

THE ROLE OF STANDARD COSTING IN AN EXEMPLARY IT COMPANY

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Abstract: In today's economic reality, enterprises based on modern technologies are increasingly gaining on the importance. Access to modern technology is often offered through outsourcing to IT companies. Despite offering modern, often virtual solutions, cost accounting issues are as real as possible. The aim of this paper is to present the general principles of standard costing in contemporary enterprises and to define the possibility of using standard cost accounting in companies offering specific IT solutions. The paper uses the method of literature analysis in relation to the problem of standard costing. The paper contributes to the management accounting literature in two ways. Firstly, it points out that in the face of widespread criticism of the use of traditional tools such as standard costing and the use of contemporary accounting tools (such as ABC, JIT, BSC and others) in the era of globalization, the established practice may not reflect the popular opinion. Secondly, the paper presents a case study of standard costing in an IT service company that can be implemented in practice or be further developed theoretically.

Keywords: standard costing, cost accounting, IT, valuation, management accounting.

1 Introduction

Standard cost accounting is a classic instrument of management accounting. It was predominantly used in manufacturing companies since the end of the nineteenth century. With the advancement of civilization, apart from traditional companies, there have developed companies based on modern technologies as well as offering IT solutions that combine the features of a product and service. The author of the paper raises the question whether in today's modern enterprise in the IT industry the standard cost accounting has lost its importance or whether it is still applicable. Two objectives of the study were formulated:

- presentation of the role of standard costing in contemporary enterprises,
- determining whether it is possible to adopt standard cost accounting in companies offering specific IT solutions.

The paper uses the method of literature analysis in relation to the addressed problem of standard costing. In the empirical part, a case study on an exemplary IT enterprise is presented, in which methods of standard costing can be applied. The analysis deals with 6 different IT solutions offered to customers within a comprehensive IT service. The paper contributes to the management accounting literature in two ways. Firstly, it points out that in the face of widespread criticism of the use of traditional tools such as standard costing and the use of contemporary accounting tools (such as ABC, JIT, BSC and others) in the era of globalization, the practice may not reflect the popular opinion. Secondly, it provides examples of standard costing in an IT service enterprise that can be implemented in practice or be further developed theoretically.

2 Theoretical rules of standard costing

The standard cost accounting is the base for the key performance indicators, which are helpful in making decisions pertaining to the planning, designing and controlling production processes in the case of varied production and/or service [8].

The standard cost accounting consists of planning the cost of products and services based on reasonably justified consumption norms and postponed purchase prices as well as of defining the deviations between the standard costs and the actual costs incurred. Apart from the accounting definition of costs, it is assumed that costs are the financial expression of the resource consumption within the enterprise activities. Therefore, the cost model may take the form of the so-called basic cost equation [14]:

$$\text{Cost} = \text{Resource consumption} \times \text{Resource unit price}$$

The above equation is the basis for modelling the standard cost of manufacturing a product unit. This model assumes certain operational conditions of the company's activities, resulting, inter alia, from qualitative requirements, applied technology, qualifications of employees, parameters of remaining resources. As noted by Piosik [10], from the point of view of management objectives, the adoption of standards at expected values levels is arguable. This usually results in standards being set on an average level of difficulty. In order to motivate managers to achieve management objectives, higher-level standards can be set, at least for some cost groups. Ideal standards are not, in turn, achievable under real conditions.

From the standard cost equation it follows, firstly, the need to distinguish the quantitative standard for the physical quantity of a resource with the specified quality parameters necessary for the production of the product. Secondly, the price standard for the proposed unit price of a resource with specific characteristics should be distinguished.

When using the variable cost accounting instead of the full cost accounting, the standards for variable costs as well as for fixed costs should be set separately [1].

For example, in order to set standard direct material costs, consumption standards and price standards are set separately. In order to establish consumption standards, the method of average consumption per production unit can be used on the basis of historical data. This method requires detailed quantitative and qualitative records and material flow records, but it is relatively simple to use. The second method is the technical analysis of consumption (industrial-engineering method) [9]. In this case, the projected net consumption is calculated taking into account technological losses, useful and useless waste, quality deficiencies. Losses can be estimated based on the formula for the percentage of planned consumption. Estimation of losses can also be based on statistical data, especially for bulk production. Standard purchase prices, standard purchase costs and expected price discounts should be considered in order to determine the standard purchase price. To estimate

the standard purchase price one can apply an extrapolation of the linear trend to determine the trend. If the purchase price does not show the trend, the standard will be determined based on the expected value [10].

