Performance indicator variance analysis as the statistical method for downsizing / rightsizing

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ABSTRACT

Purpose: *This article elaborates method for downsizing/rightsizing in public sector enterprises, commonly burdened by the number of employees. Our goal was to develop an understandable, quantitative, objective, reliable and efficient method.* ***Design/methodology/approach:*** *The method design criteria were practical applicability, minimisation of subjectivity and maximisation of procedural justice. Our approach analyses performance indicators, and the amount of invested work, computing variability of the productivity time-series in the observed period. Excessive variation of ratio between performance indicators and amount of invested work indicate downsizing/rightsizing needs, as explained in the article. Method is based on internal benchmarking and thus in the first iteration it gives larger headcount estimation than comparison with industrial leaders, or best public enterprises, but it converges towards optimal headcount in the longer time span with more iterations.* ***Main findings:*** *This method has been applied in 21 different public sector organisation during the successful processes of downsizing/rightsizing, which identified a total of 1 819 redundant workers among 18 806 total employees. After the implementation of our method, we found that the application was the first successful massive downsizing program in that group of enterprises after more than five decades.* ***Originality/value:*** *A novel approach to analyse performance indicator as a measure to estimate downsizing/rightsizing goals.* ***Conclusions/Recommendations:*** *With such trait, it is appropriate as the first step in convergence toward the optimal number of employees. The lateral output of our method is that it demonstrates care about employee performance, tracks it and observes*

inconsistencies, and it offers a chance to employees to increase productivity in order to avoid downsizing.

Keywords: *downsizing, rightsizing, performance analysis, public sector, performance indicator*

JEL Classification: L32, L97, M12, M54

1.INTRODUCTION

The public sector is prone to overstaffing and workforce redundancy (Rama 1999; Feldheim 2007). General instability incited by speculative mortgage lending crisis 2007^{th}-2009^{th} lead to recession and economic problems in countries like Greece, Spain, Italy, Portugal, Ireland (Gros & Mayer 2010) and Romania (Savoiu & Dinu 2012) has not been completely solved. Similarly, Eurozone crisis has intensified attention on structural reform (Lapavitsas et al, 2010). Whelan (2009) includes overemployment in the public sector as one of the important sources of economic instability. Inadequate, often larger than required number of employees bloats structure and often burdens public governance finances (Aharoni, 2000; Birdsall & Nellis 2003; Kessides, Miniaci, Scarpa & Valbonesi 2009). Such problems pressure commercial activity and economic development, decrease efficiency and too many employees that were hired in the past may lead towards the "mixed services" problem, provided by both private and/or public institutions, which include public resources and lots of regulations. Due to that, strategies for organisational change often include downsizing in the context of the public sector and administration reform (Awortwi, 2010), with recent examples of layoff interventions in the public sector worldwide (Eliason, 2014; Kopelman & Rosen, 2016; Zahariadis, 2016; Laird, 2017).

Downsizing need may be especially emphasised as the COVID-19 pandemic effects influence the global economy (Bartik, Bertrand, Cullen, Glaeser, Luca & Stanton, 2020; Guerrieri, Lorenzoni, Straub & Werning 2020; Fernandes, 2020). Early reports show that worldwide downsizing and layoff wave is expected as one of the COVID-19 impacts on the global economy. There are also indications that new workplaces will be created (Altig, Barrero, Bloom, Davis, Meyer, Mihaylov & Parker, 2020), which is in line with the rightsizing aspect of our approach. So-called "Age of Austerity" (Wells 2018) in the public sector preceded the expected downsizing wave caused by the COVID-19. This is not the first and most probably will not be the last wave of downsizing, a common practice since the 1980s (Mckee-Ryan & Kinicki 2002; Lapavitsas et al. 2010).

The paradigm of state-led organisation directs organisational structures in the public sector to the forms of professional and machine bureaucracy

(Mintzberg, 1993). Also, among the public sector organisations, we can expect to see "orange" organisations of Lalaux (2014), with a rigid structure, strictly defined procedures, predictable behaviour and other bureaucratic traits. During our consulting experience in the South-East Europe, we have experienced that public sector organisations lean to the "red" forms of Lalaux typology, power-hungry hierarchical organisations with a strong emphasis on personal power, where cliques are formed and intrigues are used to fight towards the top of the hierarchy. In such form, Lalaux's "orange" (as bureaucratic, objective) administrative form is just institutional facade for what is really going on behind the sight of the public. This combined influence of organisational forms and culture leaves much to be desired in the situation where layoff has to be performed.

This paper describes downsizing/rightsizing method for the public and public utility enterprises. Rightsizing is a term popularised by early research (Hitt, Keats, Harback, & Nixon 1994; Zeffane & Mayo, 1994), following lack of success of blunt downsizing approach during the 1980s and early 1990s. Hitt et al (1994) defined rightsizing as is an integrated, internally consistent and externally legitimated configuration of organisational processes, products, and people. Decision basis in that is found in the analysis of performance indicator variance. Our goal was to develop a comprehensible, quantitative, objective, reliable and efficient method for downsizing/rightsizing in the public sector, as the previous era of layoff imposed a search for increased flexibility and rationality during layoff (Raudla, Randma-Liiv & Savi 2015). Besides downsizing, our approach permits partial increase in employee headcount in organisational departments that lack employees, effectively fitting goals and amount of work in the enterprise with the number of employees. The method was originally developed to calculate the optimal number of employees in the public sector, based on the consulting experience of more than 20 projects of restructuring public and public utility enterprises from South-Eastern Europe (Cudanov, Jasko & Savoiu 2012), but it was later applied in other business contexts. Basically, our approach is founded on gathering commonly accessible data in e-form, e.g. salary calculation reports or output measurements related to performance indicators. Employee's overall output is observed as a statistical population, using collected data as a sample. Second step is the calculation of standard performance. Next, similar positions, according to this performance are grouped in categories based on Porter's value creation chain (Porter & Millar 1995). We will describe background data necessary for the method in section 2, performance indicator analysis in section 3 and quantitative calculations in section 4, followed by the discussion in section 5 and finally a conclusion.

