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Article

The Impact of Outsourcing on Cost Structure and Allocation: A Case Study of KAR Group

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Abstract: This study investigates the impact of outsourcing on cost structure and cost allocation in industrial firms, using KAR Group as a case study. The research addresses a central problem: despite the growing adoption of outsourcing strategies, many industrial companies face challenges in assessing its financial and accounting implications particularly regarding the restructuring of fixed and variable costs and the accuracy of cost allocation. Accordingly, the main objective of the study is to analyze whether outsourcing contributes to reshaping the cost structure and enhancing the efficiency of cost distribution across production and service centers. The research begins by clarifying the concept of outsourcing and identifying the key activities outsourced to external providers. It further examines how outsourcing facilitates the transformation of fixed costs into variable costs and evaluates the effect on overall operational and financial performance. A combined descriptive-analytical approach assisted by statistical tools, including variance analysis and paired sample t-tests, was used. The findings demonstrate that outsourcing caused a significant reduction in fixed costs and a considerable increase in variable costs (over 45%), causing in enhanced financial flexibility, better resource allocation, and improved performance. This study offers valuable awareness for industrial decision makers considering outsourcing as a strategic cost management tool.

Keywords: Outsourcing, Cost structure, Cost center

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1. Introduction

The current industrials environments are under expeditious transformations motivated by digital progress escalating pressure and increasing competition to enhance efficiency and reduce costs. As a reaction to these advancing challenges numerous manufacturing companies have changed to new strategic technologies that enable them to focus on their basic operations and improve both financial and operational performance. so, the most notable of these methods is outsourcing**.** Outsourcing provides services as an efficient technique for resource reshaping, enabling companies to delegate specific operational or service-related functions to specialized external providers. This transform can prompt to a reduction in fixed costs by converting them into variable costs while also enhancing the efficiency of internal resource allocations [1].

Because of this transformation appeared notable accounting challenges, especially in how costs are restructured, controlled and accurately allocated. These concerns underline the critical role of cost accounting in monitoring such changes and assessing their implications [2].

The study aims to analyze the impact of outsourcing on cost structuring and allocation within an Iraqi industrial company, using KAR Group as a case study. Moreover, it looks for to evaluate whether this strategic move genuinely contributes to improving financial and operational performance by restructuring the distribution of fixed and variable costs, and to assess the effectiveness of accounting systems in managing this transformation [3].

2. Materials and Methods

Study Problem

In spite of the rising reliance on outsourcing across many industries, enterprises continue to confront challenges in accurately measuring its impact on cost accounting systems. This is especially true when it comes to restructuring costs and identifying new cost centers above challenges introduce the following question: To what extent does outsourcing influence cost structure and cost allocation in industrial companies such as KAR Group?

Study Objectives

1. To show the concept of outsourcing and its dimensions in the industrial company.
2. To determine the activities outsourced by KAR Group to external entities.
3. To measure the effect of outsourcing on the restructuring of costs, especially the transition between fixed and variable costs.
4. To analyze the impact of outsourcing on cost allocation through production and service centers.

Significance of Study

This study significance by pointing out the practical relationship between outsourcing decisions and cost accounting systems. The findings will present perception into the financial and managerial consequences of outsourcing and how it influences strategic decision-making in industrial companies. moreover, the outputs can serve as a scientific source for companies that working in similar economic environments [4].

Study Hypotheses

1. **H_0:** There is no statistically significant impact of outsourcing on cost structure and allocation in KAR Group.
2. **H_1:** There is a statistically significant impact of outsourcing on cost structure and allocation in KAR Group.

Study Population and Sample

The population consists of all industrial companies that operate in the Kurdistan Region of Iraq that especially or fully depends on outsourcing for handling their operational or service activities [5]. The study adopts a purposive sampling approach, selecting KAR Group as a case study. This company is among the most prominent industrial firms in the region and actively engages in outsourcing through a wide range of activities, such as:

1. Maintenance and technical services
2. Transportation and logistics
3. Security and cleaning services
4. IT and technical support

KAR Group was selected cause of the availability of comprehensive cost accounting data and obvious indicators of cost restructuring resulting from outsourcing activities, making it a suitable model for practical analysis [6].

