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CALCULATION METHODOLOGY OF THE HOURLY RATES ON THE EXAMPLE OF A SPECIALIST ENGINEERING COMPANY

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Purpose: The purpose of the article was to present the methodology of determining hourly rates of employees in knowledge-intensive business services (KIBS) as an element of organisational resilience and building competitive advantage.
Design/methodology/approach: The proposal of the methodology was developed on the basis of a case study of a specialised engineering company in the construction industry.
Findings: A methodology proposal for calculating the hourly rates in a service company was developed and presented. Ultimately, it leads to the determination of the hourly rates including indirect costs and overheads, as well as the cost of direct wages, taking into account the effective working time.
Practical implications: Since service companies are based on the intellectual capital, the parameter that determines the potential to acquire work from the market are the hourly rates of its employees consisting of the markups for total costs including labor efficiency. The proper determination of the hourly rates influences the generation of net sales revenue, followed by trade receivables and positive net cash flow. The ability to calculate the hourly rates supports also the process of cost optimisation, which can improve profitability. Cost reduction supports company's competitive advantage in acquiring work, which again can generate an increase in net sales revenue. There is a kind of feedback loop resulting from the methodical calculation of the hourly rates and conscious management of the variables that affect it. At the same time, this improves the organisational resilience in overcoming financial difficulties primarily in the long term, which was also observed in the example of the analysed company.
Originality/value: Despite the growing role of service companies in the economy, there are no known methodologies or guidelines for calculating the hourly rate in service companies, especially knowledge-intensive business services. The literature focuses on calculating the unit cost of production or the calculation of coverage margins primarily for manufacturing companies. Moreover, these methods are based on far-reaching simplifications such as the assumption of a standardised single-assortment production. The proposal of this methodology therefore fills a research gap in the field of determining the hourly rates in service companies, especially knowledge-intensive ones.

Keywords: hourly rates, personnel controlling, financial controlling, knowledge-intensive business services, organisational resilience.

Category of the paper: Research paper, case study.

1. Introduction

The activity of service companies is burdened with specificities of operation that determine a number of management elements. One of the areas that most require a different approach is financial management, management accounting or financial controlling. Scientific publications on these issues use examples taken from production activities or, alternatively, from commercial activities. Service companies, due to their specificity, require an individual approach.

As pointed out by Pocztowski (2008, pp. 45-51), the aspect of human resources management, including the issue of shaping the remuneration of employees are immersed in a number of conditions such as, for example, technical, economic, legal, demographic, socio-cultural, environmental or occurring globalisation processes. At the same time, the aspect of determining the value of an hourly rate is part of global changes such as Industry 4.0. Within this framework, aspects such as project valuations or determining remuneration strategies are influenced by a number of important factors related to the level of market saturation, level of competition, as well as technological changes (Stańczyk, Stuss, 2022). Setting an hourly rate is one element of human capital management (Armstrong, 2009, 2011). It is, however, a key task in the case of knowledge-intensive service companies, as its value determines the company's chances, and thus its competitive position in relation to gathering projects from the market primarily from the public procurement market, where the criterion of the lowest price still dominates in practice in construction industry in Poland.

The aim of the article is to present a methodology for determining hourly rates of employees in knowledge-based companies as an element of organisational resilience and building competitive advantage. The proposal of the methodology was developed on the basis of a case study of a specialized engineering company from the construction industry, where this methodology is applied. Despite the growing role of service companies in the economy, there are no known methodologies or guidelines for calculating the hourly rate in service companies, especially the highly knowledge-intensive ones. The literature so far focuses on the calculation of unit manufacturing cost or the calculation of coverage margins primarily for manufacturing companies (Leszczyński, Wnuk-Pel, 2010; Żaba-Nieroda, 2018). Moreover, these methods are based on far-reaching simplifications such as, for example, the assumption of standardised single-assortment production, in which once calculated cost parameters can be effectively replicated in subsequent periods. The proposal of this methodology therefore fills a gap in the area of determining the hourly rate in service activities, in particular knowledge-intensive ones.

2. Specificity of service companies operating in the public procurement market from the perspective of setting hourly rates

Service enterprises are an essential part of any economy, in particular knowledge-based business services (KIBS). KIBS are specialised business, commercial services that create added value through the creation, accumulation and dissemination of professional knowledge, support the development of the knowledge economy by creating and promoting innovation, and stimulate modernisation processes in global value chains (Bohatkiewicz et al., 2017, pp. 475-476). Design companies in the construction industry are an example of such business entities. Below, Table 1 presents the distinguishing characteristics of service activities and the accompanying problem areas in financial management, management accounting and financial controlling that accompany them.