2. METHODS AND DATA

Basic data for our method includes: a) organisational charts and job descriptions/job systematisation act; b) salary calculation reports; c) performance reports (at least on monthly basis). Main issues were practical availability (often data is too hard to gather by external consultants in the public utility companies) and data reliability. Thus we have followed the famous Einstein recommendation, making data background "as simple as possible, but not simpler". Our method is based on data generally available to gather with required accuracy by interviews, in order to be practically applicable to the consultants and researchers (Cudanov & Jasko, 2012). Key issue for our method is the quality of gathered data. Inaccurate or incomplete data would lead to wrong conclusions, i.e. "garbage in, garbage out" results (Goh 2011; Cervo & Allen 2011), so it is better to gather a small set of accurate and reliable data, than a huge database of questionable accuracy and reliability.

The first source of data aimed at giving general understanding are organisational charts, graphic representations of the organisational structure. In observed organisations, they were not always available or up-to-date. However, even old organisational charts give comprehensive insight and clarification. Data on organisational positions containing job titles, subordination and similar data in tabular forms can replace organisational charts in the case they do not exist in organisational documentation. Job descriptions are second part of necessary data, defined as formal documents which describe "duties, responsibilities, contributions, outcomes, required qualifications, reporting relationship and common collaborating relations of a position in an organisational structure" (Cudanov, Jasko & Savoiu 2012). These documents formalise job allocation according to job analysis and point out the critical issues regarding the functions of each position in the organisation. When job division is clearly understood, consultants can identify the performance indicators that are substantial to be included in the assessment of employees. Job descriptions are considered to be too formal and bureaucratic, but are still handy tool for human resources, as well as for management and organisation in general (Torrington, Hall & Taylor 2005; De Bono, Van Der Heijden & Jones 2009). This source of data is commonly accessible since companies, especially in the public sector, are often legally obliged to have a formal job descriptions and systematisation act.

Payroll reports are our next primary source of data. Salary calculations are commonly performed by using specialised software which provides a suitable form of spreadsheets for our method. Our method does not require actual individual salary amounts, so they can remain confidential. Observed

data sheets also include employee identification, attendance, wage rates, deductions, earnings, and cumulative earning totals (Frankel, 1984), and if the salary depends on the employee performance, indicators that measure that performance, commonly on a monthly basis. Key data for us is the record of employee attendance time. It is usually part of automatically generated reports, as in our example table below. These reports can be accessed easily, and they can be generated in a very short period of time from salary databases. There are numerous categories classifying employee attendance and payment categories are often differently titled in different enterprises. Accuracy of observed data is often questionable since it differs from regular attendance, or even from overall attendance sum. Public enterprises often have legally restricted, capped or "frozen" salary limits (Glassner 2010; Grimshaw, Johnson, Marino & Rubery 2017), so management in response "puffs up" attendance records interpretation for additional employee monetary benefits, without explicitly breaking the law. However, in all enterprises, there was at least one attendance category which tracked employee attendance with maximum available technical accuracy. That attendance category was tangential in the large majority of observed enterprises, e.g. hot meal reimbursement – a small part of the salary, and thus often unaltered. To find out that information, direct contact with the accounting department is, from our consulting experience, precious in this step. Their open explanation on where correct data on actual attendance is can often point to unexpected, insignificant remuneration categories, like the mentioned hot-meal allowance.

Performance reports are third, and crucial data input for our method, easy step if companies have adopted a balanced scorecard approach, which is unfortunately rare among public enterprises in South Eastern Europe. With balanced scorecard "individuals and teams articulate personal, business unit and corporate objectives, as well as initiatives for achieving them, and then define up to five key performance measures for their objectives and set targets for each measure" (Kaplan & Norton 1996). A performance indicator is "quantitative or qualitative indicator that reflects the state/progress of the company, unit or individual" (Popova & Sharpanskykh 2007), and it can be the partial measurement which reflects overall work, e.g. public procurement department performs various, and numerous tasks, but all those tasks are indicated by or correlated with a number of executed public procurements. Sometimes, performance is measured through monthly, quarterly or annual employee reports, which is also alternative with acceptable reliability. The practice showed that the indicators should not be surfeited during data gathering. According to our empirical consulting experience, a smaller number of adequate indicators is better than a larger number of questionable

indicators, because performance indicators are often correlated among themselves (Popova & Sharpanskykh 2007). We should always remember we are not gathering overall performance data but performance *indicators*. If for example, one employee manages 58 public procurements in January, it does not mean that employee's worked only that for 176 hours – there were lateral, connected supplemented tasks related to those public procurements. Nevertheless, if in March employee conducts 18 public procurements, this does not undoubtedly prove that the observed employee works three times less than in January, but it definitely indicates that not everything is right with the performance and organisation. If these situations happen often, and for more than one worker, the indications are much stronger. Also the category of the public procurement process, for example, we can form subcategories as e.g. small and large size public procurements law defined, and assign appropriate ponders to them. Thus we can aggregate several related indicators to one general, e.g. small procurement requires four times less work so the ponder is 0.25, and it is added to large procurements.