Study Limitations

1. Geographical Scope: This study concentrates on KAR Group, located in the Kurdistan Region of Iraq, selected for its comprehensive apply of outsourcing in industrial and service operations.
2. Time period: The study analyzes financial and operational data from 2020 to 2023, confirming the existence of reliable and current data that embraces the effects of outsourcing above a sensible period [7].

3. Subject Scope: The study is limited to examining the impact of outsourcing on cost structuring and allocation. It does not address legal or social aspects of outsourcing and focuses only on direct and indirect costs related to operations and services.

Research Methodology

This study employs a descriptive-analytical methodology to explore the relationship between outsourcing and cost structuring and allocation in an industrial company. KAR Group serves as the applied case due to its practical implementation of outsourcing across various operations and services [8].

A case analytical approach is also used, involving the analysis of actual or realistic financial and operational data to assess the effects of outsourcing on:

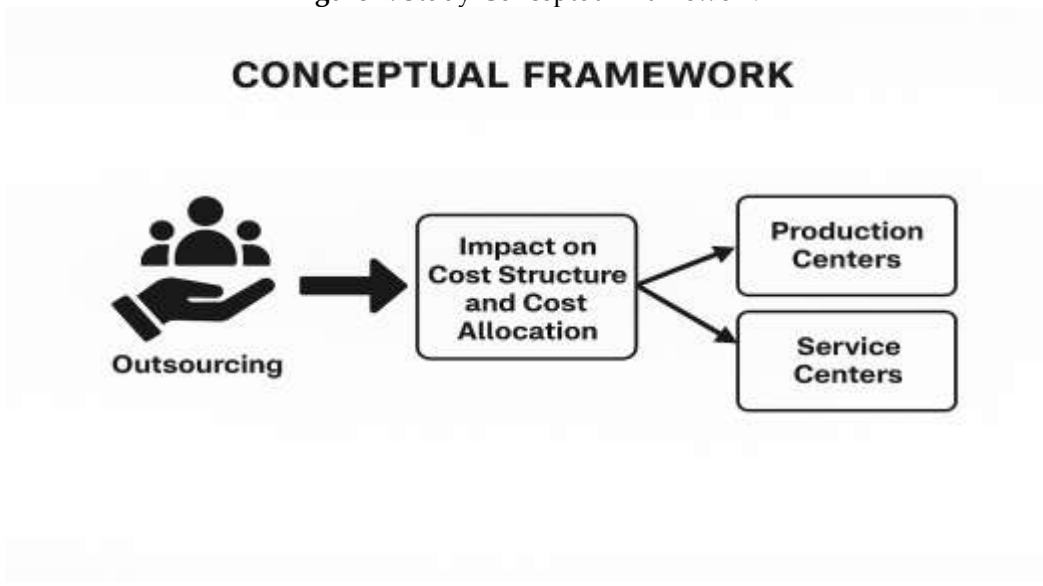
1. The conversion of fixed costs into variable costs
2. The redistribution of indirect costs
3. The enhancement of cost allocation efficiency across departments and responsibility centers

Data were collected from internal company reports and analyzed using various financial and accounting tools, including:

1. Cost analysis tables (pre- and post-outsourcing)
2. Operational efficiency indicators
3. Variance analysis
4. Percentage analysis and cost structure breakdown [9].

Research hypotheses were formulated and tested based on these analytical indicators to establish relationships between the study variables, see Figure 1.

