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Optimizing Idle Asset Management in Polish Companies

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Abstract:

This study aims to investigate Polish companies' approach to managing their unused fixed business assets in light of the costs they generate. A survey was conducted across various companies in Poland. The Mann-Whitney U test and contingency tables were employed to determine whether there were notable differences in the composition and management of these owned assets. The results indicate that many surveyed companies possess assets that may not be actively used in their operations. Most companies do not factor the cost of idle resources in the production cost of goods or services. This trend is consistent regardless of the asset structure or use. This research has potential applications in the fields of business management and management economics, particularly in the areas of resource optimization and operational efficiency. Polish companies' approaches to managing unused fixed assets provide essential information on cost optimization and resource management to increase profitability and operational efficiency. Unlike previous studies focused on resource utilization, this study highlights the costs associated

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Production,
Resources,
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with idle assets and evaluates whether companies account for these costs. This study has highlighted that companies may dispose of their unused fixed assets to enhance profitability or gain financial advantages. Effective management of fixed assets remains a significant challenge for many companies, encompassing issues of underutilization and cost calculation accuracy. Advancements in technology and communication facilitate resource optimization, whereas modern cost accounting methods and flexible business approaches enable more precise unit cost calculations.

波蘭企業閒置資產管理優化

摘要：

本研究旨在根据闲置固定业务资产产生的成本，调查波兰公司管理闲置固定业务资产的方法。对波兰的多家公司进行了调查。采用曼-惠特尼大学检验和列联表来确定这些自有资产的构成和管理是否存在显著差异。结果表明，许多接受调查的公司拥有的资产可能未在其运营中积极使用。大多数公司不会将闲置资源的成本计入商品或服务的生产成本中。无论资产结构或用途如何，这种趋势都是一致的。这项研究在企业管理和管理经济学领域具有潜在的应用价值，特别是在资源优化和运营效率领域。波兰公司管理闲置固定资产的方法为成本优化和资源管理提供了重要信息，以提高盈利能力和运营效率。与以前专注于资源利用的研究不同，本研究强调了与闲置资产相关的成本，并评估了公司是否考虑了这些成本。本研究强调，公司可能会处置其闲置固定资产以提高盈利能力或获得财务优势。有效管理固定资产仍然是许多公司面临的重大挑战，包括利用率不足和成本计算准确性问题。技术和通信的进步促进了资源优化，而现代成本会计方法和灵活的业务方法使单位成本计算更加精确。

关键词：未使用的固定資產、固定成本、生產、資源、管理

1. Introduction

Enhancing profitability is a critical objective in business operations. One of the most effective strategies for achieving this is to optimize operational processes through better resource management. However, the relentless increase in competition and rapid technological advancements often lead to the underutilization of fixed resources in many organizations. This underutilization not only incurs costs but also impacts productivity levels within a business (Mohamed et al., 2022; Korinek et al., 2021). By maximizing available resources, businesses can significantly reduce expenses associated with idle capacities. The resource-based view suggests that a company's potential and profitability are closely tied to its distinctive resource portfolio. How a company manages, structures, and leverages its resources can lead to superior economic returns (Misiewicz, 2015). Therefore, managers must ensure that resources are utilized most efficiently within the operational framework.

Businesses often hold various assets that are unused or not employed in daily operations. Despite their lack of use, these fixed assets contribute to a portion of the fixed costs, influencing the unit cost of goods or services offered. However, traditional methods of calculating the costs of products and services exclude these expenses from the

current production costs. This scenario is particularly pronounced in small and medium-sized enterprises (SMEs), which often have limited access to sophisticated cost optimization strategies and tools. Ownership and intermittent utilization of fixed assets can also affect the routine cost of sales. Companies are, therefore, advised to first identify such assets and then incorporate the costs of those still in use into production, management, or sales expenses. This study explores how companies manage idle or underused fixed assets, considering the costs they incur. It includes a theoretical section outlining fundamental concepts and challenges related to this topic. The practical section investigates how the organization of resources correlates with the valuation of unused resources, illustrated through a study of the Polish SME sector.