Similarly, for payroll cost, cost standards can be set, consisting of a labour intensity standard, which is the equivalent of the consumption standard and a standard remuneration rate. In determining the labour intensity standard, usually defined as man-hours, the non-productive time for working breaks should be taken into account. In turn, the method of linear trend extrapolation can be used to determine the remuneration rate standard, as in the case of material prices.

In practice, the standard costs of fuel and technological energy, the cost of special tools, the cost of third-party tooling, the cost of production preparation and production related overheads can be determined.

3 Criticism of standard costing in the contemporary companies

The literature from the late 1980s contains a lot of criticism of the inconsistency of the standard costing in today's manufacturing environment. The standard cost account was criticised for being based on historical data and cost data deformation leading to erroneous decisions. The standard cost account was also blamed for fulfilling the support and service function towards financial accounting. According to Kaplan and Johnson [7] as well as Ferrara [5], the standard costing methods and the variance analysis appeared to be insufficient for cost control and performance evaluation. The mentioned authors stated such reasons for the reduced usability of standard cost accounting as shorter product life cycles, advanced manufacturing technologies, decreasing emphasis on labour in the production process. The wave of criticism aimed at standard costing has been accompanied by popularisation of new management concepts (e.g. Just-in-time, Kaizen) and alternative cost accounting such as Activity Based Costing (ABC) [12, 13], Time Driven Activity Based Costing (TABC), or Target Costing connected with the lean management concept.

There have also emerged alternative views. For example, Bromwich and Bhimani [3] believed that the low level of management accounting development and the negative effects of standard costing were due to poor quality of management and lack of skills among senior executive staff, and consequently they disagreed with the view that management accounting was at the service of financial accounting.

Similarly, although Bowhill and Lee [2] perceived the strategic importance of management accounting for modern companies, they did not confirm the need to implement new cost accounting systems. They stated that: 'Although not necessarily fully "compatible" with new manufacturing methods, standard costing systems can still continue to be useful.'

Despite the emerging trends, companies have continued to use the standard cost accounting, which, among others, was proved by Drury [4]. Based on the conducted research, he found that 76% of organisations responding to his survey operated a standard cost system. Drury emphasized that in addition to budgeting and variance analysis, standard costing also has many other purposes than cost control. The most important for him were decision-making purposes.

In Poland, Sobańska [11] carried out a study on the popularity of various cost accounting models in the period of 1999-2005, which showed that the standard cost account was still the dominant cost account in the 93 surveyed companies, and only 3.3 % of them decided to implement alternative cost accounts.

Nowak [9] emphasized that an important area of cost accounting is the cost accounting for decision-making, which does not have systematic nature but concerns specific decisions taken under specific management conditions. In decision-making tasks that are limited to cost

minimization, costs can occur as a goal function. In other more complex situations, costs are values occurring under the conditions restricting decision-making models.

Based on the literature analysis, the question arises as to whether companies are able to manage without the traditional standard cost accounting, or whether it is better to treat the alternative cost accounting as parallel cost accounting for decision-making. Is it possible to use traditional methods of standard costing in modern service enterprises, for example in IT sector? To answer this question the case study of an exemplary IT company is discussed in the paper,.

4 Case study of Exemplary IT Company

The analysed company is engaged in outsourcing IT services. The goal of the company is a complex provision of IT services for small and medium enterprises. The activity is carried out within the framework of long-term contracts concluded with customers for the provision of standardized IT services. Thanks to signing a comprehensive contract, the customer has a professional IT service provided without the need of hiring IT professionals and can focus on the core business. Sample services included in the standard outsourcing agreement are included in Table 1.