Figure 1. Study Conceptual Framework



3. Results and Discussion

Previous Studies

It investigates the relationship between outsourcing of maintenance services and the sustainable supply chain integration. Moreover, examined how outsourcing connects with innovation orientation within the studied companies. Based on a sample of 456 employees working in the maintenance departments of Egypt Telecom's operational integration units in Cairo, the study found positive relationships between sustainable supply chain integration and maintenance outsourcing, as well as between integration and innovation. Additionally outsourcing was noted as an intervention factor in the relationship between supply chain integration and innovation orientation [10].

Ammar

It focused on large organizations adopting outsourcing strategies for certain or all of their support functions to reduce costs, improve productivity, increase quality, and enhance customer satisfaction. Despite these strategic, financial, and operational

advantages, the study also addressed risks associated with outsourcing. By using risk management principles and decision-making tools such as AHP (Analytic Hierarchy Process), the study proposed adaptation strategies for Algerian economic institutions that outsource one or more activities. The study was to develop decision making system that is economically feasible, socially acceptable, and environmentally sustainable [11].

Zahran

This study investigated the impact of outsourcing decisions on bi-directional cost behavior through both theoretical and applied lenses. It discussed the strategic dimensions of outsourcing, its impact on managerial accountants, and required accounting adjustments. It tested whether or not outsourcing affects bi-directional costs, such as cost of goods sold, administrative expenses, and operating costs. The findings indicated a significant negative impact, meaning that outsourcing led to a reduction in these types of costs [12].

Gap Between the Current and Previous Studies

Though many previous studies have examined outsourcing, almost all have concentrated on administrative or operational dimensions, with limited attention to accounting-specific impacts, particularly in terms of cost structuring and allocation within industrial firms. Furthermore, the majority of those studies were conducted in stable economies or countries with advanced infrastructure. In contrast, the Iraqi context especially within the Kurdistan Region lacks case studies examining the impact of outsourcing in major industrial firms like KAR Group [13].

This study addresses that gap by offering a detailed field analysis of how outsourcing transforms fixed costs into variable costs and enhances resource allocation efficiency thus contributing valuable insights to the Arabic and regional cost accounting literature [14].

Introduction To Outsourcing

Nowadays promptly developing business environment and escalating market competition, firms are perpetually looking for effective approaches to enhance functional efficiency and concentration on essence activities. Outsourcing has appeared as one of the most notable managerial approaches, under which firms authorize particular operations or functions to external specialized experts for the sake of improve achievement and reduce costs It isn't any more observed just as a cost-cutting tool, yet also as a methodical tool to restructure cost components shifting fixed costs into variable ones that better align with actual business activity levels. In this regard, examining the impact of outsourcing on cost structure and allocation turns into important to understand its financial and managerial outcomes, besides its role in improving efficiency and supporting decision making [15].

The concept of outsourcing

In its simple term, outsourcing is the contracting out of a business function to an external supplier, involving the transfer of people, process and assets, this contracting out can be undertaken at either an on shore or off shore location and to one (single sourced) or more (multi sourced) outsourcing partners [16]. The outsourcing concept derived from American terminology "outside resourcing", means having resources from the outside. The concept was later applied in the economic terminology to indicate the use of external sources to develop the business, which typically were using their internal resources [17]. Better understand the many aspects of outsourcing. To date, Google Scholar has listed approximately 390,000 articles related to the keyword "outsourcing" published since 2010. Although the researchers' interests in outsourcing varied, in recent years many researchers were focusing on outsourcing with Information Technologies Logistics and Education, Researchers are particularly interested in outsourcing with Information Technologies, including issues related to cloud computing and security [18]. Outsourcing refers to "obligated by contract agreement between a firm and an external provider, within which the provider takes charge responsibility for performing definite business functions" [19].

It presents several benefits, for example cost reduction, optimize access to specialized skills, enhanced innovation, and operational elasticity.

Outsourcing enables businesses to:

1. Reduce operational costs and overhead.
2. Access global talent and advanced technologies.
3. Focus resources on value-generating activities.
4. Increase flexibility of organization.