2. Literature Review

2.1. The Critical Role of Physical Resources in Enterprise Operations

In the context of this article, attention is directed exclusively towards tangible resources. Plawgo (2007) offers a broad categorization of enterprise resources, pinpointing tangible resources, such as buildings, raw materials, materials, machinery, enterprise location, and

material technologies, as key components. Traditionally, the resources of an enterprise, also referred to as enterprise assets, are recognized in accounting and are essential for facilitating the enterprise's production, trade, or service operations. According to Bak (2014), these assets can be categorized as follows:

- Fixed assets, also known as property, plant, and equipment, which include machinery, production equipment, buildings, and transportation.
- Current assets encompassing materials, fuel and energy, work-in-progress, finished goods, perishables, cash, and cash equivalents (including receivables from the company's business partners).

Resource management is identified as a strategic and coherent approach that, when applied effectively and efficiently, empowers an organization to meet its economic goals, according to Cyfert & Kozakiewicz (2017). This study narrows its focus to the organization's fixed assets, which, for a variety of reasons, may not be continuously active within the organization. Consequently, such assets can occasionally be dormant, yet remain part of the company's resources. This notion of intermittently idle resources correlates with the concept of unutilized capacity, particularly concerning production capacity. The standard recognized in accounting for capacity utilization is determined as the production level anticipated under normal operating conditions over a given period, factoring in maintenance activities (Singh et al., 2022). Adopting a standard for capacity utilization considers the average production level but also integrates the reduction in capacity due to the scheduled maintenance of assets (Sarbpriya & Mihir, 2011).

Optimizing unused capacity involves strategically managing resources to ensure that high-value equipment is utilized more frequently, whereas less essential assets are allocated or used less frequently (Sebestyen & Juhasz, 2003). A crucial component of this process is the valuation of individual assets, which enables organizations to prioritize the use of more valuable resources to maintain production levels while considering the release or reduced utilization of less valuable assets (Rane et al., 2023). Unused resources may manifest across various facets of a company's operations, embodying forms such as unutilized spaces or buildings, production machinery, vehicles, stockpiles of raw materials or finished goods, and labor (Kamislı Ozturk, 2020).

According to Filipova-Slancheva (2017), another categorization of resources, acknowledging the aspect of sustained long-term investments, distinguishes them based on:

- Asset investments, where a business incurs upfront costs for the acquisition of equipment, machinery, or buildings intended for use in the

forthcoming years.

- Contractual costs, where a business enters into agreements to utilize services from another company over several years.

- Personnel expenses, where an organization employs staff on permanent contracts, guaranteeing stable income.

2.2. The Impact of Tangible Assets on Business Expenditures

Unused resources within an organization often result in unused capacity costs. This occurs when long-term production resources are not fully utilized, leading to fixed costs (Rane et al., 2017). However, the consequences of low production levels or underutilization of production equipment may not directly affect the unit cost of producing a product or service. Consequently, the calculation of production costs typically excludes expenses stemming from unused production capacity (Masztalerz, 2017).

Nevertheless, unused resources still entail fixed costs that accrue regardless of the resource utilization level. These fixed costs play a significant role in the cost structure of an organization's fundamental operational processes. Despite this importance, the cost of unused resources is often overlooked and not thoroughly analyzed within enterprises (Frydzinski, 2017). Moreover, even when management is aware of suboptimal resource utilization, accurately quantifying the associated loss remains challenging.

According to Polish legal regulations, the cost of unused resources constitutes a reasonable portion of indirect fixed costs, assuming standard capacity utilization (Accountant's Guide, 2019). Additionally, the concept of idle costs is often encountered, which refers to expenses incurred to maintain resources that temporarily do not generate value for the company (Masztalerz, 2017). However, it is important to note that the cost of unused resources does not necessarily equal idle costs. Consequently, a portion of the cost associated with unused resources affects the accuracy of product or service costing and proposal preparation. Moreover, the lack of insight into the level of unjustified indirect costs influences the implemented management strategies and financial status of the enterprise (Wnuk-Pel, 2013).

Until recently, only a limited number of companies had the capability to delineate the costs associated with unused resources, thereby affecting the quality of management information concerning this phenomenon and compliance with reporting requirements. Research conducted by Zielinski (2014) indicated that less than 8% of Polish enterprises systematically segregate the costs of unused resources. This issue, along with its related costs, is particularly significant to the SME sector's efficiency. Often, these entities employ simplified costing systems to analyze profitability at the

organizational level rather than at the level of specific areas of activity. Consequently, managers lack sufficient information on the profitability of particular customer groups, products, or distribution channels, hindering accurate decision making, especially regarding pricing policies. Small businesses are less likely to calculate the costs of unused resources because of factors such as limited financial management expertise, inadequate accounting support, and underutilization of management accounting (López & Hiebl, 2015).

