

Factors Impacting the Decision to Purchase Parts and Components, Rather than Manufacture them in the Conditions of the Covid-19 Pandemic

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Abstract

Under conditions of blocked main hubs, frozen container traffic, high container freight rates, difficult deliveries and a number of other shocks accompanying the Covid-19 crisis, businesses were faced with a number of challenges to which they had to adapt. In this regard, the factors that influence the decision not to produce, but to purchase parts and components under the new conditions, have also aroused interest. This aspect is related to the make-or-buy strategic decision, where a choice is made between producing materials or purchasing them from an external supplier. The aim of this article is both to highlight the importance of a group of factors that influence the decision of companies to buy parts and components, rather than produce them independently, and to make an attempt to compare the importance of these factors in different periods, namely before and during the Covid - 19 crisis. The assertion is that the degree of importance of the factors that are taken into account in the decision not to manufacture but to buy parts and components is different in each individual situation.

Keywords: Pandemic, produce, buy, suppliers

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Introduction

Covid-19 has caused major disruptions in supply chains around the world. The aspiration of the research community is to evaluate potential strategies for mitigating the consequences and adapting enterprises to the new conditions. In this regard, studies on the impact of the pandemic are needed. This study focuses on a group of factors that are taken into account when companies decide whether to purchase or manufacture parts and components that are necessary for their production.

1. Thesis statement and literature review

In the specialized literature (Linders at.dl., 2006 Korbankoleva, 2010 Dybskaya, 2019) we find widely advocated factors, which, according to specialists in this field, should be taken into account in the decision of manufacturing enterprises to produce independently or purchase the materials, raw materials, components, etc. that they need for the end product. In this regard, decision-making processes are also proposed, methods for analyzing quantitative and qualitative factors, etc. are recommended. In the English-language literature, the make-or-buy decision is called the Make-or-Buy Problem or in abbreviated form - the MOB problem, the solution of which depends on a number of factors external and internal to the enterprise. In relation to the purpose of the study, emphasis will be placed on factors that influence the decision to buy rather than to produce. In this regard, limitations in the capabilities of manufacturing companies, the desire to avoid equipment and labor costs, reduction of stocks, release of production capacity, need for small quantities of materials, are among the main factors influencing this decision. Such a choice makes it possible to use the know-how and specialization of the supplier and share the financial risk with the latter. According to Taylor (2008), by abandoning its own production and deciding to purchase components from a specialized supplier, the company is able to increase quality and reduce its cost, but at the same time it becomes dependent on the economic environment. The company's decision to purchase or produce should be consistent with its competitiveness and contribute to achieving a competitive advantage for the organization.

2. Methodology and experimental methods

The survey approach through questionnaires was used for the study, whereby the information was collected by the method of personal interviews /with the goal of contacting the

highest possible ranks of the companies/ and observation. For the purposes of the article, some of the questionnaires compiled by the University of National and World Economy research team in connection with a study aimed at the development of logistics in Bulgaria were restructured and supplemented. Companies were asked the following questions:

1. "Approximately what percentage of the parts and components that make up a specific product is made in-house and what percentage is manufactured by other companies?"
2. "How often does the company take into account the following factors when deciding not to produce parts and components independently, but to purchase them from other companies?" Respondents had the opportunity to answer by indicating the strength of influence on a five-point scale, respectively 1 - weak influence and 5 – strong influence/.

3. Results and discussion

14 production enterprises operating on the territory of Bulgaria were covered for the purposes of the study. The data was collected in the period September 2021 - December 2021. Representatives of micro, small, medium and large companies were included in the survey. The conclusions that have been drawn apply to the surveyed companies. Among manufacturing companies (table 1), the largest share is of the medium-sized companies (35.71%), followed by large companies (28.57%).

Table 1. Structure of the surveyed production companies according to the type of company

Company type	Number	Percentage
Micro	3	21.42
Small	2	14.28
Medium	5	35.71
Large	4	28.57
Total:	14	100.00

The sample includes the largest number of manufacturers in the field of food industry, light industry, machine building, etc.

79% of the companies use production and purchase of parts and components that make up the final product. The ratio of purchased and produced parts and components varies, but it is necessary to clarify that in large companies in this group produce between 60 and 80% of materials needed, in contrast to small and medium ones where the percentage is around 15- 20%. Only 21% of the surveyed companies buy all the materials they need for their products. The sample does not feature companies that fully produce the input materials. The percentage of purchased and manufactured parts and components is different for the surveyed companies.

The decision "to buy parts and components rather than manufacture them" is made on the basis of the following most impactful factors /rated 4 and 5/, namely:

- Lower costs – 54% of companies;
- Ensuring a higher quality of the produce – 54% of companies;
- Shorter turnaround time for customer orders – 54% of companies;
- Production difficulties in the company – 54% of companies;

The least impactful factors /rated 1 and 2/ turned out to be the following:

- Easing the production load of the company – 46 % of companies

- Lower costs – 31% of companies;
- Ensuring a higher quality of the produce – 31% of companies;
- Shorter turnaround time for customer orders – 31% of companies;
- Production difficulties in the company – 31% of companies;
- A neutral rating was given for the following factors:
- Lower costs – 15% of companies;
- Ensuring a higher quality of the produce – 15% of companies;
- Shorter turnaround time for customer orders – 15% of companies;
- Production difficulties in the company – 15% of companies;
- Easing the production load of the company – 54% of companies

One of the companies has not indicated answers to this question. Only one large bakery company gave all factors a rating of 5, and another electronics company rated all of them with only 1. It is noteworthy that for every second company included in the study, the mentioned factors have a high degree of influence when they decide to buy parts and components that make up their final product. For more than half of the companies, the purchase of materials, parts, etc. is a more profitable option compared to the option of producing them in the enterprise. For 31% of respondents, the situation is exactly the opposite. The situation is similar with regard to the provision of higher quality of the manufactured products and the achievement of shorter deadlines for the fulfillment of the orders undertaken. The production difficulties faced by more than half of the companies strongly influence the decision under consideration. There is a small share of enterprises for which the mentioned factors have a low degree of influence.

