

# RESEARCH OF FINANCING TECHNOLOGICAL EQUIPMENT IN PROCESS OF LOADING AND TRANSPORTATION OF SAND AND GRAVEL

## VÝZKUM FINANCOVÁNÍ TECHNOLOGICKÝCH ZAŘÍZENÍ V PROCESU NAKLÁDÁNÍ A DOPRAVY ŠTĚRKOPÍSKŮ

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### **Abstract**

This paper deals with the issue of financing technology investments. Specifically, it concerns the process of loading and transportation of sand and gravel. The research was conducted through a questionnaire survey. The main objective of this paper is to identify financing sources used for the process of loading and transportation of sand and gravel in selected companies. Another objective was to evaluate whether the selected industrial companies outsource the process of loading and transportation or not. If so, it was then necessary to find out the most common reason for that decision. The issues of financing technological processes in loading and transporting sand and gravel is an interesting area that has not yet been mapped.

### **Abstrakt**

Příspěvek se zabývá problematikou financování technologických investic. Konkrétně jde o proces nakládání a dopravy štěrkopísků. Výzkum byl proveden formou dotazníkového šetření. Hlavním cílem příspěvku je zjistit, z jakých zdrojů je financován proces nakládání a dopravy štěrkopísků ve vybraných podnicích. Dalším cílem bylo vyhodnotit, zda vybrané průmyslové podniky outsourcují proces nakládání a dopravy. Pokud ano, pak bylo zapotřebí zjistit, jaký je nejčastější důvod takového rozhodnutí. Problematika financování technologických procesů při nakládání a dopravě štěrkopísků představuje zajímavou oblast, která doposud nebyla zmapována.

**Key words:** sources of financing, leasing, outsourcing, sand and gravel.

## **1 INTRODUCTION**

Construction minerals play a key role in our economy. Opencast mining of deposits of mineral resources represents almost 90 % of the production of these mineral resources in the Czech Republic. In terms of exploitation efficiency, the opencast mining has the greatest advantage in that it achieves much higher efficiency with significantly lower operating costs through the use of more efficient mechanization, higher extraction performance, shorter time of deposit opening and thus lower investments, etc. [5] This article deals only with the sector of sand and gravel. The exploitation of this material consists of the process of loading, technological transportation and subsequent treatment of the extracted raw material. For the purposes of this article, the research deals only with the process of loading and transportation. The aim of this paper is to map out, using quantitative research, how industrial enterprises, mining sand and gravel in the Czech Republic, finance the process of loading and technological transportation of the extracted raw material. The topic of this paper was chosen with regard to a research project solution and also in relation to the elaboration of the thesis.

## 2 ACTUAL SITUATION IN FINANCING OF SELECTED INDUSTRIAL ENTERPRISES

In 2011, the author of this paper conducted research on the situation in financing technology investments in industrial enterprises. Several companies exploiting sand and gravel were selected. The research was conducted through questionnaires that were sent to respondents via e-mail. The aim of the research was to find out actual financing methods of selected technological processes in enterprises mining sand and gravel. The return of questionnaires was only 44 % (see Tab. 1). It could probably be caused by the fact that the companies are owned by both domestic and foreign persons, and therefore it is very difficult to access the information. It could also be due to the fact that in today's competitive environment, enterprises are afraid to disclose their sensitive data.

**Tab. 1** Number of respondents

	Total number of enterprises	Number of enterprises that responded	%	Ltd.	%	JSC	%
<b>Sand and gravel</b>	18	8	44	4	50	4	50

*Source: Inherent processing*

Even though there is only 8 companies, having been analysed in this paper, this number represents 29 % of the total production in the sector of sand and gravel.

## 3 ANALYSIS OF RESPONSES

Enterprises exploiting sand and gravel use different financing methods for loading and transportation processes. The main research question is whether they purchase the investments required for individual processes (from their own or other sources) or outsource it. Tab. 2 shows a summary of the responses.