More examples of measurements which can indicate performance are a) raw materials or energy used, b) produced output or c) interaction with the customers. The first type can be illustrated with the amount or caloric value of the fuel used in heating boilers, correlated with total engagement of the "Boiler operator" employee. The second example can be illustrated with the number of meals served in company restaurant as direct food serving job engagement, but also administration, hygiene maintenance, food storage and other related jobs depend on the total monthly quantity of served meals. Also, in context of the "Boiler operator" employee second type can be illustrated with the amount of heat output in Joules produced by the boiler (also correlated with the amount of fuel). Third example is for employees in a call-centre - the number of accepted calls, or the total time spent in talking to the customers. If possible, two or mere indicator on the same phenomenon can be compared to see if there is any discrepancy, e.g. for the "Boiler operator" we can track both amount of fuel used and output heat generated. Performance data should be selected to maximise the reliability of measuring employee output, while in the same time minimising consultant's time and effort needed to gather such data.

For further calculation, it is of utmost importance that these indicators are kept in the record by maximisation criteria, i.e. that higher value indicates better results. If that is not the case, e.g. for the average service time per customer indicator (where lower values are better), we can calculate reciprocal indicator like the average number of customers served in one hour (higher values are better). It is also necessary that the performance indicators are gathered for

a longer time period, as far as the data sources provide. We strongly suggest to use months as time periods, because there are no great internal variations in productivity during these periods of 30 days, so proposed indicators can be reliable. Performance variation in most cases balances within the period of one month. With 36 months, according to a central limit theorem the data distribution will incline to a normal distribution since generally "a sample larger than 30 measurements is considered sufficient for the central limit theorem to take effect" (Trevor & Nyberg 2008). Our practical experience shows that even 18 months period can give reliable results – or at least better than the subjective assessment of the excessive number of employees. During the process, ICT department is the key source for ensuring data support for this, confirming the ICT usage relations with organisational change (Cudanov, Savoiu & Jasko 2012), whether ICT is the cause or catalyst of organisational change. Data extracted with the help of ICT department makes results more accurate and reliable, and restructuring efforts much easier.

3. LABOR TASK CATEGORISATION AND ASSOCIATION WITH PERFORMANCE INDICATORS

After gathering data, we need to classify employees by the criteria of performance contribution. The main idea is to make groups that will consist of employees contributing to the same performance indicator. There are several approaches for employee classification that can be used: "a) the bottom-up approach which considers criteria of collected performance indicators; b) the process approach, using criteria of processes which are described in quality management system; c) the typified organisational structure approach, which are based on Porter's and Mintzberg's models; d) the existing organisational structure approach, that is using criteria of departmentalisation" (Cudanov, Jasko & Savoiu 2012). When all employees belong to some group, calculation of productivity indicators can be performed. There are four alternatives to the calculation of productivity indicators.

1. The first alternative for further steps in our method is to perform an analysis of the obtained performance indicators and match those with the existing job descriptions/actual employees. Every employee must be connected with at least one performance indicator. Employees can be related with more than one performance indicators, which can be combined using the PLS method as described in (Stancu, Stancu, Naghi & Baltenau 2018) That can increase the precision of calculation if correct ponders are determined.

2. The second alternative is based on the idea to classify employees and later connect those classes with performance indicators. The basis for that classification is often described in the documentation of the quality management system (QMS).
3. The third alternative is used where the quality management systems are non-existent or insufficient, so the consultants have an alternative to use Mintzberg's organisational structure or identify activities according to Porter's value chain, where specific instructions for activity identification can be found in the literature (Jasko, Cudanov, Krivokapić, Jevtić & Savoiu 2011; Jasko, Krivokapić, Cudanov 2011). This concept has massive potential since it enables the creation of patterns that can be used for different types of enterprises. Porter's value chain model enables comparison among the companies that are entirely different and can be a basis for the benchmarking. For example, one may ask why the marketing as a typical job engages 1.9% of total workhours in one public utility company, while it is connected with 0.7% workhours in another similar company.
4. The fourth and the last alternative is classification of employees, based on organisational structure, where performance indicators are assigned to the departments (of the lowest possible organisational level) in organisational structure. It is expected to provide the least reliable results which are also hard to compare. On the other hand, practical application of this method is simple, organisational departments are obvious criteria for employee classification, without ambiguous clues, thus observed performance indicators can be connected to the organisational structure within few days of consultant engagement, and identified in regular reports from analysed organisational department.

5. RESULTS CALCULATION

Collected data should be organised into indicators - quantitative basis for downsizing/rightsizing. This approach can be based on following steps: a) productivity indicators calculation for each month in the observed period, as a ratio of pondered performance indicators and hourly employee engagement; b) total average productivity calculation for the whole time period of observations; c) computing of variability indicators – most commonly, as suggested in the formulas below, the standard deviation of monthly productivity indicators in the observed period; d) application of mathematical expression (4) to compute

the standard performance for the employee/group of employees; e) final computing of average percentage of achieved standard performance for each group of employees.