Table 1. Types of business services offered to customers

Business service ID	Type of Business Service	Description of Business Service
BS_1	Internet Sharing	The Internet sharing services are provided to clients on an ongoing basis, i.e. 24 hours a day, 7 days a week. The basic parameter of the service is the bandwidth determined by the minimum and maximum transfer of downloaded and sent data.
BS_2	Electronic mail	The service consists of setting up and configuring mail accounts, reporting service levels, configuring email clients at workstations, providing ongoing support, maintaining services within established quality and capacities.
BS_3	Provision and maintenance of workstations	The service includes rental and maintenance of desktops and laptops. The inventory of equipment and licenses of installed software is included in the service.
BS_4	Supply of consumables	As part of the service, supplies of consumables such as printer toners and spare parts for computers are delivered.
BS_5	Applications development and servicing	The service consists of the data collection of customer needs to clarify functional and environmental needs. Then the architecture and the environment of created application are proposed. The application is created in selected languages and using the indicated technologies.
BS_6	IT consulting	The service deals with broadly understood IT consulting.

Source: own elaboration

Taking into account the theoretical assumptions for standard costs set out in point 2, one should consider whether they will be applicable to determining the costs of business services presented in Table 1. Undoubtedly, payroll costs are very significant cost item in the IT service. The remuneration rate of employees of a given department is calculated according to the formula:

$$C_{MH} = \frac{\sum C_D}{\frac{FTE}{168}}$$

where: C_{MH} – cost of one man-hour; C_D – costs of department; FTE – number of full-time employees.

The payroll costs and overhead expenses from a given department are collected from the accounting system. Table 2 presents the remuneration rates for one of the divisions of the analysed company in the period of April-December of 2016.

Table 2. Observations of monthly man-hour rate

No.	Month	Man-hour rate PLN
4	April	45.30
5	May	46.10
6	June	47.00
7	July	47.70
8	August	50.00
9	September	51.20
10	November	51.80
11	October	52.40
12	December	54.00

Source: own elaboration

In order to set a standard rate based on historical data, the linear trend extrapolation method (using the REGLINP program, statistical functions in Microsoft Excel tools) was used [10].

The following parameter values were calculated:

- $a = 40.59$ (α)
- $c = 1.11$ (γ)
- average estimate errors $D(c) = 0.49$; $D(a) = 0.058$
- multiple determination coefficient: 0.98

The standard remuneration rate can be described using the function [10]:

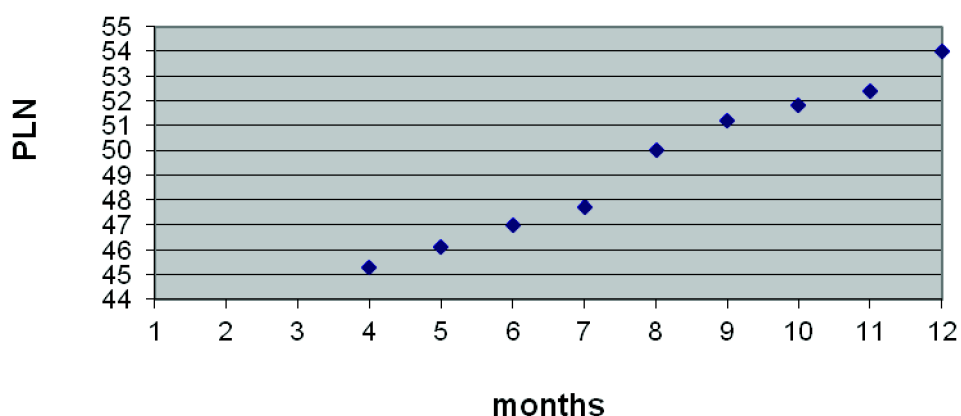
$$\varepsilon(y_t) = \alpha + \gamma t$$

After substituting the parameters, the function looks like this:

$$\varepsilon(y_t) = 40.59 + 1.11t$$

A graph of the function is presented below.

Figure 1. Development of standard remuneration rates for an exemplary department



Source: own elaboration

In order to calculate how much payroll costs amount to a business service BS_5, one should estimate the labour cost in man-hours to create the application and multiply it by the predicted remuneration rate. For example, if a service requires 90 man-hours and is scheduled to be executed in March 2017 (12 consecutive months from April), then the payroll costs will be:

$$R = 90 \times (40.59 + 1.11 \times 12) = 90 \times 53.91 = 4\,851.90$$

The second important factor affecting the cost of the analysed company is the cost of licenses paid to subcontractors in the form of subscriptions. Subscriptions can be paid for a period of one to five years. Customers do not pay one-off amount for the licenses they have purchased, as they are included in the monthly payments for the comprehensive service contract. In order to determine the standard monthly payment for a license, account should be taken of the change in the time value of money and discounted at the adopted rate of IRR (Internal Rate of Return)¹.

