age	0.19	0.44	0.14	1						
Location	-0.24	-0.46	-0.21	-0.33	1					
Region	-0.10	0.26	-0.21	0.24	-0.23	1				
Position	0.13	-0.04	-0.06	-0.05	-0.09	-0.01	1			
Workload change	-0.01	-0.08	0.03	-0.08	0.06	-0.20	0.07	1		
Remuneration change	-0.04	0.06	0.03	0.17	-0.03	0.03	-0.15	0.21	1	
Members unprovided for	0.01	-0.12	-0.11	-0.14	0.15	-0.08	0.06	0.01	-0.14	1

Source: the authors

The outcomes used correlation analysis to answer the second hypothesis H2, *'The Covid-19 pandemic affected corporate subjects in terms of their market life, the main field of business (NACE), the main scope of the company and the business size'*. Table 2 suggests several significant dependencies between the age and size of the business. The correlation between the size and regions of the province shows an inverse proportion, despite the lack of a broader sense for it in the parametric-categoric data relationship. The age and location also reflect a slight dependence. The table also illustrates a lesser significance between the workload and remuneration changes, indicating a value of 0.21. Answering the third hypothesis, H3, *'The change in the workload impacted the remuneration'*, involved the one-factor ANOVA analysis depicted in Table 3.

Table 3. Results of the one-factor ANOVA and F-test ANOVA

ANOVA						
Variability source	SS	Difference	MS	F	P value	F crit
Lines	607.9678	248	2.4515	1.3641	0.00739	1.232
Columns	160.8213	1	160.8213	89.4897	2.49E-18	3.879
Error	445.6787	248	1.7971			
Total	1214.468	497				
F-test of equality of variances						
	Workload changes			Evaluation changes		
Mean value	1.9194			3.056		
Variance	1.8963			2.361		
Observation	248			248		
Difference	247			247		
F	0.8031					
P(F<=f) (1)	0.0428					
F crit (1)	0.8108					

Source: the authors

The research results proved that the change in remuneration impacted the different workloads, indicating the significance level $\alpha = 0.05$. The F-test of equality of variances confirmed the outcome (see Table 3). The current social demand was the impulse for the hypotheses of the collective of authors of this article, observing the topic up-to-dateness regarding the professional experience and consumer use. Considering the pandemic and its repercussions on the corporate environment and workers, we framed several research questions: ***RQ1 'Is there a differentiation by which we can prove that the Covid-19 pandemic affected certain enterprises more than others?'*** This query explored the interrelationship between the Covid-19 pandemic and the differentiation of corporate components, including the market life, main field of business (according to NACE), the main scope of the company and business size. We applied the one-factor ANOVA, testing individual differentiation aspects depending on the identified variable and separate test models (see Table 4).

Table 4. Results of the one-factor ANOVA and F-test ANOVA - research questions

ANOVA – tested RQ1					
Model I.	RQ1A: Has your remuneration changed during the pandemic period?				
	Df	Sum Sq	Mean Sq	F value	Pr (>F)
Market life	2	13.1	6.556	2.825	0.0613
Residuals	246	571.0	2.321		
Model II.	RQ1B: Has your remuneration changed during the pandemic period?				
	Df	Sum Sq	Mean Sq	F value	Pr (>F)
The main field of business	17	71.4	4.197	1.891	0.0196
Residuals	231	512.7	2.220		
Model III.	RQ1C: Has your remuneration changed during the pandemic period?				
	Df	Sum Sq	Mean Sq	F value	Pr (>F)
The main scope of the company	2	0.2	0.1189	0.05	0.951
Residuals	246	583.9	2.3734		
Model IV.	RQ1D: Has your remuneration changed during the pandemic period?				
	Df	Sum Sq	Mean Sq	F value	Pr (>F)
Business size	3	19.3	6.445	2.796	0.0409
Residuals	245	564.8	2.305		

Source: the authors

Legend: [Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1]

Table 4 suggests a profound significance of models II and IV, confirming the research question. The inquiry proved a strong correlation between the sectoral and size differentiation and the Covid-19 pandemic, indicating the P-value >0.05 . The dimensional analysis examined parallels between inspected corporate topics and their impact on remuneration and business size, showing great utility for answering the inquiries. We adjusted the dataset to comply with our objectives, forming two groups. We looked for potential changes in remuneration or if wages were the same as before the pandemic (Table 5). We further explored whether there were positive or negative salary alterations (Table 6).

