HOLISTIC ASSESSMENT OF COMPETITIVENESS OF BULGARIAN FARMING ENTERPRISES

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Abstract: The problem of determining the level of competitiveness of various economic organizations is among the most topical academic and practical issues. However, there is no widely accepted and comprehensive framework for understanding and assessing the competitiveness of farming enterprises in different market, economic, institutional and natural environments. This presentation suggests and applies a holistic approach for assessing the competitiveness of Bulgarian farms as a whole and different specializations. This novel framework includes appropriate criteria, indicators and reference values for the four pillars of farm competitiveness – Economics efficiency, Financial endowment, Adaptability and Sustainability. The multi-criteria assessment of farm competitiveness in Bulgaria has found that the level of competitiveness of farms is at a good level, with low adaptive potential and economic efficiency, to the greatest extent contributing to lower competitiveness. More than a third of all farms in the country has a low level of competitiveness. The most competitive are the farms in the beekeeping, followed by field crops, mixed livestock and crop productions, and the lowest in grazing livestock. The proposed approach should be improved and applied more widely and periodically, increasing accuracy and representativeness.
Keywords: competitiveness, pillars, indicators, farming enterprises, assessment, EU CAP, agriculture, Bulgaria.

1. Introduction

The problem of determining the competitiveness of various economic organizations is among the most topical academic and practical (aimed at improving business strategies and policies) issues from the emergence of economics science to the present day. The problem has become particularly relevant in recent decades as a result of the fundamental development of the Theory of Economic Organizations, the processes of globalization, the new social and market „order", and latest processes, such as COVID-19 pandemic, climate change, fundamental reforms in EU CAP, widespread digitalisation, etc.

Despite its importance and long-term lively discussions, there is still no consensus on: what is the competitiveness of farming enterprises, how to measure the competitiveness of different organizations in agriculture, what is the absolute and comparative competitiveness of different types of farms, which are critical factors for increasing the competitiveness, etc. Numerous studies have emerged in recent years on various aspects of the competitiveness of farms of different sizes [1–5], in selected countries [1, 5–9], subsectors [1, 4, 6, 10–13], farming systems, such as organic, vertically integrated, greenhouse [2, 5, 11], regions [8] and chain producers [4], comparative studies in different EU countries [9, 10, 13], etc. To date, however, there is no widely accepted and comprehensive framework for understanding and assessing the competitiveness of farms in different market, economic, institutional and natural environments. Usually the competitiveness of agricultural holdings is not well defined and is assessed through traditional indicators of technical efficiency, productivity, profitability, etc. Rarely is a systematic approach, applied to the formulation of pillars and principles of competitiveness, criteria and indicators of evaluation, integration and interpretation of assessments, etc. Important aspects of farm competitiveness, such as management efficiency, potential for adaptation, and ‚long-term' sustainability, are often ignored.

In Bulgaria, modern research on the competitiveness of agricultural enterprises is at the beginning stage [14–20]. The number of publications on farms competitiveness is insignificant, and there are no comprehensive studies on the competitiveness of farms with different specialization at the current stage of development. This study tries to fill the existing gap by applying a holistic approach, and assessing the level of competitiveness of farms as a whole and with different specializations in Bulgaria.

2. Methods

"Competitiveness" means the capability (internal ability, potential, incentives) of a farm to maintain sustainable competitive positions on (certain) market(s), leading to high economic performance through continuous improvement and adaptation to changing market, natural and institutional environment [14, 16, 18, 20]. Efficiency, financial emdowment, adaptability and sustainability are the main "pillars" of the competitiveness of farming enterprises. Good competitiveness means that a farm produces and sells its products and services efficiently on the market, manages its financing efficiently, is adaptable to evolving market, institutional and natural environment, and is sustainable in time. Conversely, insufficient (lack of) competitiveness indicates serious problems in efficient financing, production and sale of products due to high production and/or transaction costs, inability to adapt to evolving environmental conditions and/or insufficient sustainability over time.

For assessing the particular and integral level of competitiveness of Bulgarian farms, a holistic approach is applied, which includes a system of 4 criteria and 17 indicators and reference values, taking into account economic efficiency, financial capabilities, adaptation potential and sustainability of farms. A detailed presentation of the applied approach, and criteria for selection and integration of indicators is presented by Bachev [14, 16] and [18]. In Bulgaria there is no adequate (statistical, etc.) data for assessing the various aspects of farms competitiveness. In this study, the assessment of competitiveness of farms is based on primary microinformation, provided in the summer of 2020 by the managers of 319 „typical" farms. The structure of surveyed farms approximately corresponds to the real farm structure in the country and main sub-sectors of the agricultural production. Farm managers have indicate one of the three levels (low, good, high), most closely corresponding to their holding for each indicator. The qualitative assessments were transformed into quantitative values, as the high levels were assessed with 1, intermediate with 0.5, and low with 0. For each farm, an integral competitiveness index is calculated as an arithmetic average for each criteria and as a whole. The competitiveness indices of farms with different specialization were obtained as arithmetic averages from the individual indices of the constituent farms. Banchmarks, set up by leading experts in the field, were used to determine the overall competitiveness level – for high 0.51–1, good 0.34-0.5, and low 0–0.32.

