

No. 118/21, 24–37  
ISSN 2657-6988 (online)  
ISSN 2657-5841 (printed)  
DOI: 10.26408/118.02

Submitted: 10.05.2021  
Accepted: 25.05.2021  
Published: 30.06.2021

## QUALITY COSTS IN CATERING

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**Abstract:** One of the tools for improving quality in an organisation is the use of quality cost accounting, which can be helpful in the analysis of the qualitative situation of an enterprise and its optimisation. There is no universal model of quality cost accounting. An organisation that decides to implement such an instrument must keep in mind that it is a time-consuming and labour-intensive process.

This article presents an example of identification and quantification of quality costs for the catering industry. A presentation of quality costs was made with a division into cost groups: compliance and non-compliance and a method of recording quality costs characteristic of catering production was proposed as well as methods of their analysis and optimisation. The possibility of the use of this tool by large chains operating in the catering industry to identify the strengths and weaknesses of pro-quality activities was highlighted.

**Keywords:** quality costs, quality cost assessment, quality cost analysis, quality cost accounting, catering.

### 1. INTRODUCTION

The catering business is moving into a phase of re-emergence after the pandemic caused by the spread of COVID-19. There was a stagnation in the operation of catering outlets in Poland as well as in other countries around the world between March 2020 and April 2021. In order to be able to continue operating in this industry, owners had to adapt to many requirements related to increasing the degree of food safety assurance and introduce strict rules of hygiene assurance [Malinowska and Szymańska-Brałkowska 2021].

According to the encyclopaedic definition, the catering industry is: “a group of mass catering establishments (restaurants, bars) and specialized establishments (e.g., gourmet food) of a production and service character” [Sala 2011]. The most widely used basis is the division according to the formal conditions of use, which divides catering establishments, also known as mass catering establishments, into “open” and “closed” types. Open-type catering establishments are geared towards serving a diverse clientele based on criteria such as age, diet and financial capacity. These types of establishments include, among others, restaurants, bars, caterers,

cafés, etc. In open-type establishments, the consumer chooses the quantity and variety of the food consumed. The second type are closed-type catering establishments, which operate in the field of organised catering for specific groups of consumers. They are located, for example, in hospitals, schools, kindergartens, boarding schools and sanatoriums. In closed-type establishments, the consumer cannot make qualitative and quantitative food choices. They instead consume a meal that has been prepared according to a strictly prescribed procedure for their dietary group following specially prepared dietary rules [Milewska, Praczko and Stasiak 2010].

Regardless of the nature of the consumer, whether it is a homogeneous or heterogeneous group, catering businesses must incur costs in order to operate. They may also choose to identify and quantify quality costs. It is, of course, a voluntary action, but the quality-oriented manager of a catering facility may, parallel to cost accounting, also keep account of costs related to the introduction and maintenance of the required quality.

The current conditions of the catering business, characterised by increasing competition, force companies operating in this industry to constantly seek sources of competitive advantage in order to maintain or strengthen their position in the market. Undoubtedly, some forms of innovation in running the business and shaping the direction of development of the industry in accordance with the requirements and expectations of modern consumers are those factors that can ensure competitiveness and efficiency for catering companies.

The aim of this article is to present a proposal for the identification of quality costs, the means of their analysis and optimisation for a catering business. The study is theoretical in nature; it uses a research method based on analysis of available literature and inference.

## **2. AN ATTEMPT TO IDENTIFY QUALITY COSTS IN CATERING**

In order to classify the components of particular groups of quality costs properly, it is necessary to learn the characteristics of a business for which these costs are to be identified.

The technological process in catering consists of the production of a dish or a meal [Milewska, Praczko and Stasiak 2010], which must be characterised by the appropriate quality desired by the consumer. The technological process is one of the elements of the whole production process, which, apart from the activities related strictly to the processing of raw materials, semi-finished products and products into meal components, consists of the following stages:

- supplying the raw material for production;
- storage under appropriate conditions;
- proper technological process: pre-treatment and heat treatment;

- shipment of ready meals.

The procurement stage consists of the selection of the supplier and carrying out the qualitative and quantitative acceptance of goods in appropriate conditions. Storage is another highly important stage due to the possibility of adverse consequences as a result of failure to comply with recommendations for appropriate temperature and humidity storage conditions and storage time.