The first research phase dealt with ***RQ2A, 'Which factors mostly contributed to the change in the remuneration regarding the size differentiation?'*** Dimensional analysis - Scale reliability examined a dataset of 78 micro and small, 28 medium-sized and 59 large enterprises, indicating no relationship (or significant correlation) between the observed variables (please be specific) and no change in remuneration related to various business sizes (Table 5).

The second step involved ***RQ2B, 'Which factors mostly contributed to the consistency in the remuneration regarding the size differentiation?'*** Dimensional analysis - Scale reliability again answered our query on a dataset of 78 micro and small, 28 medium-sized and 59 large companies, revealing the remuneration consistency (Table 5).

Table 5. Results of the Dimensional analysis - Scale reliability: Size differentiation – no changes in remuneration, consistent with the payment before the COVID-19 pandemic.

Model VO2A	Alpha	Stf.Alpha	Micro & Small enterprises	Medium enterprises	Large enterprises
			r(item, total)		
Overall.communication.and.information.to.employees.	0.8421	0.8470	0.6947	0.8744*	0.6896
The.overall.corporate.strategy.	0.8350	0.8382	0.7630	0.7450	0.7467
Flexibility.and.responsiveness.	0.8374	0.8422	0.7298	0.8807*	0.7844
Work organisation.	0.8441	0.8479	0.6917	0.7014	0.7440
Approach.to.employees..Pay.policy.	0.8600	0.8636	0.5733	0.4681	0.6787
Approach.to.employees.Health.protection.	0.8507	0.8562	0.6330	0.7783	0.7082
Use.of.digital.technology.for.internal.communication.	0.8752	0.8781	0.4564	0.6654	0.6385

Source: the authors

The analysis showed 'Flexibility and responsiveness' as decisive factors in determining the observed variables (the business size, the consistency in the pandemic and before-pandemic payment), spanning through the business size categories. 'The overall corporate strategy' followed a similar pattern. The issue 'The overall communication and information to employees' stands out only in medium-sized enterprises. These companies apply a traditional organisational structure of effective communication networks. 'Work organisation' and 'Approach to employees and health protection' involve other significant topics discussed in medium and large corporations.

The research question RQ2B, 'Which factors mostly contributed to the remuneration consistency regarding the size differentiation?' used a similar strategy, including dimensional analysis, to evaluate the data. The results showed no change in remuneration during the COVID-19 crisis. Table 6 suggests the distributed dataset using the Data analysis in the MATLAB Program, including 37 micro and small, 24 medium and 22 large firms.

Table 6. Results of the dimensional analysis – testing the factors according to the size differentiation - changes in remuneration

Model VO2B	Micro & Small enterprises	Medium enterprises	Large enterprises
	r(item, total)		
Overall.communication.and.information.to.employees	0.6221	0.5898	0.5304
The.overall.strategy.of.the.company.	0.6561	0.5425	0.7454
Flexibility.and.responsiveness.	0.6022	0.5544	0.7597
Work organisation.	0.7207	0.6272	0.5765
Approach.to.employees.Pay.policy.	0.5773	0.5443	0.5162
Approach.to.employees.Health.protection.	0.5713	0.6086	0.5829
Use.of.digital.technology.for.internal.communication.	0.4871	0.1308	0.3503

Source: the authors

Legend: r-item total > 0.7

Table 6 illustrates three crucial factors affecting size differentiation. Micro and small companies indicated 'work organisation'. Large enterprises included 'the overall corporate strategy' and 'flexibility and responsiveness' as aspects responsible for size differentiation and changes in remuneration.