Computers and laptops made available by the analysed company are installed with office software, whose price per license is PLN 1650.00. The license is available for 33 months. Under the agreement with the subcontractor the IT company managed to negotiate a favourable rate of 1597.00 PLN on the purchase of 100 licenses. The payment for the license supplier is settled monthly. The manner in which monthly license payments are made is shown in Tables 3 and 4.

Table 3. Example of calculation of licenses' cost to rent

No.	Name	Quantity	Price PLN	BS	Purchase cost PLN
1.	purchase of license X	100	1 579.00	BS ...	157 900.00
				SUM	157 900.00

Source: own elaboration

Table 4. Example of calculation of licenses' rental instalments

NPV cost		Margin	NPV revenue	
payments in months	33		payments in months	33
IRR	6.05%		IRR:	6.05%

¹ Internal rate of return is a discount rate that makes the net present value (NPV) of all cash flows from a particular project equal to zero.

instalment PLN	5194.42	5,80%	instalment PLN	5514.24
sum of instalments PLN	171415.70	5,80%	sum of instalments PLN	181969.96
			payment for 1 license PLN	55.14

Source: own elaboration

The value of the customer's monthly fee as part of a comprehensive IT contract shall be equal to the product of PLN 55.14 and the number of licenses he/she uses.

In order to value the BS_3 service, the company must determine the standard cost of the computers being made available. The standard monthly cost of sharing a computer set is based on purchase prices from supplier, but also includes the "Risk of Exchange Rate" and the "Risk of Computer Set Change" rates. They should also include the costs of final disposal, unless the entity returns used computer sets free of charge. Table 5 shows an example of the cost of a standard computer set.

Table 5. Example of calculation of cost of computer set to rent

Computer Set – Standard	Purchase price EUR	Quantity	Unit	Cost PLN
HP 600G2PD MT i36100 500G 4.0G 54 PC	464.6	1	pcs	2072.12
HP 4GB DDR4-2133 DIMM	27.27	1	pcs	121.62
HP 5y NextBusDay Onsite DT Only HW	15.15	1	pcs	67.57
plug strip	5.00	1	pcs	22.30
HP EliteDisplay E240c Monitor	156.55	1	pcs	698.21
HP warranty 5 years	15.00	1	pcs	66.90
Risk of Exchange Rate and Risk of Computer Set Change	2.76%	1	%	84.14
Insurance	0.25%	5	years	39.63
Disposal	0.00	15	kg	0.00
One-time man-hours	57.00	2	mh	114.00
Sum				3286.49

Source: own elaboration

This way established sharing cost over time should include the margin, as well as account for the changes in the time value of money through the assumed IRR rate, as in the case of providing the license. The standard monthly rental rate for the computer set should be added to the standard cost of the support offered, for example 0.5 man-hour multiplied by the standard remuneration rate from the support department of PLN 57.00.

IT companies providing the so-called Server Hosting or offering rental of servers are also required to evaluate the standard cost of hardware and software platforms. Standard items valued for the so-called Virtual Machine include a particular collection of virtualized hardware resources available to a virtual machine (VM) instance, including the memory size, virtual CPU count, and maximum persistent disk [6].

The valuation is based on purchase costs of hardware resources and software licenses, as well as labour costs associated with the maintenance. On this basis, price lists are created for customers. Table 6 lists examples of virtual machines.

Table 6. Exemplary types of virtual machines

Machine type	Virtual CPUs	Memory	Price (USD)	Preemptible price (USD)
n1-highmem-2	2	13GB	\$0.1184	\$0.0250
n1-highmem-4	4	26GB	\$0.2368	\$0.0500
n1-highmem-8	8	52GB	\$0.4736	\$0.1000
n1-highmem-16	16	104GB	\$0.9472	\$0.2000
n1-highmem-32	32	208GB	\$1.8944	\$0.4000
n1-highmem-64	64	416GB	\$3.7888	\$0.8000

Source: [6]

Due to limitations of the paper, it is not possible to include detailed calculations for all the analysed business services. Table 7 summarizes what cost items can be standardised for each of the services.

