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# Labor costs in a construction company in the Czech Republic – a case study

Keywords: labor costs, construction company, wage costs

# Introduction

Nowadays, the inflation rate in the Czech Republic reaches two-figure digits which results in a great pressure on the increase in wages of the employees, both generally and in the construction industry. At the same time, the fact that some professions are highly specialized and there tend to be fewer professional workers in production, forces the construction companies to keep these professions as a part of their workforce. This, however, entails increased costs per such worker and thus increased costs per construction contract. Every company monitors all production costs very carefully; however, it is also necessary to have a detailed overview associated with the labor costs on each construction contract, both the company's own labor costs and the subcontractor's labor costs. If wages or even other costs associated with employees increase, it could have a significant impact on the profitability of the contract.

The aim of the article is to quantify the total labor costs of the company in percent. Moreover, it aims to show the labor costs on a construction contract both from the terms of the company's labor costs of its own employees and the subcontractors' labor costs.

The construction industry represents one of the pillars of the country's economy. It is a sector that is closely connected to the development of the territory, including environmental impacts. Construction productivity is very important for the growth of the national economy and plays a significant role in the industry by Naoum (2016). It contributes to the development of the territory by expanding infrastructure, creating conditions for the development of the economy and the associated increase in jobs during the construction period in the region together with investment construction by the Stavebnictví České Republiky 2019 (2020).

The construction sector provides employment for a wide range of the population in terms of education, being able to absorb workers with lower or different qualifications. The construction sector employs 8% of the total number of persons employed in the Czech Republic. It provides jobs for foreign minorities, whose employment in the Czech construction sector is currently crucial for the smooth and economical operation of construction companies due to the shortage of domestic workers. This reflects the normal operation of the construction industry in the world by Jang, Kim, Kim and Kim (2011), and Smart Stavebnictví (2012). According to Rabušić (2001), the biggest benefit of such migration is the taxes that immigrants working in the Czech Republic have to pay on their income.

According to Šimková (2016), the importance of migration in the construction sector is that foreign workers are willing to work in worse conditions with lower financial remuneration. Moreover, the construction sector faces the issue of labor productivity as one of the biggest problems. There are several factors related to productivity, one of them being the lack of motivation, where one of the main motivation tools is the financial reward of workers in Hamza, Shahid, Bin Hainin and Nashwan (2022). Although motivation in the form of financial remuneration is directly reflected in an increase in labor costs, its increase is also directly linked to an increase in labor productivity. Thus, it can be stated that the work productivity increases with the increase of the labor costs in Chen, Wu and Van Ark (2009).

Companies are constantly struggling with their labor costs. On the one hand, some companies value their employees more and thus have more benefits to motivate them which is associated with higher costs, and on the other hand, some companies pay only what is required by the state's labor laws. The composition and magnitude of the companies' labor costs of own employees varies from company to company. In the case of contracted outsourced workers, companies have only one total cost to pay the hired person only for the work done.

According to the Czech Ministry of Industry and Trade (MIT CZ, 2023), labor costs in the period under observation 2016–2020 amounted to 13.60% on average in relation concerning the sales revenues for the construction sector (Table 1). Labor costs include the sum of wage costs per employee, compulsory social and health insurance and other costs related to, for example, employer contributions to life insurance or pension schemes.

TABLE 1. Percentage of labor costs to sales revenue from profit and loss statement from 2016 to 2020 period

Specification	2016	2017	2018	2019	2020
Labor costs [%]	13.87	13.96	13.40	13.35	13.46
Wage costs [%]	10.01	10.86	9.51	9.49	9.51
Social and health insurance costs [%]	3.58	3.89	3.63	3.62	3.96
Other costs [%]	0.29	0.32	0.25	0.25	0.16

Source: own work according to MIT CZ (2023).

The above-stated values are taken from construction companies of various sizes operating in the Czech Republic. On average, 32 construction companies entered this analysis for the period 2016–2020. The above-stated costs are classified according to the profit and loss statements, which is are determined by Act No. 563/1991 Coll. on accounting. As mentioned earlier, Labor costs form the sum of the following:

- wage costs including wages under an agreement to perform work or under agreements to complete the job,
- social and health insurance costs, which in the Czech Republic amount to 33.8% of gross wages,
- other costs incurred in connection with the payment of life insurance or pension contributions or costs associated with food allowances, etc.

A wage is a reward for work done, i.e., the price of work. Act No. 1/1992 Coll. on wages states that it is a monetary remuneration or remuneration of monetary value provided by an employer to an employee in return for work.