The technological process itself consists of the so-called “dirty” and “clean” pre-treatments. The first consists of sorting, washing, peeling, cleaning and rinsing, the purpose of which is to remove elements that are undesirable or harmful to health, such as: rotten parts, soil, roots, wilted leaves, stalks and stones. “Clean” processing includes such activities as: grinding, ripening, fermentation, weighing, measuring, forming and coating, by means of which the raw material is prepared for direct consumption or as a semi-finished product is then subjected to further thermal processing [Górecka 2007]. Heat treatment, i.e. the next stage of the technological process, consists of subjecting semi-finished products to high temperatures and processing them into ready meals. The basic heat treatment methods in food preparation include boiling, frying, braising and baking. The main tasks of heat treatment are [Milewska, Praczko and Stasiak 2010]:

- increasing the digestibility and bioavailability of the product;
- reduction or increase in volume through evaporation;
- destruction of microorganisms;
- enzyme inactivation;
- accentuating the flavour and aroma;
- diversification of dishes and meals.

The final stage of the gastronomic production is the shipment of food, which must be delivered to the consumer at the right temperature and in a form that is attractive to the senses.

During the entire technological process the principles of hygiene (GHP – Good Hygiene Practice) and the so-called Good Manufacturing Practice (GMP) are followed. Activities related to ensuring the mentioned systems can also be identified as quality cost drivers [Malinowska 2008].

Table 1 presents a sample identification of the main groups of quality costs based on the activities that are the carrier that generates a given cost. When the management of a catering enterprise decides to implement quality cost accounting, individual quality costs should be distinguished [Malinowska 2020a], taking into account the precise characteristics of the organisation of work in the establishment (cf. Table 2).

**Table 1.** Proposed quality cost structure for a catering establishment

Type of quality costs	Activity generating the quality cost
<p>Prevention costs (related to design, implementation and maintenance of the quality system, technical condition of equipment and tools)</p>	<p>Planning the quality requirements of a catering service, e.g.:</p> <ul style="list-style-type: none"> <li>– establishing the quality system (e.g. determining the essence of the quality plan, identifying the parameters of the quality documentation),</li> <li>– identifying the parameters of the products necessary for the catering service,</li> <li>– identifying the parameters of the equipment necessary for the catering service,</li> <li>– identifying personnel qualifications,</li> <li>– identifying equipment requirements,</li> <li>– preparation of a quality training programme.</li> </ul> <p>Ensuring the required level of quality of the catering service, e.g.:</p> <ul style="list-style-type: none"> <li>– ensuring the quality system (e.g. developing a quality plan, developing quality documentation),</li> <li>– selecting the supplier of the products necessary for the catering service,</li> <li>– selecting the equipment necessary for the catering service,</li> <li>– selecting suitably qualified personnel,</li> <li>– selecting a catering equipment supplier,</li> <li>– staff training in quality management.</li> </ul> <p>Improving the level of quality of the catering service:</p> <ul style="list-style-type: none"> <li>– surveys to identify customer satisfaction,</li> <li>– benchmarking,</li> <li>– developing quality improvement programmes,</li> <li>– other, e.g.: office work and consumption of consumables linked to quality assurance, missions, insurance, activities linked to obtaining a quality certificate</li> </ul>
<p>Appraisal costs (related to the inspection of purchased materials, activities of intermediaries, determining the capacity of processes, services for compliance with specifications)</p>	<p>Supervising the quality system (e.g., evaluation of quality plan execution, evaluation of quality documentation, internal quality assessment, quality assessment by external entities), e.g.:</p> <ul style="list-style-type: none"> <li>– inspection of personnel qualifications,</li> <li>– inspection of the products necessary for the catering service,</li> <li>– inspection of the equipment necessary for the catering service,</li> <li>– supplier evaluation,</li> <li>– evaluation of the organisation and course of the basic and ancillary processes,</li> <li>– customer satisfaction survey,</li> <li>– other: office work and consumables related to quality assessment, day-to-day checks e.g. on health and safety</li> </ul>
<p>Internal failure costs (the result of a failure to meet certain catering standards noticed before the service was provided)</p>	<p>Costs associated with:</p> <ul style="list-style-type: none"> <li>– waste,</li> <li>– corrections,</li> <li>– repeated inspection,</li> </ul>

	<ul style="list-style-type: none"> <li>– reduced quality level,</li> <li>– losses,</li> <li>– error analysis</li> </ul>
External failure costs (related to failure to meet customer requirements and relevant specifications)	<ul style="list-style-type: none"> <li>– the cost of improving the service,</li> <li>– complaint costs,</li> <li>– costs related to the handling of complaints,</li> <li>– liability (compensation) costs,</li> <li>– costs of loss of trust, reputation</li> </ul>

Source: own study based on [Opolski, Dykowska and Możdżonek 2005].