Awareness and proper identification of unused resources and their costs influence entrepreneurial decisions regarding production cessation or price adjustments for products or services. Moreover, understanding unused resources and accurately calculating their costs enable the recognition and enhancement of production or service capacity utilization potential (Mohd et al., 2021). By employing appropriate indirect costing tools, companies can incorporate an appropriate level of unused resource costs into sales and inventory operations.

3. Methods

To assess companies' management approach towards free or unused fixed assets and the associated empty costs, a random survey was conducted among 352 companies in Poland. The survey sample was evenly distributed based on the employment size. Data were collected using computer-assisted telephone interviews (CATI). The collected data served as a foundation for drawing inferences regarding the management of company-owned resources and related costs.

The hypothesis posits significant relationships between the structure of owned assets or related fixed costs and the decision to estimate the cost of unused resources and include them in the cost of production. The verification of this hypothesis involves several research steps, as outlined below.

1. Assessment of the problem of owning unused assets by analyzing the structure of tangible fixed assets in the surveyed companies.
2. Determination of the method and most important motivations for disposing of unused fixed assets.
3. Evaluation of the propensity to calculate the cost of unused resources.
4. Analysis of the impact of asset structure on decisions regarding the estimation of the cost of unused resources.
5. Examination of the influence of the size of the enterprise on decisions regarding the estimation of the cost of unused resources.

This hypothesis guided the division of the study population into two subpopulations based on whether they estimated the cost of unused resources. Additionally, the study analyzed the structure of held resources, methods, and purposes of disposal and recorded fixed costs in the studied entities. Basic

descriptive statistics and graphical methods were used to observe the determinants of the phenomenon under investigation. The Kruskal–Wallis test for k-independent samples was used to test the differences between the studied subpopulations..

4. Results

4.1. Analysis of the Structure of Tangible Fixed Assets in the Studied Enterprises

The study analyzed the distribution of fixed assets in the surveyed enterprises, with the majority reporting between 20% and 40% of fixed assets in their structure (Figure 1) and approximately one-third using these assets continuously (Figure 2).

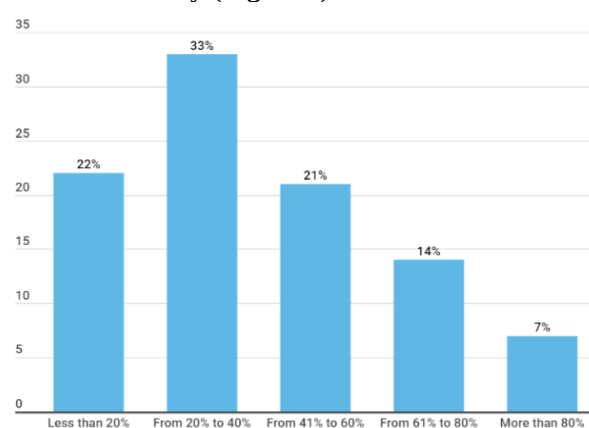


Figure 1. Structure of fixed assets in the total assets of the company (developed by the authors)

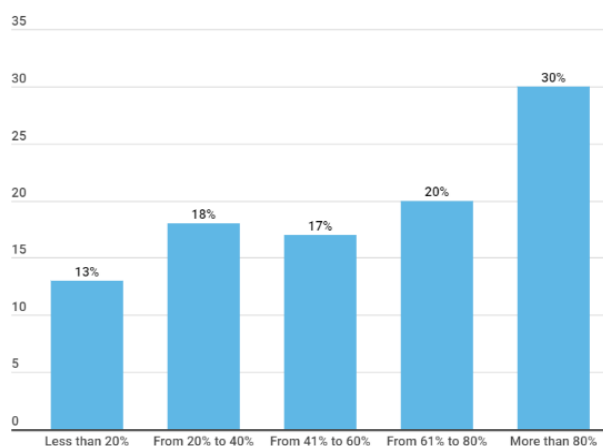


Figure 2. Structure of fixed assets used continuously (developed by the authors)

Most companies reported having fixed assets ranging between 20% and 40%, while approximately one in five had less than 20% or more than 40% to 60%. Few entities have fixed assets, comprising more than 80% of their total assets. In terms of utilization, around 30% of the companies utilized more than 80% of their assets continuously, while one in five companies unused between 20% and 80% of their physical resources. The breakdown of fixed assets by their underutilization is shown in Figures 3 and 4.