In order to perform the calculations, we form a spreadsheet with calculated performance indicator productivity in separate columns for each month, for each employee in different spreadsheet row. Performance indicator productivity is calculated by dividing the performance indicator of the pondered sum of each performance indicator (PI) with total workhours invested in achieving that performance during that month. Average PI productivity is calculated as the arithmetical mean in the observed period:

$$A.PI.PR = \frac{\sum_{i=1}^{i=n} PI.PRi}{n} \quad (1)$$

Next, we calculate the standard deviation of average PI productivity:

$$\sigma_{A.PI.PR} = \sqrt{\frac{1}{n}\sum_{i=1}^{i=n}(PI.PRi - A.PI.PR)^2} \quad (2)$$

Calculated standard deviation is added to average PI productivity.

$$S.PI.PR = A.PI.PR + \sigma_{A.PI.PR} \quad (3)$$

Presuming standard normal distribution of productivity variable, and in line with the three-sigma rule (Pukelsheim, 1994), there is approximately 85% chance for the observed variable to be at array below μ + σ. In other words, using the same methods, tools, in the same organisational context, in the 15% of the cases the same employees would produce better results. Example of the calculation, based on the productivity of accountancy and salary calculation are given in the table 1 below. To save space and protect confidentiality, only first and the last month data is presented to illustrate the approach.

Example of statistical analysis of productivity indicators

Table 1

Job group	Indicator	Month1	…	Month 36	A.PI.PR	σ (A.PI.PR)	S.PI.PR=
Accountancy	Total turnover (000 RSD)	844511		125749			
	Number of different suppliers	389		293			
	Number of lines on supplier account cards	10616		2872			
	…	1255		1156			
	Total hours worked on accountancy department	3920		3664			
	Pondered performance indicators / hour	**3.8630**		**1.9072**	**1.99**	**0.44**	**2.43**
Salary calculation	Hours worked	6870		6208			
	# of calculated salaries	6134		6263			
	Pondered performance indicators / hour	**0.89**		**1.01**	**0.94**	**0.08**	**1.02**

As downsizing/rightsizing guideline, A.PI.E (average efficiency in achieving standard PI performance) is calculated by the following formula:

$$A.PI.E = \frac{A.PI.PR}{S.PI.PR} \times e \times 100\% \quad (4)$$

Specific factor "*e"* is the key part of the formula, although it is partly subjective. It depends on the objective necessary variation in productivity on a monthly scale. Sometimes there are peaks of demand due to external factors, and that limitation causes variation in productivity, instead of the excessive number of employees, because employees simply have to wait in attendance for demand peaks which are not in their sphere of influence. That situation can indicate a need for better organisation, better coordination of sales and production or a different division of labour rather than the need for downsizing/rightsizing. To determine "*e"* constant for each job, a consultant has to analyse output variability and the reasons for its variability carefully. A good rule of thumb is that the "*e"* constant is roughly 1 + *variability of output due to objective reasons*. Our practice has shown that for most jobs "*e"* ranges between 1.05 and 1.15, while in some jobs with extreme peak demands it can even be close to 1.5. Given that in combination with the "*e"* factor our formula can indicate desired increase, not only decrease of the workforce,

our method is more appropriately associated with the *right*sizing, rather than *down*sizing. Table 1. below shows the average efficiency, corrected with the "*e"* factor as the guideline for rightsizing by each organisational department/ group of jobs.

Rightsizing guidelines, from organizational modules to job groups

Table 2

Org.dept.1	Org.dept.2	Org.dept.3	Job type	A.PI.E	Rightsizing goal
Birostructure	Auxilliary activities	Safety and security	Security guards	0.942	-0.058
		Safety and security	Fire protection employees	0.943	-0.057
		Safety and security	Security managers	0.943	-0.057
		Safety and security	Health and safety employees	0.943	-0.057
		Internal restaurant	Restaurant cooks	0.921	-0.079
		Internal restaurant	Restaurant servers	0.920	-0.080
		Maintenance and hygene	Building maintenance	0.841	-0.159
		Maintenance and hygene	Hygene maintenance	0.762	-0.238
		Other auxiliary activities	Courier	0.811	-0.189
		Other auxiliary activities	Info and mail desk	0.811	-0.189
	HR	HRM operations	HRM staff	0.911	-0.089
Inbound logistics	Commerce	Public procurement	Public procurement managers	0.666	-0.334
		Public procurement	Public procurement administative staff	0.666	-0.334
Operations	Transport	Core transport	Transport support employees	0.895	-0.105
		Core transport	Managers of core transport	0.898	-0.102
		Core transport	Administrative staff in core transport	0.820	-0.180
		Core transport	Buss drivers	1.000	+0.007
		Core transport	Tram driversy	1.000	+0.024
		Core transport	Troley drivers	1.000	+0.015

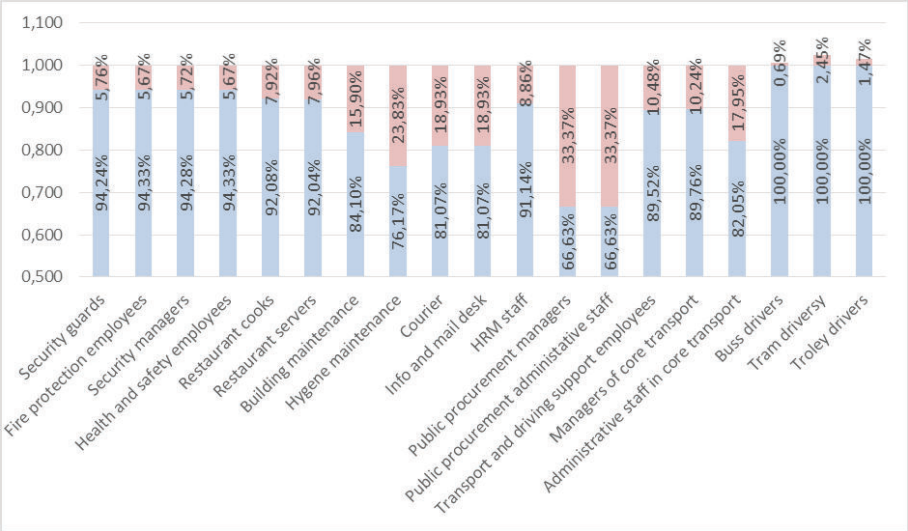
Instead of using standard deviation as statistical measurement of variability for the fluctuation of performance indicator by months, we can use Gini – Struck coefficient to measure inequality, as described in Savoiu, Craciuneanu and Taicu (2010). The difference is not to be measured between the smallest and highest income as the Gini coefficient is commonly used, but instead between the smallest and highest indicator of productivity within the observed group of workers in the enterprise. Values of Gini-Struck between 0 (perfect equality) and 100 (perfect inequality) can be used instead of the ratio of average and standard productivity (A.PI.PR and S.PI.PR) to calculate the downsizing/rightsizing guideline in the form of percentage (e.g. A.PI.E = (1 - G-S coefficient of performance indicator productivity) + e). Our future research plan is to test Gini-Struck based formula in the practical context, just like previous formulas were tested on public sector companies with more than 18,000 total employees.