**Table 2.** Examples of quality costs for a catering establishment – excerpt

Type of quality costs	Activity generating the quality cost (cost calculation method)
Prevention costs	<ul style="list-style-type: none"> <li>– creating a checklist for selecting a qualified supplier (number of man-hours x number of hours),</li> <li>– researching consumer preferences (value of external contract),</li> <li>– analysis of current legal requirements for catering business (man-hours x hours),</li> <li>– selection of cooling, heating, other small equipment (e.g. pots, containers) and other equipment, e.g. in the customer dining area (man-hours x hours, travel costs),</li> <li>– following new trends in the culinary arts (participation in fairs, training courses) (mission expenses, value of external contract),</li> <li>– selection of protective clothing for personnel, cleaning agents,</li> <li>– selection of external services,</li> <li>– (...)</li> </ul>
Appraisal costs	<ul style="list-style-type: none"> <li>– qualitative and quantitative assessment of deliveries (man-hours x hours),</li> <li>– control of storage conditions (man-hours x hours),</li> <li>– assessment of consumer preferences (value of external contract),</li> <li>– supplier evaluation (man-hours x hours),</li> <li>– control of personnel (quality of work performed) (man-hours x hours),</li> <li>– (...)</li> </ul>
Internal failure costs	<ul style="list-style-type: none"> <li>– re-inspection of deliveries (man-hours x hours),</li> <li>– pre-treatment, heat treatment (man-hours x hours x value of products used),</li> <li>– repeated cleaning (man-hours x hours x value of products used),</li> <li>– re-training of personnel (value of external contract),</li> <li>– (...)</li> </ul>
External failure costs	<ul style="list-style-type: none"> <li>– response to a customer complaint (food poisoning, wrong dish, etc.) (cost of compensation, complaint, legal proceedings, cost of the dish complained about),</li> <li>– reduction in the number of customers due to a decrease in trust (value of the reduction in sales revenue),</li> <li>– (...)</li> </ul>

Source: own study.

### **3. QUALITY COST ACCOUNTING AS A TOOL FOR QUALITY IMPROVEMENT IN A CATERING BUSINESS**

Separation and proper classification of the quality costs is a difficult task, which is however beneficial for the improvement of the operation of an organisation.

The most important and the most frequent benefit from quality cost accounting in an enterprise is indicating where these costs arise, changing the structure of expenses and reducing them.

The key tool of the quality cost system is the quality cost account defined as a system of recording in appropriate sections and on appropriate accounts the costs connected with quality. Therefore, after identifying the activities which may be the drivers of quality costs and assigning them to particular groups, proposed by the literature, it is necessary to proceed to building the structure of the quality cost account (QCA).

The purpose of implementing the QCA is to identify activities, the cost value of which can be reduced, or places where costs are generated and can be reduced or even eliminated in order to increase customer satisfaction [Malinowska 2020b]. The QCA should be one of the decision-making tools of management and should be created in such a way as to present in a simple way the correlation of quality and costs incurred to implement, maintain and improve it.

According to the literature [Kraska and Stadnicka 2010], due to the lack of obligation and the problems that may accompany this process, the implementation of the QCA should take place in several stages. Initially, a team should be formed with competent members.

Then the present circumstances in the enterprise should be analysed in order to separate the costs connected with quality assurance, develop individual procedures for the implementation of the QCA and to carry out an implementation test.

After the test, possible corrective actions should be taken and the quality cost quantification project should be implemented into the organisational process of the catering establishment [Martyniuk et al. 2021].

For the purposes of recording quality costs, synthetic off-balance sheet accounts can be created and, depending on the needs, they can be supplemented with analytical accounts. It may be proposed that an account numbered 90, called "Quality Costs", be created in the catering business, with a breakdown into the following accounts:

- 90–1 prevention costs;
- 90–2 appraisal costs;
- 90–3 internal failure costs;
- 90–4 external failure costs.

With these accounts in mind, proposals have been made to make the entries more detailed in order to give an accurate picture of the cost drivers and locations. The cost accounting system presented in Table 3 is only an example, which can be used for adaptation to the activity of a particular catering establishment, taking into account the usefulness of the information provided about the costs incurred.