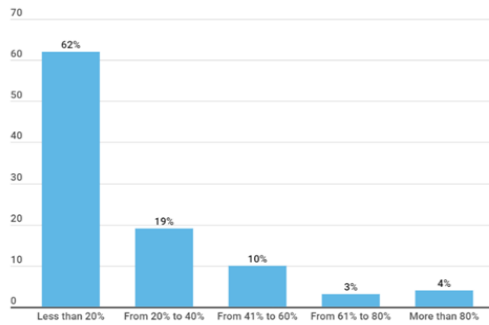


Figure 3. Structure of fixed assets used in the company temporarily (developed by the authors)

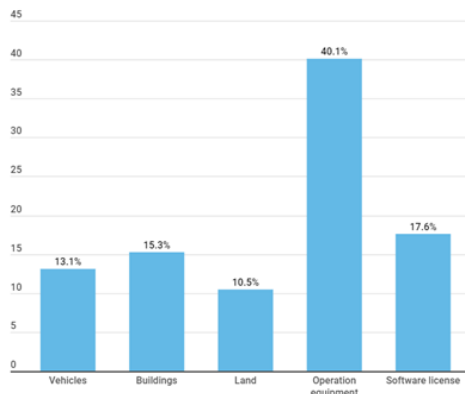


Figure 4. Type of most frequently unused physical assets in the company (developed by the authors)

Additionally, more than half of the surveyed companies (62%) reported that only up to 20% of their funds were used in operations temporarily during the year, with one in three companies having between 20% and 40% of such resources. Only 4% of the companies indicated having more than 80% of such resources. Regarding the type of fixed asset, companies most frequently mentioned machinery and equipment (40.1% of indications), followed by software licenses (17.6%), buildings (15.3%), vehicles (13.1%), and land (10.5%). These findings underscore the issue of underutilization of tangible assets, particularly machinery and equipment.

4.2. Ways and Purposes of Managing Unused Assets

Redundant assets, whether no longer needed in operations or unused, can impact decision making regarding their management, as illustrated by the results of the analyses conducted at the surveyed companies (Figure 5).

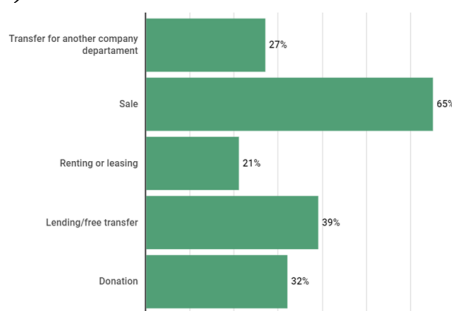


Figure 5. The most common ways of disposing of redundant assets (developed by the authors)

Regarding redundant assets, over half of the enterprises typically opt to sell them (65% of the indications). Additionally, common methods of disposing of redundant assets include temporary lending (39%) and donation (32%). This is particularly common among public entities where equipment is often transferred for educational purposes. Assets are also frequently transferred within the organization (27%), while renting or leasing them for a fee is less common (21%).

The diverse range of methods for managing redundant assets, whether permanent or temporary, indicates that such actions are not solely driven by financial motives. While selling or renting equipment aims at profit, other disposal methods primarily aim to reduce the costs associated with maintaining redundant assets. The financial and non-financial objectives of disposing of unnecessary or unused assets are summarized in Table 1.

Table 1. Purposes of disposing of redundant and unused assets (developed by the authors)

Goals:	Mean Value	
	An unnecessary assets	An underutilized asset
Obtaining financial benefits	3,19	3,04
Increasing the profitability of assets	2,83	2,84
Supporting our company's branches	2,14	2,20
Supporting our business partners based on a mutual agreement	2,16	2,11
Supporting organizations educating future staff	2,15	2,07

In both asset type categories, the financial objectives of their management are rated similarly in terms of importance, as indicated by the average ratings assigned. Within both study groups, achieving financial benefits slightly outweighed the goal of enhancing asset profitability. Conversely, non-financial objectives received lower average ratings than financial objectives. This suggests that financial motivations carry more weight as goals for the disposal of redundant fixed assets than do non-financial motivations. The emphasis on cost reduction and revenue generation highlights the need for further research.