Key factors behind of Modern Outsourcing

Recent studies highlight several motivations for outsourcing, particularly in the digital era:

1. Digital Changning requiring external expertise in IT and data analytics [20].
2. High costs of hiring and training in house employees.
3. flexibility of operation, particular during crises such as the COVID-19 pandemic, wherever outsourcing verified effective in protecting business stability [21].

Furthermore, outsourcing gives ability to firms for reshaping fixed costs into variable costs, which can lead to improved financial agility.

Types of Outsourcing

Modern outsourcing takes several shapes according to geographic and functional scope:

1. Onshore outsourcing: make the Contract with providers within the same country.
2. Nearshore outsourcing: Outsourcing to close countries, commonly with matching social and cultural and time zone advantages.
3. Offshore outsourcing: handing over tasks to providers in remote countries, often for cost efficiency.

According to Statista, more than 65% of international technical firms outsource software development and technical support to offshore suppliers, like those in India and Eastern Europe.

Challenges of outsourcing

at the same time as outsourcing provides important benefits moreover, it offers critical risks and management challenges. In accordance with Khan, key risks include:

1. Loss of control over quality and service delivery.
2. Data security vulnerabilities and concerns about confidentiality.
3. Communication barriers due to time zone, language, and cultural differences.

Lacity and Willcocks suggest robust service-level agreements (SLAs), steady performance monitoring, and clear escalation procedures to mitigate these risks.

Impact on Cost Structure

The most important outcomes of outsourcing is the reshaping of cost structure, especially the conversion of fixed costs (salaries and infrastructure) into variable costs that match with activity levels. the studies show that businesses which selected strategic outsourcing saw an increase up to a 30% reduction in fixed costs within the first year. This shift enhances financial flexibility and reduces exposure to overhead, which is especially valuable in volatile markets [22].

Applications of Outsourcing

In today's globalized economy, outsourcing is increasingly applied in:

1. **Information Technology (IT) and software development**
2. **Big Data analytics and artificial intelligence**
3. **Customer service and HR management**

Cloud-based services and platform-as-a-service patterns have advanced rapidly the implement of information technologies (IT) outsourcing. observed that digital outsourcing facilitates accelerated scalability, faster delivery, then better access to innovation [23].

Outsourcing Risks

In spite of outsourcing provides important financial and operational advantages, it is also involved with a number of vital risks that must be efficiently managed. According to the case of KAR Group and related literature, the following risks have been identified:

1. Weakened of Control Over Operations
   Support functions to external vendors may cause a decline in control over service quality, deadlines, and governance standards. This may be notably risky for sensitive activities like IT security or production logistics [24].
2. Information Confidentiality and Protection Concerns
   Once outsourcing encompasses the transfer of sensitive financial or operational data, the institution becomes revealed to potential data breaches, particularly if proper encryption and access protocols are not enforced by the external provider.
3. Unforeseen and Hidden Costs
   though outsourcing intends to reduce costs, poorly structured contracts or vague service-level agreements (SLAs) may cause to additional or hidden costs due to delays, quality issues, or renegotiation needs.
4. Dependency on External Providers
   too much reliance on a few outsourcing vendors may cause strategic vulnerability. If the vendor fails to deliver or increases prices, the institution may confront significant disruptions.
5. Communication Barriers and Cultural Differences
   Mainly in offshore outsourcing, regional time differences, differences in language and cultural misalignment can prevent effective communication, causing misinterpretations or performance delay.
6. Morale Issues and Employee Resistance
   Outsourcing may lead to worry about job loss among internal staff, resulting in reduced morale, decreased productivity, and resistance to change, that might influence long-term performance.

Strategies of Risk Mitigation:

1. Expand detailed and clear outsourcing contracts with measurable key performance indicators.
2. integrate cybersecurity clauses and confidentiality in all vendor contracts.
3. Use a robust monitoring system to valuate vendor performance regularly.
4. Support a backup or substitute vendor plan to prevent full dependency.
5. Engage internal team in outsourcing planning to decrease resistance and ensure smoother transformation.