**Table 3.** Example of cost structure for a catering establishment

90	Quality costs		
90-1	Prevention costs		
	1	Costs associated with the quality system	(quality plans documentation, system organisation, quality system operation)
		1	planning
		2	maintenance
		3	improvement
	2	Personnel costs	knowledge, skills, competences
		1	planning
		2	maintenance
		3	improvement
	3	Cost of equipment, tools	
		1	planning
		2	maintenance
		3	improvement
	5	Costs associated with deliveries	selection, verification, initial evaluation of suppliers
		1	planning
		2	maintenance
		3	improvement
	9	Other	
		1	planning
		2	maintenance
		3	improvement
90-2	Appraisal costs		
	1	Costs associated with the evaluation of the quality system	(quality plans documentation, system organisation, quality system operation)
		1	as per schedule
		2	ad hoc
	2	Personnel evaluation costs	knowledge, skills, competences
		1	as per schedule
		2	ad hoc
	3	Equipment and tools inspection costs	
		1	as per schedule
		2	ad hoc
	5	Supplier evaluation costs	selection, verification, initial evaluation of suppliers

		1	as per schedule
		2	ad hoc
6	Costs related to the evaluation of customer satisfaction		
		1	as per schedule
		2	ad hoc
7	Other		
		1	as per schedule
		2	ad hoc
90-3	Internal failure costs		
	1	Costs associated with waste	e.g. faulty, illegible instructions, incorrect information
		1	resulting from the catering process
		2	arising after administrative events
	2	Costs associated with corrections	adjustment of quality documentation, supplementing personnel qualifications, changing supplier after a negative evaluation, calibration of control and measurement equipment after its failure re-ordering a test, procedure after a wrong decision
		1	resulting from the catering process
		2	arising after administrative events
	3	Costs related to repeat checks	
	4	Costs associated with reduced quality	sale of a service at a reduced price
		1	resulting from the catering process
		2	arising after administrative events
	5	Costs related to error analysis	actions to identify the causes of erroneous decisions or actions
		1	resulting from the catering process
		2	arising after administrative events
	6	Costs related to losses	unused products, equipment
		1	resulting from the catering process
		2	arising after administrative events
90-4	External failure costs		
	1	Cost of improving the service	
	2	Complaint costs	
	3	Costs related to the handling of complaints	
	4	Liability (compensation) costs	
	5	Costs of loss of trust, reputation	

Source: own study.

In order to present a clear picture of causes and places of formation of particular items of the quality cost groups, different forms of reporting can be used, an example of which is presented in Tables 4 and 5. Presentation of quality costs in Table 4 will determine their correlation with the costs shown in their arrangement by type, while in Table 5 – by function.

**Table 4.** Structure of quality costs for catering establishment by type

Quality costs	Depreciation 40-0	Consumption of materials and energy 40-1	External services 40-2	Taxes and charges 40-3	Remuneration 40-4	Social security and other benefits 40-5	Other costs by type 40-9
Prevention costs							
Quality system planning costs							
Quality system maintenance costs							
Quality system improvement costs							
Costs related to identification of personnel qualifications							
Personnel selection costs							
Costs of redefining the personnel selection criteria							
(...)							
Appraisal costs							
Costs associated with the evaluation of the quality system – as per schedule							
Costs associated with the evaluation of the quality system – ad hoc							
Personnel evaluation costs – as per schedule							
Personnel evaluation costs – ad hoc							
(...)							
Internal failure costs							
Costs associated with waste resulting from the catering process							
Costs arising after administrative events							
Costs associated with corrections resulting from the catering process							
Costs arising after administrative events							
(...)							
External failure costs							
Cost of improving the service							
Guarantee costs							
(...)							

Source: own study.

**Table 5.** Structure of quality costs for a catering establishment by function

Quality costs	50-51 Core business costs	52 Departmental costs	53 Costs of ancillary activities	54 Sales costs	55 General administrative expenses
Prevention costs					
Quality system planning costs					
Quality system maintenance costs					
Quality system improvement costs					
Costs related to identification of personnel qualifications					
Personnel selection costs					
Costs of redefining the personnel selection criteria					
(...)					
Appraisal costs					
Costs associated with the evaluation of the quality system – as per schedule					
Costs associated with the evaluation of the quality system – ad hoc					
Personnel evaluation costs – as per schedule					
Personnel evaluation costs – ad hoc					
(...)					
Internal failure costs					
Costs associated with waste resulting from the catering process					
Costs arising after administrative events					
Costs associated with corrections resulting from the catering process					
Costs arising after administrative events					
(...)					
External failure costs					
Cost of improving the service					
Guarantee costs					
(...)					

Source: own study based upon [Sadkowski 2018].