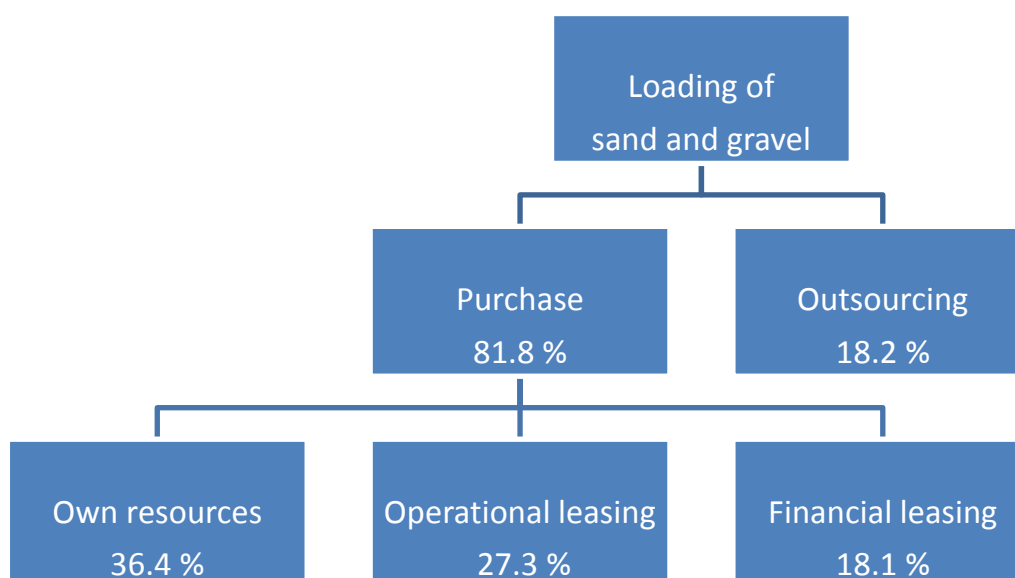
**Tab. 2** Sand and gravel

	Process	
	loading in %	transportation in %
<b>PURCHASE</b>	81.8	55.6
<b>own resources</b>	36.4	55.6
<b>loan</b>	0	0
<b>grant</b>	0	0
<b>operational leasing</b>	27.3	0
<b>financial leasing</b>	18.1	0
<b>leaseback</b>	0	0
<b>OUTSOURCING</b>	18.2	44.4
<b>TOTAL</b>	<b>100</b>	<b>100</b>

*Source: Inherent processing*

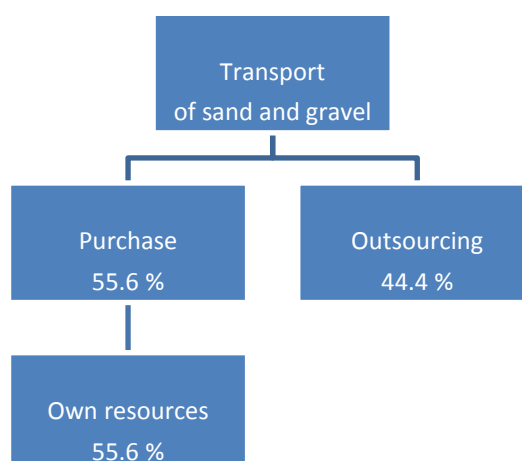
The companies mining a sand and gravel deposits provide the process of loading most often by purchasing the technology from its own resources (36.4 %). The second most common variant of acquisition of investments in the process of loading is operational leasing (27.3%), followed by financial leasing (18.1 %). Outsourcing in the process of loading is used only in 18.2 % of cases.

Fig. 1 shows an overview of the achieved results.



**Fig. 1** Loading of sand and gravel

The technological transportation in the enterprises exploiting sand and gravel is in 55.6 % of cases provided from their own sources and in 44.4 % of cases is outsourced. Fig. 2 shows the results of the process of sand and gravel transportation.



**Fig. 2** Transportation of sand and gravel

Another important question is how these industrial enterprises look at the leasing and outsourcing issues. The respondents indicated in Tab. 3 whether they use financial leasing options and why.

**Tab. 3** Reasons for and against the use of leasing

		Reasons
Number of companies making use of leasing	6	<b>Acquisition of assets without need of lump-sum payment (50 %)</b> <b>Faster recovery of technology (50 %)</b> Acquisition of assets without need of lump-sum payment (0 %) Inflation risk borne by leasing company (0 %) Faster availability than in case of loan (0 %) Faster recovery of technology (0 %)
Number of companies not making use of leasing	2	Lease price (50 %)  Sufficient financial resources (50 %) Limited ownership rights (0 %) Penalties for contract termination (0 %) Ownership risks (0 %)

Source: *Inherent processing*

What is the advantage of financial leasing according to the companies mining sand and gravel? The first advantage is caused by the nature of that form of financing. When buying on credit, a high initial capital is not required, but payments are made just in the course of life. This reason was given by 5 companies (50 %). Also faster recovery of technology was the reason for the acquisition of investments through leasing (50 %).

On the contrary, the reason why not take advantage of leasing as a source of financing is the lease price (50 %) or sufficient financial resources in the company (50 %).