6. DISCUSSION

This method has been applied in 21 different public sector organisation during the successful processes of downsizing/rightsizing, which identified a total of 1 819 redundant workers among 18 806 total employees, out of which 679 employees within the total 4 983 employed on non-core and support activities and 1 140 out of 13 823 in the core activities of the observed public enterprises. The basis for that significant organisational change was above explained calculated average efficiency in achieving standard performance indicates standard efficiency, expected to be achieved by most of the employees in the current organisational, technological and socio-behavioural context. Downsizing/rightsizing directions have been applied in all of the observed enterprises, and the goals were reached within three consecutive years. Each rightsizing goal was available per group of jobs, as illustrated in the figure 1.

Calculated productivity variance translated to expected rightsizing goals - headcount percentage

Figure 1

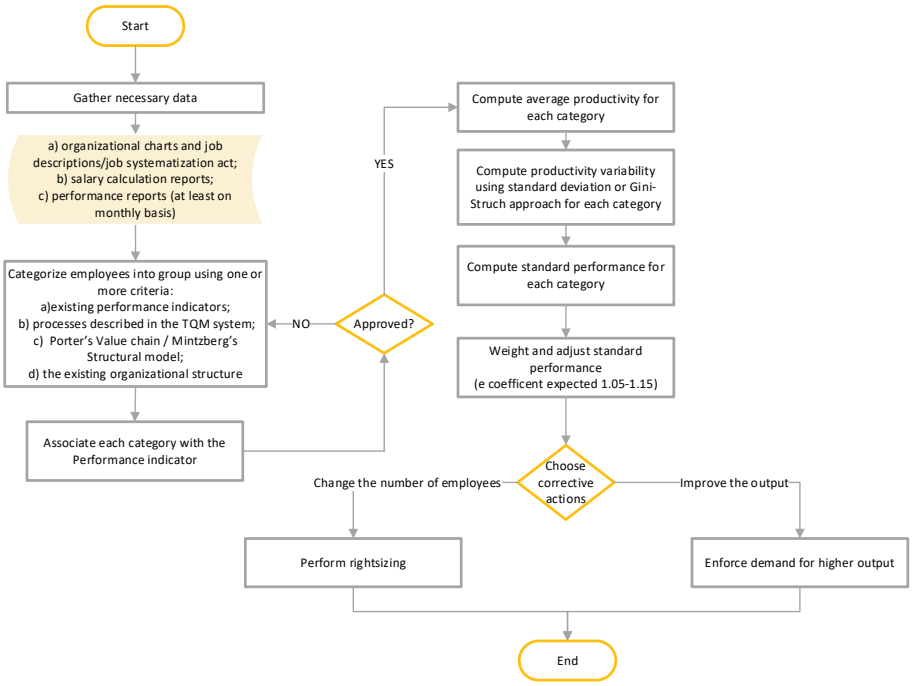


When the achieved specific efficiency is less than 100%, it means that observed organisational section can provide more services or produce more output with the same number of employees, or that demanded output can and should be created with more efficiency, i.e. fewer work hours. Fewer work hours in most cases can, but do not have to, lead to fewer employees. Other approaches can be used, and less demanded workhours can be obtained by voluntary unpaid vacations, leaves and similar strategies for responsible restructuring (Cascio, 2002). If the downsizing might not be the most appropriate solution, salary, or some other cost reduction is often a rather better alternative. If, e.g. average efficiency in achieving standard performance is 89.56%, it means that in this period observed a group of employees either can have 10.44% less employees, or the same number of employees can have 10.44% less paid hours or that number of employees can achieve 10.44% more output. If this group of employees, related to that performance indicator by any of the four methods described below has 100 employees that made 1000 value of PI, they should either (a) increase output to 1104.4 units, or (b) decrease workforce input – in the downsizing case decrease the number of employees by 10.44 (rounded to 90 employees). This decision depends on the strategy of the organisation and customers' need for additional output. In both cases, engagement is proactive (Adizes, Cudanov & Rodic 2017;

Adizes, Rodic & Cudanov, 2017), i.e. organisations can initiate the change without intense external pressure. If the decision is to implement downsizing/ rightsizing, our method cannot point to concrete employees, but to a group of employees with the contribution to the same PI. The exact method of rightsizing can be line reduction, voluntary leave, or targeted discharge, and our approach limits none of it. A general overview of the whole method is graphically represented in the Figure 2.