4.3. Importance of Costs in Calculating the Cost of Unused Resources

The proportion of fixed costs to a company's total operational expenses is a crucial factor in determining ownership and unit product costs. Consequently, higher fixed costs arising from factors, such as fixed asset utilization, lead to increased unit costs for manufacturing products and delivering services. Thus, redundant assets adversely affect business performance. Figure 6 illustrates the composition of the fixed costs for overall business expenditure.

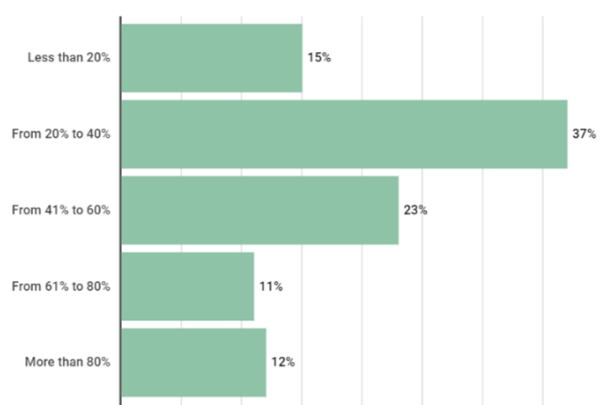


Figure 6. Share of fixed costs in the cost of core operations per year (developed by the authors)

The largest segment of companies (37%) reported fixed costs, accounting for between 20% and 40% of the total business expenses. Nearly one-fifth of the entities have fixed cost shares ranging from 41% to 60%. Other ranges were less prevalent. The median for the group falls below 40%, indicating that for 48% of the companies, fixed costs comprise more than 40% of the overall expenses. This high level of fixed costs, alongside the significant ownership of unused assets, poses a substantial financial challenge for half of the surveyed companies. Notably, 47% of these enterprises possess fixed assets that are used only temporarily or seasonally in their operations. The approach used to calculate the cost of unused resources among the surveyed companies is illustrated in Figure 7.

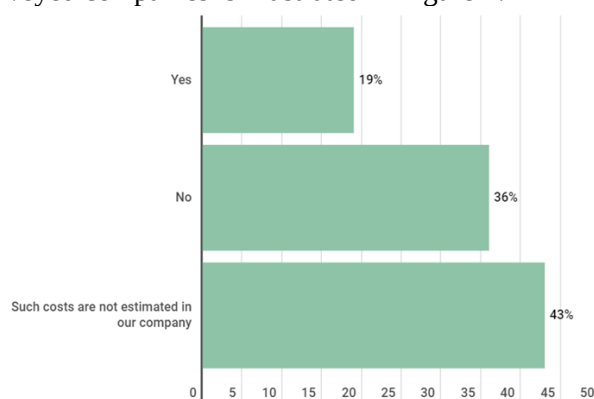


Figure 7. Include the cost of unused resources in the cost of generation (developed by the authors)

Only 43% of the surveyed companies estimated and included the cost of unused resources in their manufacturing. One in five companies acknowledges these costs, but does not incorporate them into production costs, possibly due to exceeding normal production capacity. Meanwhile, over 35% of entities do not estimate this type of cost, potentially leading to financial challenges.

4.4. The Impact of Asset Structure on Decisions to Estimate the cost of Unused Resources

The need to consider the true cost of resources

incorporated into the value of products and services encourages companies to be more inclined to dispose or share unused fixed assets. This trend applies to nearly 55% of the surveyed companies. Consequently, it can be inferred that companies are more inclined to relinquish unused fixed assets rather than calculate the associated costs for inclusion in production expenses.

Based on this premise, we hypothesize that there are significant associations between the composition of owned assets or their associated fixed costs and the decision to estimate the cost of unused resources and include them in manufacturing expenses. Consequently, it was anticipated that at least one of the examined subpopulations would differ from the others. To test this hypothesis, the differences between the studied subpopulations were evaluated using the Kruskal-Wallis test for k-independent samples. The variables tested were as follows:

1. Tested variable: Decision to estimate the cost of unused fixed resources and include them in the cost of production (D), categorized into two groups: Group 1 comprises companies that calculate the cost of unused resources (comprising 64% of the total), while Group 2 consists of companies that do not (comprising 36% of the total).