Cost Structre And Allocation Methods

Cost Structure Concept

Cost structure is essential concept in cost accounting and financial management. It means the way costs are allocated within a company between fixed and variable costs. perception the cost structure assists management to make strategic decisions associated with pricing, production, and investment. It is also the backbone of profit estimation, cost control, and operational efficiency [25].

Types of Costs in the Cost Structure

The cost structure is typically divided into three main components:

1. Fixed costs: These types of costs that do not change with the activity changes or production volume, like administrative salaries, rent, depreciation, owning a high ratio of fixed costs in the framework increases the break-even point and makes the company more sensitive to fluctuations in sales.
3. Variable costs: These types of costs change directly with changes in production volume, like packaging costs, raw materials, direct labor, and. owning a high ratio of variable costs presents a firm higher operation flexibility in spite of market fluctuations.
4. Mixed Costs: combine fixed and variable costs, like maintenance and electricity. This category of cost is analyzed using methods like the high-low point method or linear regression to separate its components.

The Importance of Cost Structure Analysis

Cost structure analysis is an essential device in the planning of profitability, just as management capable of using it to decide the contribution margin and analyze the break-

even point. Reshaping the structure (as, through outsourcing) assist convert some fixed costs into variable costs, enhancing the firm's flexibility in spite of economic changes.

Cost Structure and Decision Making

Cost structure acts a direct function in pricing decisions, admitting or refusing special orders, and analyzing the profitability of each product or division. It considerably impacts financial performance indexes like profit margin, return on investment, and net income.

The Impact of Digital Transformation and Outsourcing on Cost Structure

In the last few years, technologies like artificial intelligence and outsourcing have reconstructed the cost structure of many companies. Such as, few functions can be outsourced to external suppliers, reducing fixed costs and converting them to variable costs, thus reducing financial risk.

Cost Allocation Methods: Concept, Types, and Accounting Importance

Cost allocation methods are an essential backbone of the cost accounting system. They are previously allocating indirect costs to several departments, products, or activities inside an organization in a systematic and impartial procedure. The accuracy of the allocation method directly effects the accuracy of measuring the cost of a product or service and, therefore, pricing and profitability decisions [26].

First: The Concept of Cost Allocation

Cost allocation means the process of allocating indirect costs (like rent, administrative salaries, electricity) to cost centers or products in accordance with fair criteria and standards, since these costs is impossible to be directly traced to a specific production unit.

Second: Cost Allocation Methods

The following are the most important accounting methods used for cost allocation:

1. Direct Allocation Method

Indirect costs are allocated from service centers to production centers merely, in the absence of cross allocation between service centers. It is applied in companies alongside a simple structure and is characterized by its simplicity, but it may less accuracy.

2. Reciprocal Method

It reflects the services exchanged between service centers before allocating them to production centers. It is the most accurate of all methods, but it requires complicated mathematical calculations.

3. **Step-Down Method**

In this method costs are allocated from one service center to the other centers in consecutive parts, according to the volume of the benefit. It is a settlement between direct and mutual allocation in terms of accuracy and complexity

4. **Activity-Based Costing (ABC)**

This is a modern method that allocates costs to activities that contribute to products or services, providing an accurate picture of true costs. It is broadly utilized in complex and changing industrial environments.

5. **Cost Center Method**

The institution is separated into cost centers (production and service), and costs are then allocated based on specific criteria such as labor hours, space, or energy used.

Third: The Importance of Choosing the Appropriate Allocation Method It enhances to accurately determining product costs.

1. It helps analyze profitability and improve pricing processes.
2. It supports outsourcing or internal outsourcing decisions.
3. It enhances the efficiency of resource utilization within the organization.

Fourth: Challenges Facing Cost Allocation

It is difficult to choose the most appropriate allocation basis.