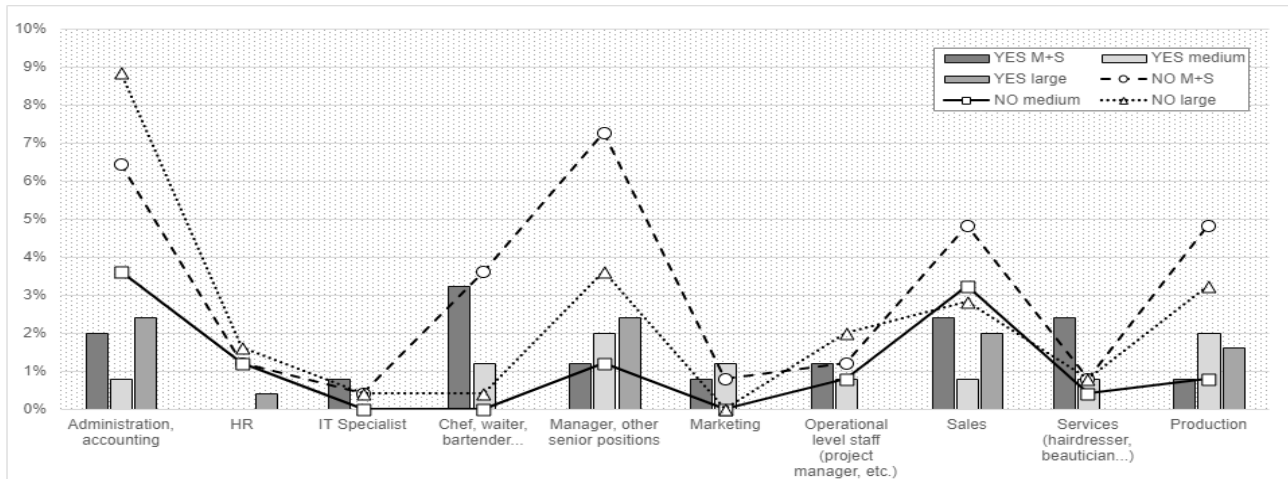


Figure 4. Changes in remuneration per job according to the business size differentiation
Source: the authors

Figure 4 above depicts results suggesting salary alterations per employment according to business size differentiation.

Discussion

The conducted study provided us with the first result approximation, addressing up-to-date and socially significant issues, including the impact of the COVID pandemic on Czech entrepreneurs or the highest business risks during a crisis. We assessed threats to the working conditions of employees who largely contributed to coping with the economic plight and had to respond to the ever-changing situation.

The outcomes involve multiple parts, following the methodology of scientific hypotheses and defining the research questions. The introduction comprises the sociometric evaluation of big data from the WOS database, and the first hypothesis is discussed in the research section. The quantitative analysis encompassed ca 4,500 articles, suggesting the term 'COVID-19' as the most frequent word in the observed field and period. Concepts like 'performance' and 'impact' ranked second and third. Table 1 illustrates the results, containing the relevant cluster, including its interrelation with predominant topics and other keywords. The outcomes prove the significance of the two parameters. The column 'analysed items' shows that the 'performance' cluster double-exceeds the effects of the third cluster 'impact'. The overwhelming dominance of the former might indicate that the social demand aimed to quickly solve or prevent difficulties at the beginning of the crisis, completely overlooking the pandemic consequences. The authors of the presented articles tackled widespread repercussions on the business sector and its employees no sooner than the following year, which corresponds to the findings of Tiutiunyk, Humenna & Flaumer (2021), Belitski et al. (2021), Hamidah, Sriyono & Nur Hudha (2020), Saad et al. (2022), etc. They argue that the COVID-19 pandemic profoundly affected the quality of life and global business activities. The bibliometric analysis explores the relationship between the pandemic and business, confirming the discernible global trends. Individual clusters assess the effects of the Covid-19 crisis on the business sector, define corporate organisational factors, explore the unemployment rate and social aspects and measure impacts on public health.

