

## CRITERIA FOR SUPPLIERS' SELECTION IN FARMS

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**Abstract:** The work presents main criteria applied in selected farms to choose suppliers of production means. The survey carried out at 50 farms - divided into five groups according to production type - provided grounds to assess factors affecting supplier's selection. It has been found that in all groups of enterprises, goods price and prompt delivery are most important among all proposed factors.

**Key words:** logistics, criterion, supplier, farm, selection

### Introduction

The purchase processes constitute essential elements in logistic system formation (chain of deliveries). They should follow the 7R rule (right product, right quantity, right time, right quality, right place, right customer, right price). Supplier's rating and selection is one of crucial elements in purchase system formation, which will decide about final product quality, promptness of works and production costs [Gołemska 2002]. For example, delay in deliveries will result in failure to keep on schedule with agrotechnical operations, and as a consequence - in product quality deterioration. High price of delivered raw materials will increase production costs, and poor quality of goods will reduce their value and decrease product purchase value.

Suppliers' selection may be carried out using either point (score) or graphical method. For this purpose it is necessary to establish scoring rules in relation to individual criteria and their measurable characteristics, and to demonstrate computing results in tabular or graphical form. Knowing which factors decide about selection of supply sources, suppliers will be able to make more efforts to meet consumers' expectations [Ciesielski 2006].

### The purpose, scope and methodology of work

The purpose of the work was to point out factors deciding about selection of suppliers of production means for farms.

The research was conducted in form of a directed survey interview among 50 intentionally chosen farms, which were then divided according to production type into 5 groups [FAPA 2000]:

- Group I - farms specialised in field crops
- Group II - farms specialised in rearing of animals fed in grazing system
- Group III - farms specialised in rearing of animals fed with concentrated feeding stuffs
- Group IV - diversified farms
- Group V - farms specialised in gardening crops.

4 basic criteria for suppliers' rating were chosen for the appraisal: price, quality, delivery time, and extra services. Each criterion was attributed with the most important (in authors' opinion) factors deciding about the selection, and factors weight was rated in a 5-point scale (1 point – unimportant, 5 points – very important). Those polled were assessing the criteria according to the factors presented in Table 1.

Table 1. Rating criteria and determining factors applied to select suppliers

I. Price	II. Quality	III. Delivery time	IV. Extra services
A. product price B. possibility to negotiate prices C. payment conditions (instalments, postponement)	D. product quality E. durability F. reliability G. company image H. flexibility (order modifications)	I. order completion time J. promptness K. keeping to fixed date L. phone deliveries	M. shipment unitising N. transport at supplier's expense O. permanent goods availability P. goods origin point Q. supplier's location R. long-standing cooperation

Source: Authors' own study

From among the above-mentioned criteria, the following factors were chosen for detailed analysis: price, payment conditions, reliability, promptness, transport at seller's expense, location and long-standing cooperation.

## Research results

The scope of the research covered enterprises characterised by highly diversified land use structure and production structure (Table 2). The smallest farm area was 6.9 ha (group V), and the largest: 107.8 ha (group I). Average number of fields in the largest farms was 39, and in the smallest: 8. Animal stock was dependent upon production scope. The largest animal stock was observed in groups II and III (114 and 206.8 DJP·100ha<sup>-1</sup> of arable land) [DJP = large conversion unit (translator's note)].

Table 2. Management conditions at the examined farms

Groups of farms	Mean area of arable lands [ha]	Number of fields [pcs.]	Animal stock [DJP·100 <sup>-1</sup> ha]	Distance from supply point [km]	Possession of transport facilities	
					[pcs·ha <sup>-1</sup> ]	[t·ha <sup>-1</sup> ]
Group I	107.8	39	2.2	94.8	0.1	0.3
Group II	17.6	7.8	114	3.6	0.2	0.4
Group III	20.5	9.1	206.8	13.7	0.2	0.5
Group IV	9.5	8.2	67.8	7.1	0.4	0.7
Group V	6.9	7.7	-	9.1	0.5	1.1

Source: Authors' own studies

A very important factor affecting suppliers' selection is the distance of farms from supply markets. The examined farms were located at the distance ranging within 3.6-94.8 km from supply markets. Farms from group I were the most distant, and farms from group II

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were the nearest. The distance from supply markets increasing every year is the effect of seeking more favourable prices of production means, or else combining sales process with supply.