Table 1.
Distinctive features of service activities and accompanying problem areas in financial management, management accounting and financial controlling

Distinctive features of specialist engineering service companies	Consequences for the area of financial management, management accounting and financial controlling
The heterogeneity of projects and the associated difficulty in standardising processes	The impossibility of explicitly calculating the equivalent unit production cost for service activities
The intangible nature of the main activity	High level of variability of the value of direct costs and difficulty in their precise planning and sub-budgeting
The company's main potential is related to its human capital, which often carries out activities generating high added value; the share of salary costs often exceeds 50% of the company's total costs	High level of risk related to the increase in labour costs - increasing wage surcharges reduce the company's margin, there may be significant deviations between the implementation and the planned budget
Lack of fixed assets, in particular fixed assets such as real estate, plant and machinery	Potentially greater difficulties in obtaining external sources of financing (e.g. loans, credits) due to the lack of tangible assets that could serve as collateral

Source: own study.

The heterogeneity of projects and the related difficulty in standardising processes means that in such enterprises each project is characterised by an individual specificity connected, among other things, with a different scope, time of realisation, qualifications of project team members who should be involved. Consequently, there is a difficulty in determining such elements of work as e.g.: standard duration of tasks, unit production cost, average variable costs or unit variable costs. Services have the character of an intangible product, for which the basic source of production potential is human capital. Hence, very often wage costs dominate the total cost structure of such companies.

In addition, these companies in the great majority operate in the public procurement market. This means that by signing a contract with a public procurer, it is in practice impossible to increase the remuneration of the contractor (company) due to rising labour costs. In addition, the contractor prepares and submits to the contracting authority a calculation of the costs of performing the contract. The contractual provisions on salary adjustments in the construction industry indicate a closed catalogue of situations in which there would be grounds for an increase. These are mainly such circumstances as change of:

- the rate of tax on goods and services,
- the amount of the minimum wage,
- the principles for being subject to social insurance or health insurance, or the amount of the social insurance or health insurance premium rate,
- the rules of collecting and the amount of payments to Employee Capital Plans (pol. Pracownicze Plany Kapitałowe – PPK).

As the literature indicates, cost accounting, as well as analyses concerning it, mostly focus on examples of manufacturing companies, in a minority on commercial companies (Leszczyński, Wnuk-Pel, 2010). Service companies, especially those operating in the public procurement market, are not the subject of research and analysis in terms of such aspects as determining the hourly rate.

It should be pointed out that the hourly rate in such enterprises will depend on a number of factors such as:

- the scope of the employee's work,
- the industry in which the organisation operates,
- the employee's competence and work experience,
- length of service in the undertaking,
- the financial situation of the company, in particular in the area of liquidity (static and dynamic, resulting from cash flows, e.g. as shown in cash flow), profitability (of the whole company, as well as of individual departments, organisational units and projects),
- presence, role and strength of trade union influence,
- development of direct and indirect costs of business activity, as well as general administration costs, sales costs,
- level of indebtedness of the company (value of liabilities due, including overdue liabilities),
- level of planned investments in the organisation,
- the presence and effectiveness of the functioning of such departments as the financial controlling department (especially in the dimension of personnel controlling), as well as management accounting.

As Lawler (1990, p. xi) emphasised, the strategy of a company, in particular its strategic objectives, should be the source for shaping its remuneration strategy. Consequently, also the setting of hourly rates of employees is a process that should grow out of the organisation's strategy and take into account the diverse context and environment of each business activity. Service activities, and in particular knowledge-intensive business services, having in the cost structure the predominance of payroll costs, at the same time base the calculation of the hourly rate precisely on the aspect of direct payroll surcharges, adding then other types of surcharges.

Wage costs include all expenses of a monetary nature, as well as other benefits, paid to employees in connection with their employment in the economic entity, which is subject to calculation according to the principles of statistics and remuneration (Pocztowski, 2008, p. 328). As indicated in the annex to the explanatory notes to the reporting on employment and wages and salaries (GUS), wages and salaries are divided into personal remuneration, impersonal remuneration and fees. Impersonal remuneration refers to persons employed on the basis of a contract for specific work or employment. Personal salaries include the following components (Borkowska, 2001, pp. 12-13):

- basic salary for normal working hours:
  a) fixed, basic wages, consisting of a basic salary (usually contractually stipulated) and relatively fixed wage supplements,
  b) changable wage, which includes supplementary wages (wages for time not worked, allowances and lump sums), the variable (movable) part of wages, including perquisites (or perks) (e.g. discretionary bonuses, regulatory bonuses, piecework surplus) and prizes or bonuses payable from profit.