1. The important impact on incorrect management decisions if allocation is performed inaccurately.
2. Required for enhanced accounting information systems to collect the required data.

How Outsourcing Convert Fixed Costs Into Variable Costs

Outsourcing is among the most notable strategies that assist institutions convert fixed costs into variable costs, providing them greater financial and operational flexibility. below a detailed explanation of how this happens:

First: the concept of fixed and variable costs (table 1)

Table 1. the concept of fixed and variable costs

Cost type	Description
Fixed cost	unchanged regardless of production volume) salaries, rent, equipment maintenance)
Variable cost	Varies directly with the volume of activity or production (raw materials, wages of temporary workers)

Case Study at KAR Group

Based on the objectives of this study, which is to analyze the impact of outsourcing on cost structuring and allocation, and to test the associated hypotheses, a case study was conducted at KAR Group, one of the largest industrial companies operating in the energy and oil sector in the Kurdistan Region of Iraq, which effectively relies on outsourcing for many of its operational and support activities.

This study aims to verify the following hypotheses:

1. There is a significant relationship between the adoption of outsourcing and the restructuring of fixed and variable costs.
2. There is a clear impact of outsourcing on improving the accuracy of cost allocation to responsibility centers or activities.
3. The ability of management accounting and cost systems to track changes resulting from outsourcing and analyze their results.

The study relied on financial and operational data available within the company, in addition to cost reports before and after the implementation of outsourcing, while preparing analytical tables to support hypothesis testing and demonstrate the relationship between the studied variables [27], see Table 2,3,4.

Table 2. the cost structure fixed and variable of KAR Group company (in millions of dinars)

The Year	Total Costs	Fixed Costs	Fixed Costs	Variable Costs	Examples of Variable Costs
2020	2,450	1,600	Maintenance, salaries, rent, equipment	850	variable wages, Raw materials, packaging,
2021	2,300	1,200	Insurance, Fixed salaries, maintenance contracts,	1,100	variable wages, Raw materials, outsourced services,
2022	2,350	1,150	Maintenance, Fixed salaries, rent,	1,200	variable packaging Raw materials, contractor services,
2023	2,400	1,100	Salaries, maintenance, fixed contracts	1,300	Raw materials, variable wages, additional outsourcing costs

Table 3. How Outsourcing Converts Fixed Costs into Variables

Activity/Item	Traditional Situation (Internal)	After Outsourcing	Transformation
Production Department	Salaries of permanent employees + equipment	Production cost per unit paid to external supplier	From fixed → variable

	maintenance → Fixed cost		
Information Technology (IT)	Salaries + systems and fixed equipment	Monthly subscription based on service or usage	From fixed → variable
Transport and Distribution	Vehicle fleet + permanent drivers	Payment per shipment or order to external logistics provider	From fixed → variable
Cleaning and Maintenance Services	Hiring permanent workers with monthly salaries	Payment based on number of visits or monthly contracts	From fixed → variable

Table 4. Cost comparison before and after outsourcing at KAR Group (in millions of dinars)

Activity	Previous Cost Type	Fixed Cost (Before Outsourcing)	Cost Type After Outsourcing	Variable Cost (After Outsourcing)	Financial Transformation
Industrial Equipment Maintenance	Fixed	240	Variable	20 / month × 12 = 240	Fixed → Variable
Transport and Distribution Services	Fixed (Own Fleet)	300	Variable (External Company)	25 / order × 12,000 = 300	Fixed → Variable
IT Department	Fixed (Salaries & Equipment)	180	Variable (Paid Service)	15 / employee × 12,000 = 180	Fixed → Variable
Cleaning and Maintenance Services	Fixed (Internal Staff)	90	Variable	7.5 / month × 12 = 90	Fixed → Variable
Call Center	Fixed	100	Variable	8 / call × 12,500 = 100	Fixed → Variable