The possibility of comparing the above results, which are observed during a period characterized by a health-related, political and economic crisis, with a previous period, namely November 2019 - January 2020, has provoked interest.

Table 2. Share of companies in which the parts and components that make up their product are purchased from suppliers and/or produced in the factory

Decision	Share of companies studied in the period November 2019 – January 2020	Share of companies studied in the period September 2021 – December 2021
Exclusively purchasing parts and components	18%	21%
Exclusively manufacturing parts and components	3%	0%
Purchasing and manufacturing parts and components	80%	79%

It was established from the data presented that a large share of the surveyed companies, respectively 80 and 79%, produce and supply parts and components that they use in the production of a final product. Although the share of companies that both produce and purchase remains the same, there are significantly more companies for which, during a period of crisis, the mentioned factors are of great importance when making a purchase decision. These are enterprises that believe that by purchasing the necessary materials, they achieve lower costs and/or decreasing of their production workload and/or higher quality and/or shorter deadlines for fulfilling customer orders.

Table 3. Share of companies for which a group of factors for the decision to purchase parts and components, rather than manufacture them, has a high degree of importance.

Factors	Share of companies studied in the period November 2019 – January 2020	Share of companies studied in the period September 2021 – December 2021
Easing the production load	23%	54%
Lower costs	34%	54%
Ensuring a higher quality of the produce	23%	54%
Shorter turnaround time for customer orders	21%	54%
Production difficulties in the company	14%	54%

In this regard, we believe that a thorough analysis is necessary in the medium and long term as to which is the better solution and which factors should be given a higher degree of importance, since while the cost per unit of purchased part or component is lower, deliveries are slow and sometimes understocked, resulting in material shortages, production stoppages, delays in the fulfillment of customer orders and any subsequent costs. The crisis caused by the pandemic forces managers to realize that continuity of production is more important than costs. In this regard, some firms may bring component production back in-house, which will change the importance of the analyzed factors. The effect of these measures must be weighed against: disruption costs, lost profits, higher prices for materials in shortage, time and effort to procure them, etc.

Conclusion

The economic turmoil caused by the Covid-19 pandemic has exposed weaknesses in supply chains and raised many questions related to globalization. Managers are challenged to take steps to improve the sustainability of companies, through better performance and competitiveness. In this regard, one of the areas that requires adequate solutions in accordance with the new conditions is related to the decision to purchase or independently produce parts and components. The article has

substantiated the thesis that the degree of importance of the factors that are taken into account when deciding not to manufacture but to buy parts and components is different before and after the Covid-19 pandemic. Considering on the one hand the increasingly unpredictable conditions faced by organizations in Bulgaria, and on the other hand, the state in which companies find themselves, making a decision to manufacture or purchase parts and components requires reasoning regarding the present and the future.

References

1. Anikina, B., Rodnikoy, T.(2011). Basic and supporting functional subsystems of logistics. Prospect, Moscow, p. 16.
2. Blagoev, B. i kol. (2009). Stopanska logistika, Nauka i iekonomika. IU-Varna, 237.
3. Dubskaja, V. i dr. (2013). Logistika. Polnij kurs MBA MASTER OF BUSINESS ADMINISTRATION. Moskva: „EKSMO“, 207-213.
4. Don Taylor G.(2008). Logistics Engineering Handbook, Taylor & Francis Group, LLC
5. EC (2020/C 169/03). Kum poetapen i koordiniran podhod za vuztanoviane na svobodata na dvigenie i premahvane na controla po vutreshnite granici COVID-19
6. Hirschler, P,R. Boutellier (2009). „Globale Integration der Beschaffung“, zfo Zeitschrift fuer Organisation.
7. Kenton W.(2020). Make-or-Buy Decision, Investopedia's Financial Review, Updated Jul 25.
8. Koraliev, Ya.(2013). Management of supply chain, UNWE. Sofia: 219. (in Bulgarian).
9. Korbankoleva, V. (2010). Sushnost i planirane na snabdjavaneto. Sofija: „Stopanstvo“,17–37
10. Linders, M., Firon, X. (2006). Upravljenje snabgeniem i zapasami. „Logistika.“ Poligon. Moskva: „Victorija plus Irvin, 309.
11. Hackamack L.(2009). Should You Make or Buy Components? Illinois University Indiana, November.
12. Miluseva, P.(2022). Aktualni problemi v snabdjavaneto na targovski i proizvodstveni firmi v Bulgaria, „Nauka i iekonomika,, IU – Varna, 71.
13. Waters, D.(2003). Logistics – management of supply chain, UNITY, Moscow.