At the same time, it is worth emphasising that the area of personnel controlling and remuneration setting is the responsibility of various entities in organisation in the sphere of human resource management process (Stańczyk, Kuźniarska, 2020, p. 285), so the hourly rate will be the link between the work of many parts of the company's structure.

3. Calculation of the hourly rate based on the example of a specialised service company in the construction industry

An enterprise from the construction sector in Poland, present on the market for over 22 years, was analysed. The company has 24 employees who work in three main departments. The company's business profile includes the development of design documentation for transport infrastructure, in particular in the field of road infrastructure, engineering structures, traffic engineering, engineering utilities, sewage management. The organisation also carries out studies and environmental analyses serving, among others, to conduct proceedings for issuing

environmental decisions. In addition, the company has a laboratory accredited by the Polish Centre for Accreditation, where the measurements of traffic noise are performed. The company also carries out measurements of traffic volume and vehicle speed. The source of its net sales revenues is in 95% the public procurement market, which at the same time means that among its clients, the dominant group are public finance sector units at both central and local government levels. The company can be classified in the category of knowledge-intensive business services due to the specific nature of its activities. Among the employees there are engineers of technical sciences, in particular with degrees in such fields as civil engineering or acoustics. These are often people with many years of professional experience. In addition, the company also employs doctoral students, persons with doctoral and post-doctoral degrees. The company has repeatedly created guidelines, codes of good practice addressed to all entities in the industry. The top management also participates in the processes of issuing opinions on legislative projects.

Certainly, the activity of this company can be considered a specialised and relatively complex activity, which is best illustrated by the value chain of the communication infrastructure design activity shown in Figure 1 below.

As can be seen, the value chain is divided into auxiliary activities, which include infrastructure management, human capital as one of the most important ones, technological development, research and development, and procurement process. The main activities were divided into pre-execution services, main activities and post-execution activities. The classification and structure of costs in the analysed company is as shown in Table 2 below.

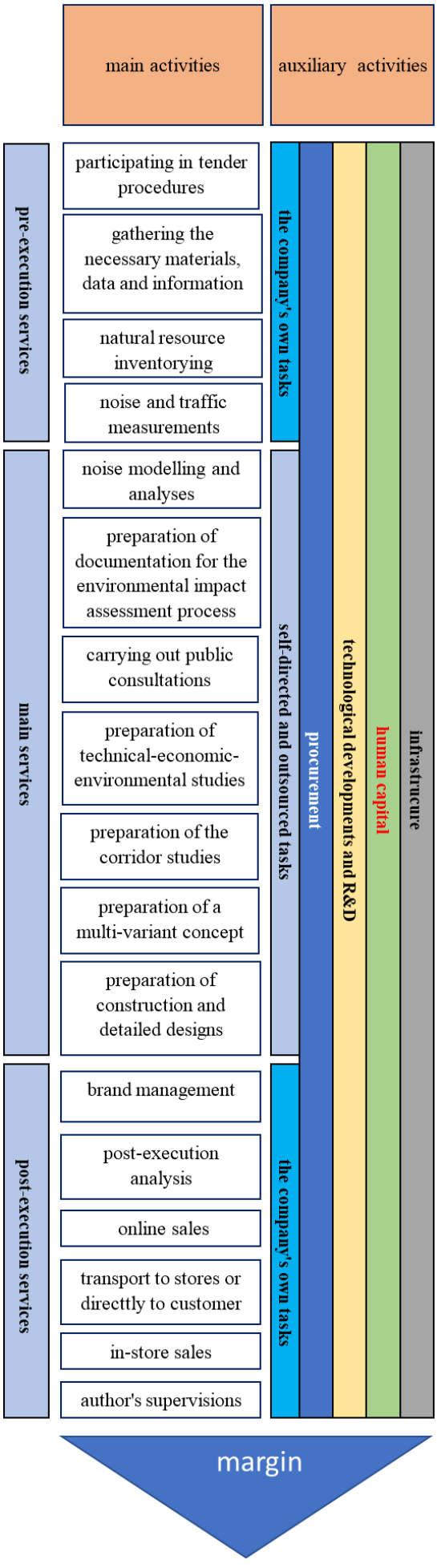

Figure 1. Value chain of communication infrastructure company.
Source: own study.