2. Grouping variables:

- Structure of fixed assets in the company (S1)
- Percentage structure of fixed assets used temporarily or seasonally in the company (S2)
- Percentage structure of fixed assets used continuously in the company (S3)
- Percentage structure of fixed costs of the core business (S4).

Each grouping variable was expressed on a five-point ordinal scale: less than 20%, 21% to 40%, 41% to 60%, 61% to 80%, and above 80%.

Table 2. Purposes of disposing of redundant and unused assets (developed by the authors)

	S1	S2	S3	S4
H Kruskala-Wallis	2,709	1,627	1,207	0,324
df	4	4	4	4
Istotność asymptotyczna	0,608	0,804	0,877	0,988

The results indicated that, for each grouping variable, $p > 0.05$, suggesting that the observed differences between the studied groups were not statistically significant. This implies that the decision to estimate (and include) the cost of unused resources remains consistent across various structures of fixed assets, frequencies of their utilization, or levels of their fixed costs. To reinforce these findings, the estimation outcomes of the examined subpopulations were juxtaposed with the grouping variables, as detailed in Tables 3-6.

Table 3. Structure of the share of fixed assets in the enterprise due to decisions on estimating unused resources (developed by the authors)

Share of fixed assets in the company's assets	Less than 20%	From 20% to 40%	From 41% to 60%	From 61% to 80%	More than 80%	Sum
Cost estimation (Group 1)	23,2%	32,6%	22,8%	13,4%	8,0%	100,0%
No cost estimation (Group D2)	21,9%	33,6%	20,3%	17,2%	7,0%	100,0%

Table 4. Structure of owned resources used temporarily due to decisions to estimate unused resources (developed by the authors)

Share of costs of underutilized fixed assets in production costs	Less than 20%	From 20% to 40%	From 41% to 60%	From 61% to 80%	More than 80%	Sum
Cost estimation (Group 1)	17,4%	36,6%	20,5%	12,5%	12,9%	100,0%
No cost estimation (Group D2)	15,9%	37,5%	23,3%	11,1%	12,2%	100,0%

Table 5. Structure of owned resources used temporarily due to decisions to estimate unused resources (developed by the authors)

Share of costs of underutilized fixed assets in production costs	Less than 20%	From 20% to 40%	From 41% to 60%	From 61% to 80%	More than 80%	Sum
Cost estimation (Group 1)	62,5%	18,3%	11,2%	3,1%	4,9%	100,0%
No cost estimation (Group D2)	61,7%	21,1%	10,2%	3,9%	3,1%	100,0%

Table 6. Structure of owned resources used continuously due to decisions to estimate unused resources (developed by the authors)

Share of costs of underutilized fixed assets in production costs	Less than 20%	From 20% to 40%	From 41% to 60%	From 61% to 80%	More than 80%	Sum
Cost estimation (Group 1)	16,6%	17,4%	18,3%	18,8%	29,9%	100,0%
No cost estimation (Group D2)	13,6%	18,8%	17,0%	20,5%	30,1%	100,0%

Based on the results presented in Tables 3-6, it is evident that companies, regardless of whether they estimate the cost of unused resources or not, exhibit a similar trend in the structure of the studied resources and fixed costs across the majority of the studied ranges, up to 80%. However, there was a notable alteration in the proportions. Specifically, in the groups with a share of up to 20% and 41% to 60%, a higher proportion of companies estimate the cost of unused resources. Conversely, in the groups with shares between 20% and 40% and between 61% and 80%, there is a prevalence of companies that do not estimate the cost of unused resources.

Furthermore, within each analyzed group, a substantial proportion of companies do not isolate this type of cost, irrespective of the extent of unused resources in their operations. Consequently, the issue of not estimating the cost of unnecessary resources does not appear to be linked to the frequency of unused resources within a company. This is especially disadvantageous for entities that frequently have unused production capacities. Consequently, the research hypothesis, which posited differences between the studied groups of companies regarding the structure of owned assets and the share of fixed costs, was not corroborated.

4.5. The Effect of Enterprise Size on Decisions to Estimate the Cost of Unused Resources

Enterprises with unused resources may base their decisions on estimating fixed costs and including them

in the production cost on factors beyond those investigated above. One such factor could be the size of the business, which in this study is defined by the enterprise's scale. This research encompassed an equal number of micro, small, medium, and large enterprises. To differentiate between the two groups, micro and small enterprises, as well as medium and large enterprises, were combined under the assumption that larger entities adopt distinct asset management strategies.

