

DEVELOPMENT OF ENERGY INDUSTRY IN UZBEKISTAN VIA INCREASING THE EFFICIENCY OF FINANCIAL MANAGEMENT OF COMPANIES IN THIS INDUSTRY BY IMPROVING THE METHODOLOGY OF THEIR MANAGEMENT ACCOUNTING

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Abstract. *The given article is devoted to determining the prospects for the development of the energy industry of Uzbekistan through increasing the efficiency of financial management of companies in this industry by improving the methodology of their management accounting. Using the method of regression analysis based on data for 1990-2022, the cause-and-effect relationships of the development of the energy industry of Uzbekistan are modeled while increasing the efficiency of financial management of companies in this industry by improving the methodology of their management accounting. As a result, it was concluded that the prospect for the development of the energy industry of Uzbekistan through increasing the efficiency of financial management of companies in this industry is associated with improving the methodology of their management accounting for companies in the energy industry. For this purpose, further automation of management accounting is recommended to speed up compliance with the requirements of government regulations.*

Keywords: *development of the energy industry, Uzbekistan, through increasing the efficiency of financial management, companies in this industry, management accounting methodology, reducing electricity losses.*

Introduction

The activities of energy companies in modern economic conditions are becoming increasingly high-tech. With the digital development of the economy and the industrial growth of the economic system of Uzbekistan as one of the most dynamically developing countries in the world (according to the World Bank, the annual growth rate of Uzbekistan's GDP was 5.67% in 2022, exceeding the growth rate of world GDP by 83.49%, amounting to 3.09% [6]), the Uzbek economy's need for electricity is increasing.

Thus, according to the World Bank, the energy intensity of Uzbekistan's GDP (in constant 2017 prices) increased by 153.03% from 1.61 kg of oil equivalent in 1990 to 4.07 kg of oil equivalent (the latest data). For comparison, the energy intensity of world GDP is 2 times higher than in Uzbekistan and currently amounts to 8.13 kg of oil equivalent, but is growing at a much slower pace: by 34.12% compared to 1990, when it was estimated at 6.06 kg oil equivalent [7].

All these determine the relevance of the development of the energy industry of Uzbekistan in support of further economic growth. The problem is that, along with the significant and growing volume of electricity production in Uzbekistan, there are quite large losses of electricity during its transmission and distribution.

In the given article the contribution of financial management to solving this problem is discussed. The purpose of the article is related to determining the prospects for the development

of the energy industry of Uzbekistan through increasing the efficiency of financial management of companies in this industry by improving the methodology of their management accounting.

Literature Review

Reducing electricity losses during its transmission and distribution is considered as one of the main vectors for the development of the energy industry of Uzbekistan in publications [8; 9; 13]. The significant role of financial management of energy industry companies in reducing electricity losses during its transmission and distribution in Uzbekistan is noted in the works [1; 2].

As a result of a review of existing literature, this article identifies two potential management accounting measures that have the potential to improve the efficiency of financial management of energy industry companies in Uzbekistan. The first measure: automation of management accounting to speed up compliance with the requirements of government regulations [4; 10]. The second measure: more detailed accounting of working capital to attract bank financing [11; 12].

However, it remains unknown how much the implementation of these potential measures actually contributes to improving the efficiency of financial management of energy companies in Uzbekistan. This raises the following research question: “What impact does 1) automation of management accounting to speed up compliance with government regulations and 2) more detailed accounting of working capital to attract bank financing have on power transmission and distribution losses in Uzbekistan?”

The article is devoted to finding an answer to the research question raised through modeling the cause-and-effect relationships of the development of the energy industry of Uzbekistan while increasing the efficiency of financial management of companies in this industry by improving the methodology of their management accounting.

Materials and Methods

The methodology of this investigation is based on the use of regression analysis method. Using the chosen method, a regression analysis is carried out of the influence of the share of time of top managers of companies spent on meeting the requirements of government regulations [12] (T) and the share of firms using banks to finance working capital [5] (F) on losses of electricity during its transmission and distribution in Uzbekistan [4] (EL). For this purpose, statistics of factors and results of development of the energy industry of Uzbekistan in 1990-2022 are used in Table 1.

Table 1. Factors and results of development of the energy industry of Uzbekistan in 1990-2022.