Possession of transport facilities is given quantitatively ( $\text{pcs}\cdot\text{ha}^{-1}$ ) and qualitatively ( $\text{t}\cdot\text{ha}^{-1}$ ). The highest number of transport facilities per area unit were in possession of farms from group V -  $0.5 \text{ pcs}\cdot\text{ha}^{-1}$  (carrying capacity  $1.1 \text{ t}\cdot\text{ha}^{-1}$ ), and the lowest - farms from group I -  $0.1 \text{ pcs}\cdot\text{ha}^{-1}$  (carrying capacity  $0.3 \text{ t}\cdot\text{ha}^{-1}$ ).

Table 3 presents number of suppliers (supply points) that individual examined farms cooperate with. The research proves that only 12.5% of farms from group III cooperate with 2 suppliers and 33.4% of farms from group V - with more than 10 suppliers. The other farms declare cooperation with 3-5 or 6-10 suppliers.

Table 3. Number of suppliers cooperating with the examined farms, in [%]

Farm groups	Number of suppliers /delivery points/			
	up to 2	3-5	6-10	over 10
Group I	-	50.0	50.0	-
Group II	-	80.0	20.0	-
Group III	12.5	62.5	25.0	-
Group IV	-	40.0	60.0	-
Group V	-	26.6	40.0	33.4

Source: Authors' own studies

The largest part, reaching 80% of those polled from group II, declared their cooperation with 3-5 suppliers, and the smallest share of farms cooperating with this number of suppliers was in group V - 26.6%. 20-60% of the examined enterprises declared cooperation with 6-10 suppliers. The highest share was observed in farms characterised by mixed production, and the lowest - in farms specialised in rearing of animals fed in grazing system.

Table 4 presents synthetic rating of suppliers (scale: 1-5 points), taking into account basic selection criteria. Completed research proved that the most important selection criterion was price (3.9-4.67 points), then delivery time (3.55-4.4 points), service quality (3.36-3.7 points), and extra services (2.9-3.6 points). Among all selected groups, "delivery time" was the main criterion for suppliers' selection only in farms specialised in rearing of animals fed in grazing system, while in other groups it was the "price".

For the analysed groups, the smallest differences in the assessment of individual criteria were observed in case of the "quality" criterion - 0.34 points, and largest - 1.1 points for the "delivery time" criterion.

Figures 1-6 present graphically the most important factors (in the opinion of those polled), and their rating that decide about suppliers' selection. Smallest differences in the assessment of individual factors for the selected groups were observed in case of price and promptness - at the level of 0.5 points. As regards the price factor, it was ranked the highest by owners of group I farms - 4.9 points on average (Fig. 2), and the lowest - by owners of group II farms - 4.4 points on average (Fig. 3). The highest discrepancies between ratings in the examined groups of farms were observed for the supplier's location factor, where the difference reached 2.8 points. This factor was most important for the owners of farms specialised in rearing of animals fed in grazing system, who rated it at circa 4.8 points. Whereas, it proved to be the least important factor (2.0 points) for farms specialised in field crops.

Table 4. Synthetic suppliers' rating (scale: 1-5 points)

Farm groups	Rating criteria			
	Price	Quality	Delivery time	Other services
Group I	4.37	3.58	3.68	3.08
Group II	4.00	3.40	4.40	3.60
Group III	4.50	3.70	3.90	3.48
Group IV	4.67	3.36	4.20	3.00
Group V	3.90	3.40	3.55	2.90

Source: Authors' own studies

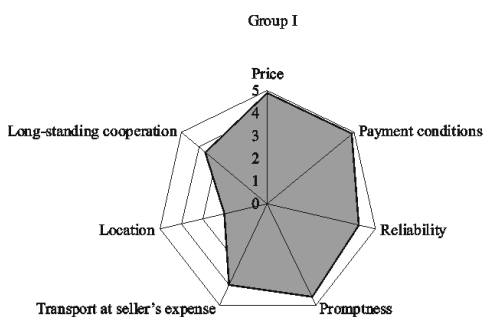


Fig. 1. Factors deciding about selection of suppliers for farms from group I

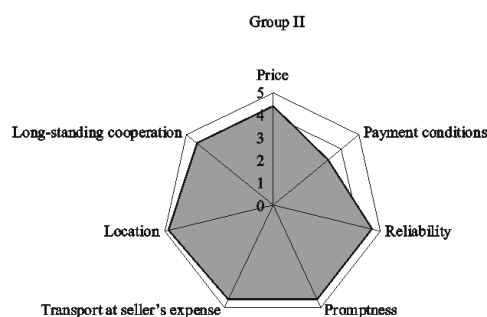


Fig. 2. Factors deciding about selection of suppliers for farms from group II

Differences in delivery reliability assessment reached 1.2 points. This factor was the most important for farms from groups II and III, where it obtained 4.6 points on average (Figs. 3, 4). Whereas, it proved to be the least important for group IV farms - 3.4 points on average (Fig. 5).