Expected workflow of the performance improvement project using indicator variance analysis

Figure 2



Interpretation of results is of utmost importance. Our method does not only point to reducing headcount – benefits can be attained by reducing costs or increasing efficiency. Results can point to concentrating unproductive tasks of several public enterprises to one small specialised enterprise, changing the structure to the organisational network of similar enterprises. Downsizing/rightsizing is a very delicate issue, and our results are just suggestions, not final action, but it is very important that suggestions are objective and just. Detailed analyses can increase trust in the objectivity of results, and communication quality has a critical positive influence on the attitude of employees who remain in the workforce (Chipunza & Samuel 2008). Remaining employees have significantly lower performance if they perceive downsizing process unfair (Armstrong-Stassen 2004). Employee morale depends on procedural justice more than on distributive justice (Van Dierendonck & Jacobs 2012), and reduction of employee number is connected with the drop in employee morale so respectful and just treatment is needed for employee commitment and trust (Tsai & Shih, 2011) because such approach can bring long-term benefits to organisational performance (Cascio, 2002; Tsai & Shih, 2011). The main source of resistance to our method resides in the corporate political power balance with employee syndicates, resulting in strike threats and spreading of rumours among employees. Syndicate resistance is expected (Burnes, Katsouros & Jones, 2004) and can be negotiated through increasing specific factor e, subjective part in our equation. Our exciting experience is that during the practical implementation of this method in 21 different public sector organisations, trade union representatives strongly opposed reduction in the number of employees on several official meetings and discussed against downsizing. However, in informal discussion, after each meeting, they explicitly complimented precision of analysis and stated that gaps in productivity and number of employees are exactly where pointed to by the analysis.

7. CONCLUSIONS

This method aims to provide an objective and fair approach to downsizing/rightsizing, which, compared to a subjective estimation of downsizing/rightsizing parameters, improves negotiating positions with employees and union representatives during the downsizing process. Also, application of this method during the downsizing/rightsizing process has beneficial effect on all three groups of employees involved in the process – employees that loose the jobs, employees that stay employed after the process with the potential "survivor syndrome" (Sahdev 2004) and employees that

execute the process. However, this approach has several limitations. Some companies have large seasonal oscillations in demand so which result in large estimated gaps between existing and desired number of employees. Typical example includes employees in communal heating plants, who perform with completely different dynamics and workload during winter and summer months. It would be wrong to perform downsizing/rightsizing because there is no need for most of their core activities during summer months – much better solution is to redistribute their work to other communal companies with different mission, where summer months take demand peak. Future research should be directed towards special cases where our set of formulas does not provide best results

Lateral contribution of our method's application is that it sobers up employees, enforces reality check and objectively showing how problems in the enterprise are also partly their fault, and that governing entities care very much for their performance, track it and observe the inconsistencies. Analyses of productivity, fair and achievable standards can motivate employees and improve their results. In general, this approach offers efficiency improvement as alternative to frightening rightsizing/downsizing since cost savings can be achieved without performing these unpopular actions. Employees begin to carefully track and widely use performance indicators, which presents another solution to the problems in the organisation, rather than to perform downsizing. Downsizing is delicate and hard organisational change and should be the last alternative, chosen only in situations where other restructuring approaches are not possible. Planning for that change needs to be elaborate, and change success should be estimated with quantitative methods, like the change equation (Cudanov, Tornjanski & Jasko 2019). Also, our experience with this method shows that if the company has to perform downsizing due to the excessive number of employees, that excessive headcount is more the effect then the cause of the real problem, minor among the organisational issues, compared to core mistakes that lead to the undesirable situation.

References

1. **Adizes, I., Cudanov, M., Rodic, D.,** 2017, „Timing of Proactive Organizational Consulting: Difference between Organizational Perception and Behaviour", *Amfiteatru Economic*, 19 (44), 232-248
2. **Adizes, I., Rodic, D., & Cudanov, M.**, 2017, "Estimating consultant engagement in the corporate lifecycle: study of the bias in South Eastern Europe", *Management:Journal Of Sustainable Business And Management Solutions In Emerging Economies, 22*(2), 1-12. doi:10.7595/management.fon.2017.0015
3. **Aharoni, Y.**, 2000, "The performance of state-owned enterprises" [in:] P. A. Toninelli, ed. 2000. *The Rise and Fall of State-Owned Enterprise in the Western World*. Cambridge University Press, New York, USA, 49–72.
4. **Altig, D. E., Barrero, J. M., Bloom, N., Davis, S. J., Meyer, B., Mihaylov, E., &**