Year	Electric power transmission and distribution losses (% of output)	Time spent dealing with the requirements of government regulations (% of senior management time)	Firms using banks to finance working capital (% of firms)	Year	Electric power transmission and distribution losses (% of output)	Time spent dealing with the requirements of government regulations (% of senior management time)	Firms using banks to finance working capital (% of firms)
1990	9,39	5,40	2,70	2007	8,83	2,50	15,00
1991	9,36	5,40	2,70	2008	8,83	11,10	15,00
1992	9,37	5,40	2,70	2009	8,83	11,10	15,00

1993	9,07	5,40	2,70	2010	8,82	11,10	15,00
1994	9,07	5,40	2,70	2011	8,82	11,10	15,00
1995	8,73	5,40	2,70	2012	8,82	11,10	15,00
1996	8,94	5,40	2,70	2013	8,82	18,80	13,40
1997	8,70	5,40	2,70	2014	8,82	18,80	13,40
1998	9,05	5,40	2,70	2015	8,82	18,80	13,40
1999	9,07	5,40	2,70	2016	8,82	18,80	13,40
2000	9,08	5,40	2,70	2017	8,82	18,80	13,40
2001	8,93	5,40	2,70	2018	8,82	18,80	13,40
2002	8,82	5,40	2,70	2019	8,82	4,90	23,70
2003	8,85	7,90	2,00	2020	8,82	4,90	23,70
2004	8,85	7,90	2,00	2021	8,82	4,90	23,70
2005	8,84	2,50	15,00	2022	8,82	4,90	23,70
2006	8,84	2,50	15,00	-	-	-	-

Source: compiled by the author based on materials [3; 5; 12].

Depending on the sign of the regression coefficients in the resulting equation, conclusions are drawn about the nature of the influence of the factors under consideration on the results of development of the energy industry in Uzbekistan.

Results

For establishing cause-and-effect relationships in the development of the energy industry in Uzbekistan, based on statistics from table. 1, a regression analysis was conducted of the influence of the share of time of top managers of companies spent on complying with the requirements of government regulations, and the share of firms using banks to finance working capital on losses of electricity during its transmission and distribution in Uzbekistan. The results obtained are shown in table. 2.

Table 2. Factor analysis of electricity losses during transmission and distribution in Uzbekistan

Regression statistics	
Plural R	0,5534
R-square	0,3063
Normalized R-square	0,2600
Standard error	0,1526
Observations	33

	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	0,3085	0,1542	6,6230	0,0041

Remaining 30						
	30	0,6987	0,0233			
Total	32	1,0072				

	Coefficients	Standard error	t-statistic	P-Value	Lower 95%	Upper 95%
<i>Y-intersection</i>				1,6*10 ⁻⁴⁵		
	9,0798	0,0568	159,7298		8,9637	9,1959
T	-0,0068	0,0051	-1,3375	0,1911	-0,0171	0,0036
F	-0,0110	0,0036	-3,0081	0,0053	-0,0184	0,0035

Source: calculated and compiled by the author.

Based on the results from table. 2, losses of electricity during its transmission and distribution in Uzbekistan are determined by 55.34% by the considered factors of management accounting of companies in the energy industry. The regression equation took the following form: $EL=9.0798-0.0068*T-0.0110*F$ (1)

In accordance with equation (1), when the share of time of top managers of companies spent on meeting the requirements of government regulations is reduced by 1%, electricity losses during its transmission and distribution in Uzbekistan are reduced by 0.0068%. With an increase in the share of firms using banks to finance working capital by 1, losses of electricity during its transmission and distribution in Uzbekistan are reduced by 0.0110%.

Discussion

The conducted econometric modeling revealed the cause-and-effect relationships of the development of the energy industry of Uzbekistan while increasing the efficiency of financial management of companies in this industry by improving the methodology of their management accounting. In confirmation [4; 10] it has been proven that automation of management accounting to speed up compliance with government regulations makes a significant contribution to reducing electricity losses during its transmission and distribution. Unlike [11; 12] it is substantiated that more detailed accounting of working capital to attract bank financing does not help reduce electricity losses during its transmission and distribution.

Conclusion

By summarizing the ideas mentioned above it should be suggested that the article revealed the prospects for the development of the energy industry in Uzbekistan through increasing the efficiency of financial management of companies in this industry. This prospect is associated with improving the methodology of their management accounting for companies in the energy industry. To this end, further automation of management accounting is recommended to speed up compliance with government regulations.

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