It is provided to the employee according to 3 indicators, namely according to the complexity, responsibility and difficulty of the work (assessment according to the education, knowledge and skills needed to perform the work), according to the difficulty of the working conditions (it means the division of working time, for example, into shifts, or work at night, on holidays, the risk level of the working environment is also taken into account) and according to the work performance and the results achieved (the main point is the quality of the work performed). The basis of the remuneration system is the wage regulations. They are divided into legal norms at the state level and at the internal company level. The defining legal standard is Act No. 262/2006 Coll. Labor Code. Other important legal standards influence the working environment and remuneration in the Czech Republic. These are mainly government laws and regulations: Act No. 435/2004 Coll. on employment, Act No. 2/1991 Coll. on collective bargaining, Act No. 592/1992 Coll. on general health insurance contributions, Act No. 589/1992 Coll. on social security contributions and contributions to the State Employment Policy, Act No. 586/1992 Coll. on income tax, as amended, Act No. 110/2019 Coll., on the processing of personal data, Government Regulation No. 567/2006 Coll. on the minimum wage and Government Regulation No. 531/2021 Coll. on salary rates in Public Services and Administration. Each company may have its own internal regulations for rewarding and motivating its employees.

The wage costs of a company consist primarily of the sum of the gross wages of all employees plus the social and health insurance paid by the employer on behalf of the employees. The gross wage is calculated by adding the basic wage and the variable wage. Under current legislation, the social insurance paid by the employer on behalf of the employee is 24.8% of the gross wage and the health insurance is 9% of the gross wage according to Act No. 592/1992 Coll. and Act No. 589/1992 Coll.

Although these costs are high, there are other costs associated with the employees; mainly costs related to education and mandatory training of employees, mandatory liability insurance of the company, compensation for sick leave, purchase of protective equipment and equipment for employees, medical allowances, bonus system – e.g. food allowances, contributions to retirement savings, recreational allowances, etc. However, the company does not have all these additional costs if it hires an external company or a tradesman to do the work. There is a constant decision-making process in every company whether it is more economically advantageous to employ a worker or just to use the work of external subcontractors.

Currently, a high inflation rate is one of the parameters affecting wage growth. It is evident, based on the studies carried out, that the rise in prices in the society puts pressure on the increase of wages. This fact is mainly proved by the correlation between the growth of the price level and the level of wages in the economy by Darrat (1994). However, it has to be taken into account that in most cases this is a reaction to the currently rising inflation. Therefore, as inflation rises, wages rise, but the rise in wages is slower and more gradual than the rise in the price level Domash and Summers (2022), and Jordà and Nechio (2023) too. It must also be taken into account that wage increases do not necessarily lead to higher productivity,

but may only keep workers productive at the same level in Cruz (2023). This especially applies if there is an increase in the price level in the economy.

The Czech Statistical Office (CSO) publishes an overview of retrospective data from the field of labor market statistics. The data was obtained from surveys of economic entities or from administrative sources. The survey of economic entities is carried out depending on the number of employees, either by comprehensive or sample surveys. In the case of a sample survey, the transformation to the base set is carried out on all active units included in the CSO register of economic entities. The overview contains the development of the most important indicators in the sectoral and territorial classifications. The sectoral classification is based on the "Classification of Economic Activities CZ-NACE", valid since 1 January 2008, which fully corresponds to the international classification NACE Rev. 2 at the reported level. The territorial classification is made according to the CZ-NUTS classification, which is in accordance with the Regulation of the European Parliament and the Council of Europe on the establishment of a common classification of territorial units for statistics (NUTS).

Wages rise as the productivity of the economy rises. The evolution of average wages for the whole economy and the construction sector in the Czech Republic from 2005 to 2022 can be seen in Figure 1.



FIGURE 1. Development of average wage in all sectors/construction sector in the Czech Republic (1 EUR = 24.50 CZK)

Source: own work according to CSO (2023).

The development of the average wage in the Czech construction industry has been lower than the average wage in the economy as a whole over the entire period. This difference has been gradually increasing over time. Whereas in 2005 the difference was around 9%, in 2022 it is already almost 12%. This disparity can be explained mainly by the significantly increasing wages in sectors of the economy such as banking, information technology and logistics, where wages are rising faster than in the construction sector.

Looking specifically at the South Moravian Region, where the company used in the case study in this article is located, it can be found that the average wage in its construction sector essentially mirrors the average wage in the construction sector in the whole country. This can be seen in Figure 2.



Average wages in the construction sector in the South Moravian Region

FIGURE 2. Development of average wage in the construction industry in the Czech Republic and the South Moravian Region (1 EUR = 24.50 CZK)

Source: own work according to CSO (2023).