The following research involves a correlation analysis of interrelationships between the parameters, detecting significant variables with different relation intensities. The method provided data on the impact of the business size (micro and small, medium and large enterprises) on the change in remuneration during the COVID-19 crisis (Hypothesis 2). The outcomes proved no causality in the relationship between the business size and salaries. The enterprises were careful about possible negative scenarios that unfolded later on. Table 2 suggests other analysed relationships, indicating a medium correlation between the corporate size, the company's age and province (local, regional or national). A weaker correlation exists between the company's age and the residence (calculated to NUTS 3 region unit). The findings revealed that the business age, size and expanding, yet limited, globalisation are hastily pushing companies to extend their province. This enormous pressure mounts with massive digitisation, dramatically expanding during the Covid crisis. The coefficient between the workload and

remuneration changes indicates a weak correlation, requiring a one-factor ANOVA analysis for reliable, detailed information. The F-test of variance confirmed the relationship, reflecting a deliberate national (regional) subsidy policy. Despite the efforts, the subsidy sometimes went to worthless items throughout business sectors, showing unequal and uneven redistribution. Our results correspond to Molina (2021) and Francis-Devine (20220, who point to ambitious support schemes for wage increases despite declining GNP.

Ultimately, we collected answers to research questions involving **RQ1, ‘Is there a differentiation by which we can prove that the Covid-19 pandemic affected certain enterprises more than others?’** (according to the market life, main field, scope and business size). The one-factor analysis proved a strong dependence on sectoral differentiation, including a specific sector and size. We may confirm that enterprises with an established home office handled the crisis better than vital industries like healthcare, food industry, agriculture, power engineering or cybersecurity, without which the society would collapse. Scientists point to diverse effects throughout the demographic population structure, regarding education (including different sectors) and territory as crucial factors behind the successful surmounting of the crisis (Montenovo et al., 2021; Bloom et al., 2020; Anayi et al., 2021).

The findings provided decisive factors for dimensional analysis, observing two possible scenarios, **RQ2A, ‘Which factors mostly contributed to the change in the remuneration regarding the size differentiation?’** and **RQ2B, ‘Which factors mostly contributed to the consistency in the remuneration regarding the size differentiation?’** First, we explored the change in remuneration, incorporating the factors analysed according to size differentiation (RQ2A). The outcomes showed that the work organisation in small enterprises and overall corporate strategy and flexibility and responsiveness in large companies are key determinants behind alterations in remuneration. The final part presents reactions from individual corporate subjects, suggesting jobs affected by radical changes in salaries, including administration, accounting and senior management. Commercial representatives and operatives reflected slight inconsistencies, while the IT sector and marketing spotted no change. Second, we examined remuneration consistency throughout business sectors (RQ2B), involving the overall corporate strategy and flexibility and responsiveness as the crucial factors in dealing with a crisis (Straková et al., 2020; Schoenwaelder et al., 2020; Kazancoglu et al., 2022). Medium and large firms embodied the approach to employees’ health protection as major determinants, indicating that personal interest and concern played a vital role during the pandemic.

Conclusion

Czech enterprises have never encountered a crisis of such a magnitude as the COVID-19 pandemic, which radically affected working environments. We foresee that SMEs and large companies will feel economic repercussions and impacts for several years. The presented article explored various hypotheses and research questions, observing decisive factors behind jobs, remuneration and classifying corporate subjects. The results proved a direct correlation between business age, size, salary, and workload changes, considering size and sectoral differentiation. The empirical findings incorporated in this study comply with the suggested theories and sociometric analysis. Although this is only the first approximation of outcomes, we arrived at interesting conclusions using one-factor, correlation and dimensional analysis presented in this article.

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