**Tab. 4** Reasons for and against the use of outsourcing

		Reasons
Number of companies making use of outsourcing	4	<b>Focus on main activity (8.3 %)</b> <b>Transfer of risks to supplier (75 %)</b> <b>Zero costs of purchase (8.3 %)</b> <b>Keeping the latest technology without capital investments (8.4 %)</b> Time advantages (0 %) Flexible response to new requirements and implementation of new technologies (0 %)
Number of companies not making use of outsourcing	4	<b>Cost savings need not meet expectations (16.8 %)</b> <b>Risk of leakage of sensitive information (33.4 %)</b> <b>Costs of outsourcing itself (16.6%)</b> <b>Have not been tested (16.6 %)</b> <b>Self-financing by concern (16.6 %)</b> Costs of contract amendment (0 %) Reduction in quality of services or products (0 %) Cost savings need not meet expectations (0 %)

Source: *Inherent processing*

The main reason why industrial companies outsource the process of loading and transportation is undoubtedly the transfer of risks to suppliers (75 %). Other reasons are: keeping the latest technologies without capital investments (8.4 %), zero costs of purchase (8.3 %), focus on main activity (8.3 %).

Why the enterprises, having been surveyed, do not use outsourcing? As they fear of leakage of sensitive information and data (33.4 %). Other reasons include the costs of outsourcing itself (16.6 %), cost savings need not meet expectations (16.8 %) or self-financing by concern (16.6 %).

## 4 CONCLUSION

Managerial decisions regarding the financing of investments are such decisions that are important not only in present, but they are critical for future enterprise management as well. The aim of the article was to determine how managers of selected industrial companies, exploiting sand and gravel, provide financing for their technology investments in processes of loading and transportation of extracted mineral resources and how these companies approach the issues of leasing and outsourcing. The conducted research shows that the process of loading and transportation is provided by purchasing technologies that are financed from own resources. As for leasing, a surprising finding was that in the process of the loading of sand and gravel, operational leasing is utilized more often (27.3 %) than financial leasing (18.1 %). Outsourcing is the process being utilized more often in the process of technological transportation (44 %), mainly due to the transfer of risk to the supplier. As for the dependence of the achieved results on the legal form of the companies, mining sand and gravel, it must be noted that the results are as follows: limited liability companies finance the processes of loading and transportation of sand and gravel from their own resources more frequently than joint stock companies (those use outsourcing more often).

In the conclusion of the article, I would like to mention the fact that mining companies are mostly owned by foreign companies who do not like to publish sensitive data. However, based on personal consultations with an economic manager of a model enterprise I would like to conclude this discussion by the following findings. In general, every company is trying to minimize its costs and increase its revenue and thus profit. Within the cost reduction, economic analyses are always performed, through which the company management determines whether it is worth to purchase the investment or not. If the manager determines that it is so, he initiates (foreign) owners who will pay for the investment. Managers thus often do not have enough information from which sources the investment has been acquired. As regards the question whether it is better for the company to acquire investments by purchase, whether from its own or external resources or by outsourcing, it again depends on the specific situation of the given company.

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## RESUMÉ

Manažerská rozhodování o způsobu financování investic jsou taková rozhodnutí, která jsou důležitá nejen v současnosti, ale také jsou rozhodující pro budoucí řízení podniku. Článek si kladl za cíl zjistit, jak manažeři vybraných průmyslových podniků exploatující štěrkopísky zajišťují financování svých technologických investic v procesech nakládání a dopravy vytěžené suroviny a jak se tyto podniky staví k otázkám leasingu a outsourcingu. Z provedeného výzkumu vyplývá, že proces nakládání a dopravy je prováděn nákupem technologií, které jsou financovány z vlastních zdrojů společnosti. Co se týče leasingu, překvapivé bylo zjištění, že v procesu nakládání štěrkopísky je využívanější operativní leasing (27,3 %) než leasing finanční (18,1 %). Outsourcing je využívanější v procesu technologické dopravy (44 %) a to hlavně z důvodu přenesení rizik na dodavatele. Co se týče závislosti dosažených výsledků na právní formě podnikání firem, těžící štěrkopísky, je nutno poznamenat, že výsledky jsou následující: společnosti s ručením omezeným financují procesy nakládání a dopravy štěrkopísky z vlastních zdrojů častěji než akciové společnosti (ty využívají více outsourcing).

V závěru příspěvku bych ráda zmínila fakt, že těžební podniky jsou z velké části vlastněny zahraničními společnostmi, které nerady zveřejňují citlivé data. Ovšem na základě osobní konzultace s ekonomickým manažerem vzorového podniku bych ráda uzavřela tuto diskuzi následujícím zjištěním. Obecně každý podnik se snaží minimalizovat své náklady a zvyšovat své výnosy a tím dosahovat zisku. V rámci redukce nákladů se vždy provádí ekonomické analýzy, pomocí nichž management podniku zjišťuje, zda se vyplatí investici zakoupit. Pokud manažer zjistí, že ano, dá podnět (zahraničním) vlastníkům, kteří danou investici zaplatí. Manažeři tedy mnohdy nedisponují informacemi, z jakých zdrojů byla investice pořízena. Co se týče otázky, zda je pro podnik lepší investici pořídit nákupem, ať už z vlastních nebo cizích zdrojů nebo outsourcovat daný proces, zde opět záleží na konkrétní situaci daného podniku.