Table 2.
The cost structure used in a service company

Project costs	direct costs	direct materials	office supplie	material costs
			maps, extracts, extracts	
		wages and salaries of staff under employment contracts	net salaries	process costs
			employee's surcharges	
			employer's surcharges	
		remuneration of subcontractors under civil law contracts	net salaries	
			employee's surcharges	
			employer's surcharges	
		outsourced services		
	indirect costs/ divisional	remuneration of subcontractors under civil law contracts		
		outsourced services		
		indirect materials		
Non-project costs	overheads	outsourced services		
		administrative remuneration		
		administrative the Board of directors		
	sales costs	materials for sales purposes		
		outsourcing services for sales purposes		

Source: Trentowska (2019), Leszczyński, Wnuk-Pel (2010) and own studies.

As can be seen, in this company costs are divided into project costs (direct and indirect) and non-project costs (overheads and selling costs). This classification serves the enterprise in the budgeting process and also when setting the hourly rate.

Base pay is used in the company, short-term moving wages and long-term moving wages are also used in the company. Fringe benefits (perquisites, perks), also referred to as gratuities (Borkowski, 2001, p. 14; Schmidt, 2000, p. 47) take into account e.g. the possession of company mobile phones or a health care package.

In addition, discretionary bonuses are granted, awarded by management. Bonus rates are set periodically at monthly intervals, usually as 1 – 10% of base pay. The bonuses depend on the level of workload of a given employee in a given settlement unit (in this case it is a month), the quality of work of a given employee in a given month, i.e. they depend, among other things, on the effectiveness of achieving the company's objectives, generating savings in projects (e.g. by reducing the use of direct materials, out-of-the-box design changes, which e.g. limit the scope of work of subcontractors, thus reducing the costs of external services and salaries of non-personnel associates employed under civil law contracts). The value of the bonus is also determined by taking into account the financial results generated by the company as a whole and those relating to the department and unit in which the employee works.

Direct materials, as well as the wages of subcontractors under civil law contracts and subcontractors' external services, are determined as part of the budgeting and pricing process, which takes place at the preparatory stage as part of the process of procuring work (both from the public procurement market and in the case of procuring work from private entities outside of tendering procedures).

This company suffered significantly during the economic crisis that occurred in the construction industry in estimated years between 2012 and 2017. This crisis was largely due to the accumulation of public expenditure on transport infrastructure in a short period of time in connection with the first period of EU funding (2008-2012) and preparations for the organisation of the EURO 2012 European Football Championship in Poland and Ukraine. After the completion of the EURO-related investments and the end of the first round of EU funding, there was a sudden collapse of the public procurement market due to the delay in launching the second round of EU funding (it was planned for 2014-2020, while tenders started to be announced in greater numbers only around 2017). The very small number of works and the simultaneous high saturation of the market with companies of a similar business profile resulted in the fact that both design and contractor companies did not acquire new projects, their net sales revenues fell dramatically, which in turn, in a short period of time, negatively affected both the profitability dimension and debt (e.g. the appearance of trade payables after the due date) and financial liquidity. During this period, the company under review undertook an internal restructuring process aimed at effectively reducing operating costs. Financial controlling was implemented. In addition to such issues as profitability analyses of projects, departments and branches of the company, or the introduction of liquidity management mechanisms, a methodology for calculating hourly rates was also implemented. Thanks to it, hourly rates for all employees were established, as well as the level of average departmental hourly rates.

4. Methodology for determining the hourly rate on the example of the company analysed

Setting an hourly rate is the process of determining the hourly equivalent of an employee's work in such a way that an appropriate multiple of the total hours worked in a given period covers all the costs associated with running a professional knowledge-intensive service activity.

Stage I of calculating the employee's hourly rate involves calculating the quotient of the monthly division costs and the number of employees in a specific department. In this company this distribution key is used, but in other, justified cases it may be better to use a different distribution key, e.g.:

- the number of projects carried out (where the revenue generated by them is similar),
- net revenue from sales of services generated in this division compared with the net revenue from sales of services of the entire company,
- the number of man-hours spent in the department in relation to the number of man-hours of the entire company per month.

As a general rule, the value of departmental costs should be calculated for each month separately, in particular when there are significant discrepancies between the values of departmental costs in individual months, which may be the case in particular in a service enterprise where projects are unique.