Parker, N. B., 2020, "COVID-19 Caused 3 New Hires for Every 10 Layoffs", Fed in print, available online: https://fedinprint.org/item/a00002/87882
5. **Cascio, W.F.,** 2002, "Strategies for responsible restructuring. *Academy of Management Executive*, 16(3), 80-91.
6. **Armstrong-Stassen, M.**, 2004, "The influence of prior commitment on the reactions of layoff survivors to organisational downsizing", *Journal of Occupational Health Psychology*, 9(1), 46-60. DOI: 10.1037/1076-8998.9.1.46
7. **Awortwi, N.**, 2010, "Building new competencies for government administrators and managers in an era of public sector reforms the case of Mozambique", *International Review of Administrative Sciences*, 76(4), 723-748. DOI: 10.1177/0020852310381803
8. **Bartik, A. W., Bertrand, M., Cullen, Z. B., Glaeser, E. L., Luca, M., & Stanton, C. T.,** 2020, How are small businesses adjusting to COVID-19? Early evidence from a survey (No. w26989). National Bureau of Economic Research.
9. **Birdsall, N. & Nellis, J.**, 2003, "Winners and Losers: Assessing the Distributional Impact of Privatisation", *World Development*, 31(10), 1617-1633. DOI:10.1016/S0305-750X(03)00141-4
10. **Burnes, B., Katsouros, M., Jones, T.**, 2004, "Privatisation and the European Union: the case of the public power corporation of Greece", *The International Journal of Public Sector Management*, 17(1), pp. 65-80. DOI: 10.13140/RG.2.1.2029.5441
11. **Cervo, D., Allen, M.**, 2011, *Master Data Management in Practice: Achieving True Customer MDM*, John Wiley and the Sons, New Jersey, USA.
12. **Chipunza, C., Samuel, M.O.**, 2011, "The Influence of Downsizing Organisational Strategies on Survivor Qualities in an Economically Volatile Environment", *Journal of the Social Sciences*, 28(2), 87-98. DOI: 10.1080/09718923.2011.11892932
13. **Cudanov M., Jasko O.**, 2012, "Adoption of Information and Communication Technologies and Dominant Management Orientation in Organisations", *Behaviour & Information Technology*, 31(5), 509-523. DOI: 10.1080/0144929X.2010.499520
14. **Cudanov, M., Jasko O., Savoiu G.**, 2012, "Public and Public Utility Enterprises Restructuring: Statistical and Quantitative Aid for Ensuring Human Resource Sustainability", *Amfiteatru Economic*, No 32, 307-322.
15. **Cudanov, M., Savoiu , G., Jasko, O.,** 2012, "Usage of Technology Enhanced Learning (TEL) Tools and Organizational Change Perception", *Computer Science and Information Systems Journal*, 9(1), 287-304. DOI: 10.2298/CSIS110106043C
16. **Cudanov, M., Tornjanski, V., & Jaško, O.**, 2019, "Change equation effectiveness: empirical evidence from South-East Europe", E&M Economy and Management, 22(1), pp. 99-114, DOI: 10.15240/tul/001/2019-1-007
17. **De Bono, S., Van Der Heijden, B., Jones, S.,** 2009, *Managing Cultural Diversity - Maastricht School of Management Series in Intercultural and Global Management*, London, UK: Meyer&Meyer.
18. **Eliason, M.**, 2014, "Assistant and auxiliary nurses in crisis times: Earnings, employment, and income effects of female job loss in the Swedish public sector." *International Journal of Manpower*, 35(8), 1159-1184. DOI: 10.1108/IJM-12-2012-0175
19. **Feldheim, A.M.,** 2007, "Public sector downsizing and employee trust." *International Journal of Public Administration*, 30(3), 249-270. DOI: 10.1080/01900690601117739
20. **Frankel, S.**, 1984, *Introduction to software packages*, Washington, USA: National Bureau of Standards.
21. **Glassner, V.,** 2010, "The Public Sector in the Crisis (December 8, 2010)." *ETUI Working Paper 2010.07*. Available at SSRN: https://ssrn.com/abstract=2264051 or http://dx.doi.org/10.2139/ssrn.2264051
22. **Goh, T.N.**, 2011, "Six Sigma in industry: some observations after twenty-five years", *Quality and Reliability Engineering International*, 27(2), 221–227.

23. **Grimshaw, D., Johnson, M., Marino, S., & Rubery, J**., 2017, "Towards more disorganised decentralisation? Collective bargaining in the public sector under pay restraint", *Industrial Relations Journal*, *48*(1), 22-41.
24. **Gros, D., Mayer, T.**, 2010, "How to deal with sovereign default in Europe: Towards a Euro(pean) Monetary Fund." *CEPS Policy Briefs*, No. 202, pp.1-10.
25. **Guerrieri, V., Lorenzoni, G., Straub, L., & Werning, I.**, 2020, "Macroeconomic Implications of COVID-19: Can Negative Supply Shocks Cause Demand Shortages?" (No. w26918). National Bureau of Economic Research.
26. **Fernandes, N.**, 2020, "Economic effects of coronavirus outbreak (COVID-19) on the world economy", Available at SSRN 3557504.
27. **Hitt, M. A., Keats, B. W., Harback, H. F., & Nixon, R. D,** 1994, "Rightsizing: Building and maintaining strategic leadership and long-term competitiveness." *Organizational Dynamics*, 23(2), 18-32. DOI: 10.1016/0090-2616(94)90066-3
28. **Jasko, O., Cudanov, M., Krivokapić, J., Jevtić, M., Savoiu , G.**, 2011, "Classical solutions for improvement of restructuring process and representation of organisational structure and alternative future solutions of quantum economics", *Econophysics, Sociophysics & Other Multidisciplinary Sciences Journal*, 1(2), 36-46.
29. **Jasko, O., Krivokapić, J., Cudanov, M.**, 2010, "Standards of job classification as organisation design tool based on Mintzberg's and Porter's theoretical assumptions", *Proceedings of 7th Conference Standardization, protypes and quality: a means of Balkan countries' collaboration*, Serbia: Zlatibor, 8-9 June.
30. **Kaplan, R. S., Norton, D. P.**, 1996, "Using the balanced scorecard as a strategic management system", *Harvard Business Review*, 74(1), 75–85.
31. **Kessides, I., Miniaci, R., Scarpa, C., Valbonesi, P.**, 2009, "Toward defining and measuring the affordability of public utility services", World Bank Policy Research Working Paper 4915, *The World Bank/Development Research Group/Environment and Energy Team*, [accessible at: http://elibrary.worldbank.org/deliver/4915.pdf?itemId=/content/workingpaper/10.1596/1813-9450-4915&mimeType=pdf Accessed October 21st 2012].
32. **Kopelman, J. L., & Rosen, H. S.**, 2016, "Are Public Sector Jobs Recession-Proof? Were They Ever*?" Public Finance Review*, 44(3), 370-396.
33. **Laird, J.,** 2017, "Public Sector Employment Inequality in the United States and the Great Recession", *Demography*, 54(1), 391-411.
34. **Laloux, F.**, 2014, "*Reinventing organisations: A guide to creating organisations inspired by the next stage in human consciousness*." Nelson Parker, Brussels, EU.
35. **Landry, J.T.,** 2004, "Downsizing in America: Reality, Causes, and Consequences", *Harvard Business Review*, 82(2), 39-46.
36. **Lapavitsas, C., Kaltenbrunner, A., Lindo, D., Michell, J., Painceira, J. P., Pires, E., Powell, J., Stenfors, A. Teles,** N., 2010, "Eurozone crisis: Beggar Thyself and Thy Neighbour", *Journal of Balkan and Near Eastern Studies*, 12(4), 321-373. DOI: 10.1080/19448953.2010.510012
37. **Matz, D. & Hause, E.**, 2008), ""Dealing" With the Central Limit Theorem." *Teaching of Psychology* 35, 198-200.
38. **Mckee-Ryan, F.M., and Kinicki, A.J.,** 2002, "Coping job loss: a life-facet perspective", *International Review of Industrial and Organizational Psychology*, 17(2), 1-29.
39. **Mintzberg, H.**,1993, *Structure in fives: Designing effective organisations*. Prentice-Hall, Inc, New York, USA.
40. **Popova, V. Sharpanskykh, A.**, 2010, Modeling organisational performance indicators. *Information Systems*, 35(4), 505-527.
41. **Porter, M. E., Millar, V. E.**, 1985, "How Information Gives You Competitive Advantage", *Harvard Business Review*, 63(4), 149-160.