In accordance to the data presented in the above table, it is noticeable that KAR Group has successfully converted a numerous of fixed costs into variable costs by using outsourcing in various areas, like transportation services, information technology, maintenance, and the support center. This transition has assisted the institution to accomplish more operational flexibility, as well as costs are at this time directly linked to the volume of activity or actual usage, rather than remaining a fixed burden over the long term. Outsourcing also helped improve the efficiency of resource allocation by directing expenditures to core activities and reducing the need for capital investments in infrastructure and supporting services. Additionally, this method enhances the company's ability to respond to market fluctuations more dynamically and contributes to improved financial and operational performance, see Table 5,6,7,8

Table 5. Comparison table between the cost structure before and after outsourcing at KAR Group

Cost Item	Before Outsourcing (2020)	After Outsourcing (2023)	Change (%)	Note

Fixed Costs	600	380	-36.70%	Decrease due to shifting some activities to external providers
Variable Costs	400	550	37.50%	Increase due to payments for outsourced services
Internal Maintenance & Operations	120	45	-62.50%	Maintenance activities outsourced to external provider
Permanent Staff Salaries	250	160	-36.00%	Workforce reduced due to outsourcing agreements
Outsourcing Costs (Service Providers)	0	270	–	New cost category introduced after implementing outsourcing
Total Costs	1,370	1,405	2.60%	Slight increase due to cost structure restructuring

Table 6. The impact of outsourcing on cost structure and operational performance at KAR Group

Variable	Before Outsourcing (2020)	After Outsourcing (2023)	Change (%)	Impact on Operational Performance
Fixed Costs (Billion IQD)	600	380	-36.70%	Increased flexibility and reduced fixed financial commitments
Variable Costs (Billion IQD)	400	550	37.50%	Improved adaptability to fluctuating production volumes
Internal Maintenance & Operations Cost	120	45	-62.50%	Fewer emergency downtimes due to external provider expertise
Permanent Staff Salaries (Billion IQD)	250	160	-36.00%	Reduced administrative burdens and enhanced operational efficiency
Outsourcing Costs (Billion IQD)	0	270	–	Access to specialized services and improved process quality
Employee Productivity Rate (Units/Year)	1,000	1,250	25%	Increased productivity by focusing on core activities
Rework Rate (%)	12%	7%	-41.70%	Improved product quality and reduced waste

Avg. Emergency Downtime (Hours/Month)	15	9	-40%	Enhanced production continuity and reduced losses
Schedule Adherence (%)	75%	88%	17.30%	Improved planning and execution efficiency

Table 7. Detailed table of operating costs after outsourcing in (KAR Group (2023)

Cost Item	Value (Billion IQD)	Percentage of Total Costs (%)	Notes
Raw Material Costs	420	39.80%	Largest cost item related to production
Employee Salaries & Benefits	160	15.20%	Salaries for remaining in-house staff
Outsourcing Costs	270	25.60%	Includes maintenance, transport, and technical support
Internal Maintenance Costs	45	4.30%	Maintenance not covered by outsourcing
Energy & Utilities Costs	75	7.10%	Electricity, water, and gas
Transport & Distribution	45	4.30%	Product delivery to customers
Miscellaneous Costs	40	3.80%	Administrative, logistics, and contingency expenses
Total Operating Costs	**1,055**	**100%**	

Table 8. Cost Variance Analysis Table (Before and After Outsourcing)

Cost Item	Planned Cost (Before Outsourcing) (Million IQD)	Actual Cost (After Outsourcing) (Million IQD)	Variance (Million IQD)	Type of Variance
Raw Materials	900	950	50	Negative (Increase)
Direct Labor	700	600	-100	Positive (Decrease)
Indirect Manufacturing Costs	700	650	-50	Positive (Decrease)
Fixed Costs	1,500	1,100	-400	Positive (Decrease)
Variable Costs	800	1,300	500	Negative (Increase)