## **Material and methods**

Mainly analytical methods were used in the case study, which deals with the determination of labor costs in a construction company and a construction contract. These analytical methods were applied to the basic financial statements, namely the profit and loss statement. As part of the introduction to the case study, the observed

period was selected, namely the period 2016–2020. For further detailed analysis of labor costs in the company, 2019 was chosen as a sample year, due to the stable reporting of these costs.

The accounting statements like profit and loss statements were used for the case study, this statement can be referred to as income statement. This statement records the income and expenses associated with the operating and financial areas of the entities.

The financial analysis method used in the case study was the vertical method. This method belongs to the elementary methods that are commonly used in the financial management of companies. Vertical analysis is based on the percentage representation of a given item to the total item. The formula of vertical analysis can be expressed as follows:

determination of percentage = 
$$\frac{research quantity}{basic quantity}$$
100. (1)

An arithmetic average was established to determine the value of the monitored items according to the formula below:

$$\overline{x} = \frac{1}{n} (x_1 + x_1 + \dots + x_n) = \frac{1}{n} \sum_{i=1}^n x_i.$$
(2)

The median was determined for the relevance of the outcome of the monitored items as follows:

$$Me(X) = x_{(N+1)/2}$$
 (3)

In the case study, the methods described above were used in the following steps:

- 1. Vertical analysis was used in the cost analysis from profit and loss statements for the 2016–2020 period.
- 2. Individual analysis is used to quantification of all labor costs from the internal company documents for the year 2019.
- 3. The product of the wage rates and the number of hours worked is used to analysis of labor costs for a specific contract of the given company.
- 4. Final evaluation of the findings.

## **Results and discussion**

The case study focuses on the analysis of the labor costs in a selected construction company. The period researched from the perspective of the whole company was the 2016–2020 period. The determination of the labor costs directly on the construction

contract was dated to 2019. The determination of the case study directly in the construction company was conditioned by the willingness of the company to cooperate and provide internal company information.

The research into the labor costs of the company was carried out in the following steps:

- 1. Cost analysis from profit and loss statements for the 2016–2020 period.
- 2. Quantification of all labor costs from the internal company documents for the year 2019.
- 3. Analysis of labor costs on a specific contract of a given company.
- 4. Final evaluation of the findings.

The labor costs are described in the case study using a real medium-sized construction company and its specific real contract. The construction company is based in the South Moravian Region of the Czech Republic (the Czech Republic is divided into 14 regions). The average sale revenues of the selected construction company are about CZK 400 million. The construction company employs about 130 employees. They are divided into production workers and technical and economic employees in the ratio of about 80 production workers and 50 technical and economic employees (percentage ratio is 62 : 38).

Workers are defined as those employees who are directly involved in the production process. Their work is predominantly physical and involves the use of tools. The result of the work of such a worker may be material goods or their repair or maintenance. A worker is for example a welder, a bricklayer, a roofer, etc.

Technical and economic employees are known as administrative staff, most often with a vocational or technical background. They operate mainly in the administration and management departments of a company. A technical and economic employee is for example the director himself, a secretary, an accountant, an economist or a budgeter, etc.

Input values to the analyses come from the financial statements of the accounting units (entities), which contain two basic financial statements, namely the profit and loss statement and the balance sheet, i.e. the balance sheet of assets and sources of coverage of these assets. The specification of these documents is determined by Act No. 563/1991 Coll. on accounting. They are published by the Ministry of Justice on its website.

Firstly, the profit and loss statement from the 2016–2020 period was used to determine data related to the company's sales remuneration and labor costs, which consist of wage costs, social and health insurance paid by the employer on behalf of employees and other personnel costs. This can be seen in Table 2.

Specification	2016	2017	2018	2019	2020
Sales revenues [thous. CZK]	252 573	345 142	422 279	481 309	441 835
Labor costs [thous. CZK]	51 158	54 877	56 648	60 238	63 778
Wage costs [thous. CZK]	36 901	39 381	41 261	43 830	46 186
Social and health insurance costs [thous. CZK]	12 320	13 183	13 793	14 655	15 366
Other costs [thous. CZK]	1 937	2 313	1 594	1 753	2 226

TABLE 2. Revenues and personnel costs of the company from 2016 to 2020

Source: own work according to MJ CZ (2023).

The data obtained shows that the share of labor costs in the company's sales revenues is 15.30% on average in the given years. The share of social security and health insurance and other costs in wages was also analyzed, i.e., how much the employer has to pay the employee in addition to his gross wages. The average figure for the period was determined to be 38.16%. See Table 3 for details.