Table 7. Standardized cost items per service

Business service ID	Cost items that are subject to standardisation included in the valuation of the service
BS_1	The valuation of the services is based on costs depending on the capacity parameters of the service provided, i.e. the so-called bandwidth of the connection. A significant component of the standard cost is the cost of purchasing connections (fibre) from the subcontractor, which should be accounted for by the distribution keys in reference to the bandwidth and the number of users. The service support is calculated on the basis of standard payroll costs.
BS_2	The price lists of email boxes of a given capacity are based on platform costs and support costs (standard payroll costs)
BS_3	Sharing and maintenance of workstations. The price lists for customers are created based on the costs of sharing computers and licenses (depending on purchase costs) and their maintenance costs (payroll costs).
BS_4	The supply of consumables. The price lists are based on the standard cost of purchasing toners and other consumables.
BS_5	Application development and technical support. In order to value the service, information on employees' payroll costs, license costs and hardware platform costs are required.
BS_6	IT consulting is primarily based on the employees' payroll cost.

Source: own elaboration

The presented case study is an example of how diverse the applications of standard costing can be found in modern enterprises providing IT services.

Conclusion

The literature on management accounting has been questioning the applicability of traditional standard costing since the 1980s. According to many authors, standard costing became irrelevant and cumbersome. They often promote lean technology like lean management, just-in time (JIT) or activity based costing. Despite the criticism, standard costing is still very popular in many manufacturing companies. The aim of the paper was to indicate the possible applications of standard costing also in service enterprises in the IT sector. The presented case study regarded a company, which carries out its activity under long-term contracts concluded with clients for the provision of standardized IT services. The discussed company offers services such Internet sharing and electronic mail, rental and maintenance of computers, supplies of consumables, as well as application development and provision of consulting services. For most of these services, it is necessary to set up standard costs, as they often result from costs incurred in the past such as hardware purchase costs, server maintenance costs, employee costs. The author has shown, according to Drury [4] as well as Bowhill and Lee [2], that standard cost accounting has additional uses primarily for the standardization of offered services and their valuation. The valuation issues in modern IT companies are gaining momentum as they often involve high-value intangible assets. Standardization of costs under such conditions may be subject to further in-depth scientific research.

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ZNACZENIE KOSZTÓW STANDARDOWYCH W PRZYKŁADOWYM PRZEDSIĘBIORSTWIE INFORMATYCZNYM

Abstrakt (Streszczenie): We współczesnej rzeczywistości gospodarczej coraz bardziej zyskują na znaczeniu przedsiębiorstwa oparte na nowoczesnych technologiach. Dostęp do nowoczesnych technologii oferowany jest często w ramach outsourcingu przed przedsiębiorstwa informatyczne. Pomimo oferowania nowoczesnych, często wirtualnych rozwiązań, problemy w zakresie rachunku kosztów są jak najbardziej rzeczywiste. Celem artykułu jest przedstawienie ogólnych zasad standaryzacji kosztów we współczesnych przedsiębiorstwach oraz określenie możliwości zastosowania rachunku kosztów standardowych w przedsiębiorstwach oferujących konkretne rozwiązania informatyczne. W artykule wykorzystano metodę analizy literatury w odniesieniu do poruszanej problematyki standaryzacji kosztów. Artykuł wnosi wkład do literatury z zakresu rachunkowości zarządczej na dwa sposoby. Po pierwsze w artykule zwrócono uwagę, że w obliczu powszechnej krytyki stosowania klasycznych narzędzi takich jak standaryzacja kosztów, i popularyzacji wykorzystywania alternatywnych narzędzi rachunkowości zarządczej (takich jak ABC, JIT, BSC i inne) w erze globalizacji, praktyka nie odzwierciedla opinii popularnych w literaturze. Po drugie w artykule zaprezentowano przykłady wykorzystania standaryzacji kosztów w przedsiębiorstwie usługowym branży informatycznej, które można wdrożyć w praktyce lub w dalszym stopniu rozwijać teoretycznie.

Klíčová slova (Słowa kluczowe): koszt standardowy, rachunek kosztów, IT, wycena, rachunkowość zarządcza