Stage II involves adding the value of gross monthly wages and salaries (including employee and employer mark-ups). The inclusion of the employer's full cost is important, because only in this way is it possible to include the total monthly labour costs. In a situation where the planned change in the value of the monthly wage in a specific month is known, the updated value of this wage is used to calculate the employee's hourly rate for that month. Special attention should be paid to the following elements:

- a planned increase in the remuneration of an employee, e.g. in connection with professional promotion, change of position, wage negotiations with the employee or trade unions,
- a planned change in social and health insurance contributions and the rules for their calculation,
- a planned change of contributions within the framework of PPK and the principles of their calculation as well as a possible desire of an employee to join or resign from PPK,
- any planned changes in the increase of surcharges on remuneration resulting from both changing legal regulations and internal regulations (e.g. internal remuneration regulations),
- possible planned encumbrance of remuneration with additional non-salary income such as costs of health care, additional insurance, housing subsidies, holiday subsidies, etc.

There are also those variables that cannot be predicted in advance, e.g. exact salary changes due to unforeseen absences from work (e.g. due to illness, accidents). It is also worth emphasising that it is possible to use total cash compensation, the cost of fixed remuneration, i.e. the annual salary costs including bonuses and premiums, then divided over 12 months or increased by long-term incentives such total performance pay also divided by 12 months.

Stage III of the pay rate calculation involves dividing the sum of the previous operations from stages I and II by the nominal working hours. The number of available working hours should take into account aspects such as:

- holidays and non-working days,
- planned leaves of the employee (e.g. annual leave, maternity leave, parental leave, child care leave, leave on demand, training leave).

It should therefore be noted that Stage III takes into account working time effectively used.

Stage IV is not mandatory, but is characterised by a high level of utility. It consists in dividing the previously obtained rate by an efficiency index. This index determines the estimated percentage of the employee's working hours worked in full focus and efficiency. This index should take into account any breaks in substantive work, resulting not only from the

need to rest, but also e.g. from phone calls, answering e-mails, meetings not directly related to ongoing projects. Therefore, such working time can be defined as the so-called "non-invoiced hours", because, although they occur in every organisation and are also necessary, they do not have a direct impact on the level of generated sales revenue and, consequently, cash flows, so necessary to conduct business activity, especially in turbulent internal and external conditions. In the company analysed, the value of this indicator was assumed at the level of 0.75, which means that 75% of the working time, when the employee is present at work, is effectively used for the benefit of the projects carried out. Making this calculation results in an increase in the hourly rate and at the same time constitutes a realisation of its value.

Thanks to the knowledge on the development of hourly employee rates, a service company gains a tool to shape not only its pricing policy, but above all the possibility to shape its project portfolio in such a way as to ensure that each time the costs of its activities are covered by the generated revenue. Moreover, it becomes possible to analyse changes of particular cost categories on lowering an hourly rate, thanks to which a company may gain price advantage on the public procurement market, where, at least in the construction sector in Poland, the lowest price is still a dominant selection criterion influencing the choice of a contractor, which was also confirmed by the Polish Supreme Audit Office (pol. Najwyższa Izba Kontroli – NIK).

5. Conclusions

Due to the fact that service companies are characterised by a predominance of wage costs in the cost structure, the projects they run are unique and the source of revenue often comes from the public procurement market, the parameter that determines the possibility of obtaining work from the market (and therefore the level of competitiveness) is the hourly rate including total cost surcharges taking into account labour efficiency. The correct determination of the rate translates into the generation of net sales revenues, followed by trade receivables and positive net cash flows. The ability to calculate an hourly rate supports the process of cost optimisation, which can lead to a reduction in its value. This increases the company's chances of acquiring further projects, which again can generate an increase in net sales revenue. There is a kind of feedback loop resulting from the calculation of the hourly rate and the conscious management of the variables that influence its amount. These are shown in Figure 2 below.

1

Figure 2. Model of determining the hourly rate and its translation into competitive advantage and organisational resilience in KIBS in construction industry. Source: own study.

At the same time it improves the resilience of the company in overcoming financial difficulties primarily in the long term, which was also observed on the example of the analysed company.

Calculation of an hourly rate in specialised service companies requires, first of all, a properly prepared financial and accounting system, which will be able to generate relevant data, regularity, so that the analysis of rates takes place periodically (e.g. once a quarter), as well as precision and meticulousness in determining the hourly rate not only for the whole company or industry, but also for an individual employee (especially in smaller teams).

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