Quality cost accounting is used to analyse trends and identify the sources of costs. The implementation of the quality cost account and its inclusion in the enterprise management system creates an opportunity to increase the effectiveness of the quality management system and the trust of customers. Consequently, the ability to compare the tendency of the quality cost volume over time and to the planned values seems to be an important issue [Nita 2013].

When implemented, it provides a picture of the efficiency of the application of pro-quality processes, the possibility of their deepening and improvement in particular stages of the process or units (Table 6).

**Table 6.** Analysis of the quality cost structure in time

Quality costs	Plan for the year...	Current year	Previous year	Change
Prevention costs, including those for: <ul style="list-style-type: none"> <li>– quality requirements planning</li> <li>– quality requirements maintenance</li> <li>– quality requirements improvement</li> </ul>				
Appraisal costs, including for the inspections: <ul style="list-style-type: none"> <li>– as per schedule</li> <li>– ad hoc</li> </ul>				
Internal failure costs, including those resulting from: <ul style="list-style-type: none"> <li>– production errors</li> <li>– administrative errors</li> </ul>				
External failure costs				

Source: own study.

In order to optimise the financial activities in accordance with the quality policy of the catering establishment, a picture of the situation can also be provided by means of various indicators. For this purpose, it is possible to use widely known financial indicators [Malinowska 2020b], as well as adapt their structure to the specifics of the catering business. Thanks to such indicators, it is possible to assess the usefulness of investing in quality measures, evaluate the failure rate of individual activities and processes in terms of quantity or value, and optimise the activities aimed at maintaining the indicated quality level (cf. Table 7).

**Table 7.** Examples of indicators for the assessment of the quality level in catering establishments

Description of the indicator	
Indicators for the areas of compliance	Personnel training/prevention costs
	Cost of catering equipment selection/prevention costs
	Number of customers who recommend the catering establishment/number of all customers
	Number of customers satisfied with the catering service/number of all customers
	Costs of maintaining a quality unit/quality costs
Indicators for the areas of non-compliance (failures)	Cost of catering equipment repair/quality costs
	Number of complaints/number of all clients
	Cost of compensation (at a given time)

Source: own study based on [Nita 2013].



**Fig. 1.** The influence of pro-quality actions on the shaping of quality costs

Source: own study.

Every organisation, including catering businesses, should strive to reduce the amount of total quality costs, and the value of compliance costs should exceed that of non-compliance costs. Records of quality costs should indicate the places of cost generation and not their disclosure.

#### 4. CONCLUSIONS

Each organisation should be aware of the existence of quality costs as one of the types of all costs generated in the company. These costs are an important aspect of quality management. They arise when an organisation wants to ensure a certain quality of its products and services or when the quality fails to meet customers' expectations. However, companies relatively rarely identify and analyse such costs [Ciechan-Kujawa 2003].

Properly developed and applied, quality cost accounting facilitates acknowledgement of the benefits associated with quality improvement, and can clearly show the cause-effect relationships that occur between action and outcome (cf. Figure 1). Owing to the assessment and analysis of the quality cost account, it is possible to determine the value of the quality level and estimate the value of high quality costs and losses incurred due to the occurrence of a low quality level.

A company that wants to survive in a competitive market, including the catering industry, should optimise quality costs and control these costs [Kokot-Stępień 2014].

There is no universal quality cost accounting model that can be applied to every organisation. Each model is developed on a case-by-case basis and its effectiveness requires several necessary conditions to be met. Firstly, the scope of quality cost accounting should be adapted to the needs of managers in terms of information. It is important that quality cost accounting provides information important to the point where the cost of obtaining this information exceeds the cost of implementing and maintaining quality cost accounting.

It should be repeated that the process of identification, classification and controlling of quality costs is time-consuming and difficult. Literature available presents attempts to develop quality cost accounting for service [Ciechan-Kujawa 2005; Kister 2010] and manufacturing establishments [Balon 2008; Toruński 2011; Malik et al. 2016; Gokilakrishnan and Varthanan 2019]. No examples of such records have been found for catering operators.

Therefore, this article presents an example of identification and classification of quality costs that may take place during the operation of a catering establishment. The proposals presented may be a starting point for the development of an individual pattern of quality costs which will be appropriate for a given enterprise. It can be foreseen that individual catering establishments will not be interested in adopting this type of solution to identify the strengths and weaknesses of the qualitative activity of their organisation. It is to be considered, however, whether food service chains should not use, among other things, such a tool to improve the quality of their services.

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