TABLE 3. Observed shares for the years 2016 to 2020

Specification	2016	2017	2018	2019	2020	AVG	Ме
Share of labor costs on sales revenues [%]	20.25	15.90	13.41	12.52	14.43	15.30	14.43
Share of insurance and other costs on wage costs [%]	38.64	39.35	37.29	37.44	38.09	38.16	38.09

Source: own work.

Labor costs are not just wage costs but consist of several items. A very important part represents the compulsory health and social insurance paid by the employer on behalf of the employee, as well as all training, travel and meal allowances, various compensations, etc. All such other costs are shown in Table 3. It contains all the employee-related costs of the company for the year 2019. The labor costs in Table 4 were determined based on a discussion with the construction company's economist where these costs were identified in the accounting records, analyzed and a summary value was determined. The value of labor costs identified in Table 4 is not broken down into costs related to workers and technical and economic employees. The workers likely have lower wages than the salaries of the technical and economic employees. It is important to show that the personnel costs (Table 2), but also of costs that enter the profit and loss statement under other cost items and that can only be identified personally.

The individual labor costs per employee for 2019 were quantified in Table 5 based on the information. Table 5 shows that the ratio of the sum of social and health insurance costs and other costs to the total wage costs is 53.66%.

The ratio  $\Sigma$  of social and health insurance costs to wage costs = 23,262,298.70//43,352,832.00 = 53.66%.

The above-stated data shows that this construction company must add to its wage costs 53.66% of these costs to get the total labor costs. These costs, quantified as a percentage share, are reflected within the overhead costs in the cost of the construction contract.

Type of cost	Value [CZK]
Wage costs	43 352 832.00
Travel – construction contracts	834 989.40
Fares – TES	678.02
Travel – meals	1 485 571.00
Training, occupation safety and health	604 259.30
Services – workers' compensation	3 104 413.00
Compensation – doctor	398 059.00
Statutory social insurance	10 763 332.00
Statutory health insurance	3 892 259.00
Supplementary pension scheme – employer's contribution	208 400.00
Other social costs	65 672.54
Liability insurance – company	443 756.52
Statutory social costs	1 460 908.92
Total labor costs per year	66 615 130.70

TABLE 4. Labor costs for 2019

1 EUR = 24.50 CZK.

Source: own work according to Bellayova (2020).

TABLE 5. Summary of labor costs per employee for 2019

Type of cost	Costs [CZK]
Labor costs	66 615 130.70
Wage costs	43 352 832.00
Social and health insurance	14 655 591.00
Other costs	8 606 707.70

1 EUR = 24.50 CZK.

Source: own work.

In the next section, the study focused on quantifying the labor costs on a specific construction contract involving the renovation of a single-family house. The renovation took place at the turn of 2019/2020. This contract involved both the company's own employees and subcontractors. The subcontracts involved roof repairs, the supply and installation of UPVC windows and plumbing. Other work was carried out by the company's employees. The total cost of the contract was 950,000 CZK. All the invoices related to the work of the subcontractors, as well as the statements of work of its own employees who had participated in the contract, were obtained from the company's accounts.

Table 6 quantifies the direct wage costs of the contract. The wage costs were determined from accounting data as the product of the actual hours worked by the employee and his hourly rate of pay, i.e. the time wage. Various employees with different wage rates and different working hours worked on the contract during construction. The amount of costs for direct wages was found to be 116,285 CZK from the accounting statements. However, if we require to quantify the total labor cost of the company's own employees, it is necessary to add all other costs, the percentage of which has been determined and declared in Table 5.

The total cost of subcontracting was determined from the invoices received and from the purchase orders provided by the company. It was possible to allocate the amount on material and labor costs of the individual subcontracted companies from a detailed description of the individual invoices and consultation with the economist of the selected construction company. When invoices do not include material costs, a tradesman was hired only for work. The company uses piecework pay for subcontractors or tradesmen hired. Most of the time, it is up to the contractor to decide how to charge for the work. For example, for earth or demolition work, the unit is m<sup>3</sup> and the corresponding unit price. Detailed description can be found in Table 7.