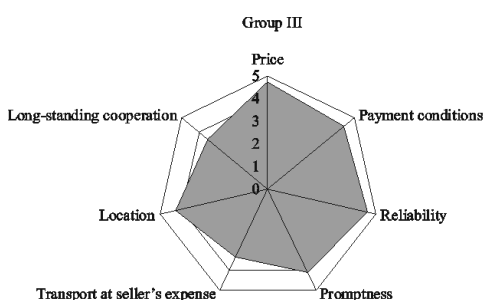


Fig. 3. Factors deciding about selection of suppliers for farms from group III

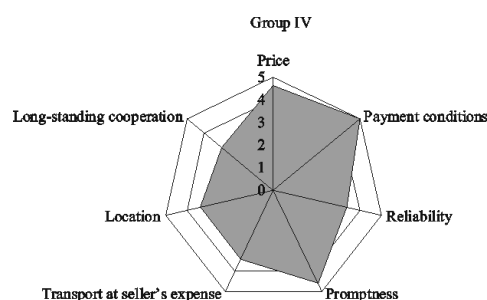


Fig. 4. Factors deciding about selection of suppliers for farms from group IV

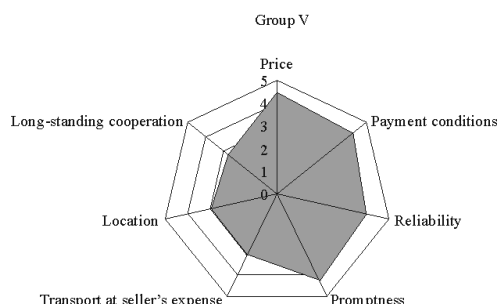


Fig. 5. Factors deciding about selection of suppliers for farms from group V

Differences between other factors ranged within 1.7 points for transport at seller's expense and long-standing cooperation, and 1.8 points for payment conditions. Transport at seller's expense and long-standing cooperation are the factors, which are most important in suppliers' selection process for owners of group II farms (4.6 and 4.4 points). Whereas, they are the least important for group V farms (2.9 and 2.7 points) (Fig. 6). Payment conditions proved to be the most important factor for farms from group IV - 5 points (Fig. 5), and the least important for group II farms - 3.2 points.

## Findings and conclusions

Completed studies and analyses allow to state that:

- in all groups of farms the most important factors deciding about supplier's selection were: price (4.5-4.9 points), and provided service promptness (4.1-4.6 points),
- payment conditions (4.3-5.0 points), being price derivative, was the second important factor used to select a supplier, except of examined farms from group II,
- for farms specialised in rearing of animals fed in grazing system the most important factors were: supplier's location, transport at seller's expense, promptness, and provided service reliability,
- long-standing cooperation (2.7-3.0 points) and location and transport at seller's expense (2.9-3.4 points) proved to be the least important factors deciding about supplier's selection in case of diversified and vegetable-growing farms,
- in spite of the fact that suppliers introduce wider and wider offer of extra services, and increase service quality and promptness, the economic criterion – price still remains the decisive factor in supplier's selection.

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## **KRYTERIA WYBORU DOSTAWCÓW W OPINII ANKIETOWANYCH WŁAŚCICIELI PRZEDSIĘBIORSTW ROLNICZYCH**

**Streszczenie:** Przedstawiono główne kryteria jakie mają wpływ na wybór dostawców w wybranych przedsiębiorstwach rolniczych. Na podstawie badań ankietowych przeprowadzonych w 50-ciu obiektach - podzielonych na pięć grup wg typu produkcji - dokonano oceny czynników wpływających na wybór dostawcy środków produkcji. Stwierdzono, że we wszystkich grupach przedsiębiorstw spośród wybranych czynników największe znaczenie ma cena oraz terminowe wykonanie usługi.

**Słowa kluczowe:** logistyka, kryterium, dostawca, gospodarstwo, wybór

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