42. **Pukelsheim, F.**, 1994, "The Three Sigma Rule", *The American Statistician*, 48(2), 88-91.
43. **Rama, M.**, 1999, "Public sector downsizing: An introduction", *The World Bank Economic Review*, 13(1), 1-22.
44. **Raudla, R., Randma-Liiv, T., & Savi, R.**, 2015, "Public Sector Financial and Personnel Management during Cutbacks: Looking back at the Literature of the 1970s and 1980s." *Administrative Culture*, 16(2), 117-140.
45. **Sahdev, K.**, 2004, "Revisiting the survivor syndrome: The role of leadership in implementing downsizing", *European Journal of Work and Organizational Psychology*, 13(2), 165-196.
46. **Savoiu, G., Craciuneanu V., Taicu., M.**, 2010, "A new method of statistical analysis of markets' concentration or diversification", Romanian Statistical Review, vol 2, pp. 15-20, http://www.revistadestatistica.ro/Articole/2010/A3en_2-2010.pdf
47. **Savoiu , G., Dinu, V.,** 2012, "Solutions for the Statistical Analysis of the Economic Phenomena Described as Opposed, Partially of Entirely Compensated Fluxes: A Case Study on the Exports and Imports of Romania and the Baltic States", *Transformations in Business & Economics*, 11, No. 11, 54-71.
48. **Stancu, I., Stancu, I.A., Naghi, L.E. and Bâlteanu, D.,** 2018, "Predicting Strategic Areas of a Financial Intermediation Services (SIF) Company Using BSC and PLS", *Amfiteatru Economic*, 20(47), 218-228.
49. **Torrington, D., Hall L., Taylor, S.,** 2005, Human Resource Management. 6th ed. London, UK: Prentice Hall.
50. **Trevor, C.O., Nyberg, A.J.,** 2008, Keeping your headcount when all about you are losing theirs: Downsizing, voluntary turnover rates, and the moderating role of HR practices. *Academy of Management Journal*, 51(1), 259-276.
51. **Tsai, P.C-F, Shih, C-T.,** 2011, The Relationship between a Responsible Downsizing Strategy and Firm Performance: Are Labor Unions a Stepping Stone or a Stumbling Block, "International Conference on Business and Information (BAI)", South Korea: 7-9 July 2008 [available at: <http://academic- papers.org/ocs2 Papers/A5/537-734-/session/1-RV.doc > Accessed 17th Oct 2012].
52. **Van Dierendonck, D., Jacobs, G.**, 2012, "Survivors and Victims, a meta-analytic review of fairness and organisational commitment after downsizing", *British Journal of Management,* 23(1), 96-109.
53. **Wells, P.,** 2018, "Evidence based policy making in an age of austerity", *People, Place & Policy Online*, 11(3). 175-183. DOI: 10.3351/ppp.2017.8763267545
54. **Whelan, K.**, 2009, Policy Lessons from Irelands Latest Depression. "UCD Centre for Economic Research Working paper series", [available at: http://www.ucd.ie/t4cms/wp09.14.pdf Accessed 18th of October 2012].
55. **Zahariadis, N.**, 2016, "Powering over puzzling? Downsizing the public sector during the Greek sovereign debt crisis", *Journal of Comparative Policy Analysis: Research and Practice*, 18(5), 464-478.
56. **Zeffane, R., & Mayo, G.**. 1994, "Rightsizing: The strategic human resource management challenge of the 1990s.", *Management Decision*, 32(9), 5-9. DOI: 10.1108/00251749410071568