Document type	Number of hours	Wage rate	Amount [CZK]
Work timesheet – employees	4.00	160.00	640.00
Work timesheet – employees	26.00	160.00	4 160.00
Work timesheet – employees	58.25	160.00	9 320.00
Work timesheet – employees	54.00	160.00	8 640.00
Work timesheet – employees	35.00	159.00	5 565.00
Work timesheet – employees	19.00	155.00	2 945.00
Work timesheet – employees	46.00	159.00	7 314.00

TABLE 6. Total company's labor costs on own employees on the contract

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Work timesheet – employees	51.00	160.00	8 160.00
Work timesheet – employees	28.00	164.00	4 592.00
Work timesheet – employees	16.00	164.00	2 624.00
Work timesheet – employees	12.00	164.00	1 968.00
Work timesheet – employees	30.50	200.00	6 100.00
Work timesheet – employees	33.00	160.00	5 280.00
Work timesheet – employees	3.00	159.00	477.00
Work timesheet – employees	42.50	160.00	6 800.00
Work timesheet – employees	54.00	164.00	8 856.00
Work timesheet – employees	10.00	160.00	1 600.00
Work timesheet - employees	16.00	157.00	2 512.00
Work timesheet – employees	35.00	160.00	5 600.00
Work timesheet - employees	70.00	160.00	11 200.00
Work timesheet - employees	35.00	160.00	5 600.00
Work timesheet – employees	36.45	160.00	5 832.00
Total direct labor costs on the cont	116 285.00		
Other labor costs (53.66% of direct wages)			62 398.53
Total labor costs per employee on the contract			178 683.53

1 EUR = 24.50 CZK.

Source: own work according to Bellayova (2020).

TABLE 7. Subcontractors' labor costs on the contract

Desument trins	Subcontract type	Total amount	Material costs	Labor costs
Document type	Subcontract type	[CZK]	[CZK]	[CZK]
Invoice received	Construction work	14 700	0	14 700
Invoice received	Roof repair	32 425	18 725	13 700
Invoice received	Delivery and installation of plastic elements	101 818	78 820	22 998
Invoice received	Supply and installation of piping	32 717	15 425	17 292
Invoice received	Demolition and earthworks	31 500	0	31 500
Invoice received	Earthworks and demolition work	19 200	0	19 200
Invoice received	Earthworks	1 950	0	1 950
Invoice received	Construction work	2 250	0	2 250
Total		236 560	112 970	123 590

1 EUR = 24.50 CZK.

Source: own work according to Bellayova (2020).

The total labor cost on the contract can be determined by summing up all company's own employees' labor costs and subcontractors' labor costs (Table 8).

It was calculated from the information obtained from the profit and loss statement for the years 2016 to 2020 of the selected construction company that the share of labor costs of the company in the sales revenue was 15.30% on average and that the share of social and health insurance and other costs in labor costs is on average 38.16%. However, it was subsequently found from the internal data of the company that the actual share of compulsory insurance (social and health insurance) and other wage costs forms 53.66% of the wage costs of the company which is a significantly higher amount.

Type of costs	Amount
Own employees' labor costs [CZK]	178 683.53
Subcontractors' labor costs [CZK]	123 590.00
Total labor costs [CZK]	302 273.53
Total cost of the contract [CZK]	950 000.00
Share of labor costs on the contract price [%]	31.82

TABLE 8. Labor costs on the contract

1 EUR = 24.50 CZK.

Source: own work.

It was possible to quantify the total labor cost of the contract thanks to the labor information obtained from the subcontractors' invoices, which was found to be 31.82% of the contract price. This figure is more than double the assumed proportion of labor costs from the company's profit and loss statement.

# Conclusions

The paper aimed to quantify all the labor costs in the company and to show the labor costs on a construction contract, both in terms of own employees' labor costs and subcontractors' labor costs. This is important information for any company in times of rising wages and other costs due to huge inflation.

The data was obtained from publicly available sources – from accounting statements mandatorily published on the website of the Ministry of Trade and Industry, and from internal information in a medium-sized construction company. All employee-related costs were collected and analyzed. Furthermore, the specific construction contract was analyzed so that the work of subcontractors and tradesmen hired for specific works was quantified.

This allowed us to accurately quantify the total labor costs in the company, which is more than double the figure from the accounting statements. The profit and loss statement of the selected construction company, on which the case study was based, shows that the average percentage representation of labor costs, which include wage costs and social and health insurance costs, is 15.30%. However, when all costs associated with employees as a labor force are identified in detail, it is evident that the total labor costs represent 31.82% of the sales remuneration. It results in doubled the value.

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## **Summary**

Labor costs in a construction company in the Czech Republic – a case study. This article focused on quantifying the company's total labor costs in percent. Moreover, it aimed

to show the labor costs on a construction contract both from the terms of the company's labor costs of its own employees and the subcontractors' labor costs. Have been accurately quantified the total labor costs in the company from the profit and loss statement of the selected construction company, on which the case study was based, shows that the average percentage representation of labor costs, which include wage costs and social and health insurance costs, is 15.30%. However, when all the costs associated with employees as a labor force are identified in detail, it is evident that the total labor costs represent 31.82% of the sales remuneration. It results in the doubled value.