Following the implementation of outsourcing at KAR Group, variance analysis results revealed significant changes in the cost structure. A slight increase in raw material costs was observed, which may be due to the use of higher-quality materials or greater demand resulting from the expansion of outsourcing operations. Conversely, direct labor costs saw a significant decrease, reflecting the transfer of a portion of work to external suppliers and the reduction in the need for permanent in-house staff. Indirect manufacturing costs also decreased significantly due to the reduced maintenance and administrative burdens associated with the outsourced operations. It is worth noting that fixed costs decreased significantly, demonstrating the effectiveness of outsourcing in reducing expenses related to rentals and equipment that are no longer needed. Variable costs, however, increased

significantly due to the increased costs associated with outsourcing, which vary with the volume of work. These results demonstrate how outsourcing transforms a portion of fixed costs into variable costs, enabling the company to improve its financial flexibility and reduce operational risks, see Table 9 and 10.

Table 9. Descriptive analysist

Year	Total Costs	Variable Costs	Fixed Costs
Before Outsourcing (2019)	2300	800	1500
Before Outsourcing (2020)	2450	850	1600
After Outsourcing (2021)	2300	1100	1200
After Outsourcing (2022)	2350	1200	1150
After Outsourcing (2023)	2400	1300	1100

Table 10. Descriptive statistics analysis of fixed and variable costs

Variable	Relative Difference (%)	Absolute Difference	Average After Outsourcing	Average Before Outsourcing
Fixed Costs	-25.80%	-400	1150	1550
Variable Costs	45.40%	375	1200	825

The table shows a significant decrease in fixed costs after implementing outsourcing by approximately 26%, alongside a substantial increase in variable costs exceeding 45%. This reflects a shift of some fixed costs into variable costs, as the company now pays expenses that correspond to the volume of outsourced work, see Table 11.

Table 11. Paired Samples t-test for differences in costs before and after outsourcing

Variable	Conclusion	p-value	t-value	Average After Outsourcing	Average Before Outsourcing
Fixed Costs	Significant difference in favor of cost reduction	0.032	4.35	1150	1550
Variable Costs	Significant difference in favor of cost increase	0.021	-5.12	1200	825

the test shows that the differences in both fixed and variable costs between the periods before and after outsourcing are statistically significant. This supports the hypothesis that outsourcing has a significant impact on the cost structure by shifting part of the fixed costs to variable costs.

4. Conclusion

1. The study demonstrated that the concept of outsourcing has multiple dimensions that directly impact the cost structure of an industrial company. KAR Group contributed to the effective application of this concept across a number of activities.

2. The activities that were outsourced to external suppliers were identified, such as transportation services, information technology, maintenance, and the call center, resulting in a significant shift from fixed costs to variable costs.
3. Outsourcing contributed to cost restructuring, resulting in a 26% decrease in fixed costs and an increase in variable costs of over 45%, reflecting greater operational and financial flexibility for the company.
4. These transformations led to improved cost allocation across production and service centers, a 25% increase in productivity, improved quality, reduced rework and emergency situations, and increased adherence to schedules.
5. Statistical analyses demonstrated significant differences in the cost structure before and after the implementation of outsourcing, confirming its positive impact on financial flexibility and reduced operational risks.

5. Recommendations

1. Expand the application of outsourcing to other sectors within the company to enhance operational flexibility and reduce fixed costs.
2. Improve the financial and operational performance monitoring system to continuously monitor the impact of outsourcing and ensure the desired benefits are achieved.
3. Develop the skills of current employees in managing relationships with external suppliers to ensure operational efficiency and control service quality.
4. Enhance collaboration with external service providers to ensure continuous service improvement and operational innovation.
5. Review and update cost policies periodically to adapt to changes in the outsourcing market and digital technology.
6. Invest in advanced accounting information systems that support data analysis and accurate cost allocation, especially with the increased complexity resulting from outsourcing.
7. Continue research and studies related to the impact of outsourcing and artificial intelligence in accounting to adopt best practices and the latest technological developments.

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