Table 7. Contingency between enterprise size and type of decision on cost of unused resources (developed by the authors)

The decision to include costs of unused fixed assets in products and services	Micro and small (group 1)	Medium and large (group 2)	Total
Yes	51,4%	48,6%	100,0%
No	59,4%	40,6%	100,0%
Such costs are not estimated in our company	42,9%	57,1%	100,0%

The cross-tabulation results indicate that Group 1 companies (51.4%) exhibit a slightly higher inclination than Group 2 companies (48.6%) to incorporate the cost of unused fixed assets into their products and services. Similarly, a comparable proportion was observed for companies opting not to include such costs, with Group 1 companies showing a slight edge (59.4%). The disparities between the decision to include the cost of unused resources and the surveyed entities become more apparent when an enterprise states that it does not estimate this type of cost within its operations. A significant majority of enterprises that abstained from such estimations are micro and small enterprises (42.9%). To validate the statistical significance of these findings, a chi-squared test was conducted (Table 8).

Table 8. Chi-square tests (developed by the authors)

	Value	df	Asymptotic significance (two-sided)
Pearson's chi-square	7,656	2	0,022
Reliability quotient	7,692	2	0,021
N valid observations	352		

Table 8 presents the chi-square test results, indicating a value of $\chi^2(2, N = 352) = 7.656$, with $p < 0.005$. This implies that we can reject the null hypothesis of independence between the analyzed variables and accept the hypothesis suggesting a relationship between them. Therefore, membership in either of the two groups of companies influences the decision to estimate and incorporate the cost of unused fixed resources into the manufacturing cost of products and services.

Table 9. Results of measuring the strength of the relationship (developed by the authors)

Measures of dependence	Value	Proximate relevance
Phi	0,147	0,022
Kramer's V	0,147	0,022
Contingency ratio	0,146	0,022
N valid observations	352	

The strength of the relationship, as measured by Phi (ϕ), Cramer's V, and the contingency coefficient, was nearly identical, indicating a weak relationship between the size group membership of enterprises and the approach to estimating the cost of unused resources, with $\phi = 0.147$ and $p < 0.05$. This suggests that enterprises categorized as micro and small are less inclined to estimate the cost of unused resources and include them in their core business costs. However, the weak value of this relationship suggests that enterprise size is not a dominant factor in the decision to incorporate the costs of unused fixed resources. Further comprehensive research in this area is required.

5. Conclusion

This research has highlighted that companies often possess unused fixed assets, which they may dispose of to enhance profitability or gain financial advantages. However, some resources apply only temporarily or seasonally, making permanent disposal impractical. Instead, these resources can be rented out or utilized externally as needed, typically for cost-effective and feasible transfers. However, the costs associated with maintaining such resources must be continuously covered by the entity's core business, included in production costs. Despite this, more than a third of the surveyed entities neglect to do so, with only a fraction including such costs in their core operations. The approach to handling unused resource costs is not significantly influenced by asset structure or fixed costs but may be marginally influenced by company size. These findings underscore the importance of further research on corporate cost-management strategies. Effective management of fixed assets remains a significant challenge for many companies, encompassing issues of underutilization and cost calculation accuracy. Advancements in technology and communication facilitate resource optimization, whereas modern cost accounting methods and flexible business approaches enable more precise unit cost calculations. However, this study only scratches the surface of resource management, omitting the intricate aspects of management accounting and urging further exploration and development in future research endeavors.

6. Limitations and Further Study

This study only scratches the surface of resource management, omitting the intricate aspects of management accounting and urging further exploration and development in future research endeavors.

Author Contributions

Conceptualization, K.G.; methodology, K.G.; validation, Z.D.-K.; formal analysis, Z.D.-K.;

investigation, K.G.; resources, Z.D.-K.; data curation, Z.D.-K.; writing—original draft preparation, all authors contributed equally; writing—review and editing, K.G. and Z.D.-K.; visualization, Z.D.-K.; supervision, K.G.; project administration, K.G. All authors have read and agreed to the published version of the manuscript.

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Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

The raw data supporting the conclusions of this article will be made available by the authors on request.

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Conflicts of Interest

The authors declare no conflicts of interest.

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