3. Results

The multi-criteria assessment of the competitiveness of farming enterprises shows that it is at a good level (**Fig. 1**). Relatively

high sustainability and good financial endowment of farms contribute the most to maintaining this level. On the other hand, adaptability of farms is relatively lower, and their economic efficiency is low. Thus, insuficient economic efficiency and potential for adaptation contribute to the greatest extent to decreasing the competitiveness of Bulgarian farms.

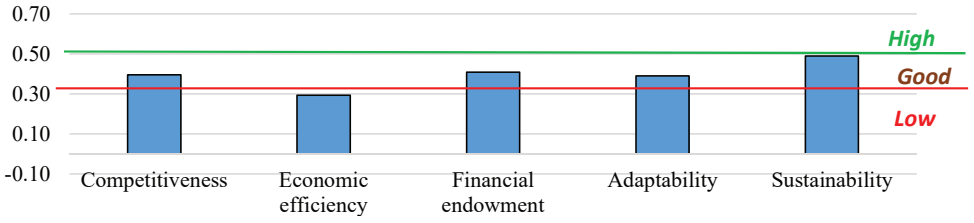


Fig. 1. Level of competitiveness of agricultural holdings in Bulgaria

The analysis of individual indicators shows the factors that most contribute to or limit the competitiveness of farms. At the present stage, the increase in farms competitiveness is limited by extremely low productivity, profitability, financial capability, and adaptability to changes in the natural environment (warming, extreme weather, droughts, storms, etc.) (**Fig. 2**). Both public support for holdings and farms management development strategies should be focused on latter critical areas. On the other hand, a number of indicators are at a high level and shows the comparative and absolute competitive advantages of country's farms. To the greatest extent to increasing farms competitiveness contribute the lack of serious difficulties in efficient supply of neededy services, land and natural resources, materials, equipment and biological resources, and low dependence on external financing (credit, state aid, etc.) or high financial autonomy.

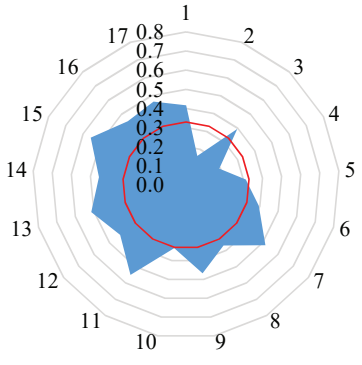


Fig. 2. Indicators* for competitiveness of agricultural holdings in Bulgaria. * 1 – Productivity of labor; 2 – Productivity of land; 3 – Profitability; 4 – Income; 5 – Financial capability; 6 – Liquidity; 7 – Financial autonomy; 8 – Adaptability to market environment; 9 – Adaptability to institutional environment; 10 – Adaptability of natural environment; 11 – Supply land and natural resources; 12 – Labor supply;13 – Inputs supply; 14 – Supply finance; 15 – Supply of services; 16 – Supply of innovations; 17 – Marketing of products and services

Majority of farms are with a good competitiveness (**Fig. 3**). Slightly more than half of all farms have a competitiveness level above the national average (**Fig. 4**), and only 18 % are highly competitive. At the same time, more than a third of all farms have a low level of competitiveness. Therefore a large part of (uncompetitive) farms will cease to exist in the near future if timely measures are not taken to increase competitiveness by improving the management and restructuring of farms, adequate state support, etc.

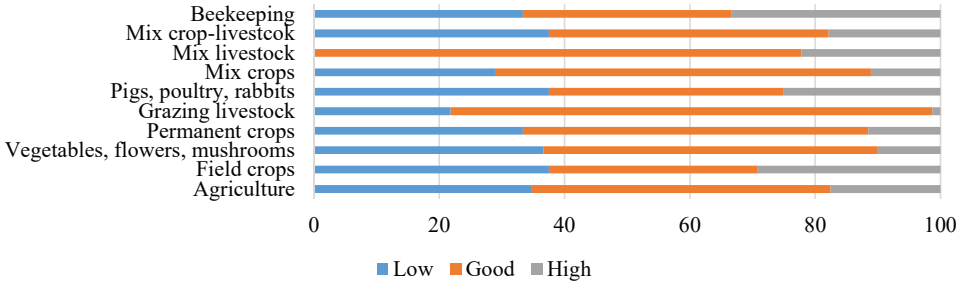


Fig. 3. Share of agricultural holdings with different level of competitiveness in Bulgaria (%)

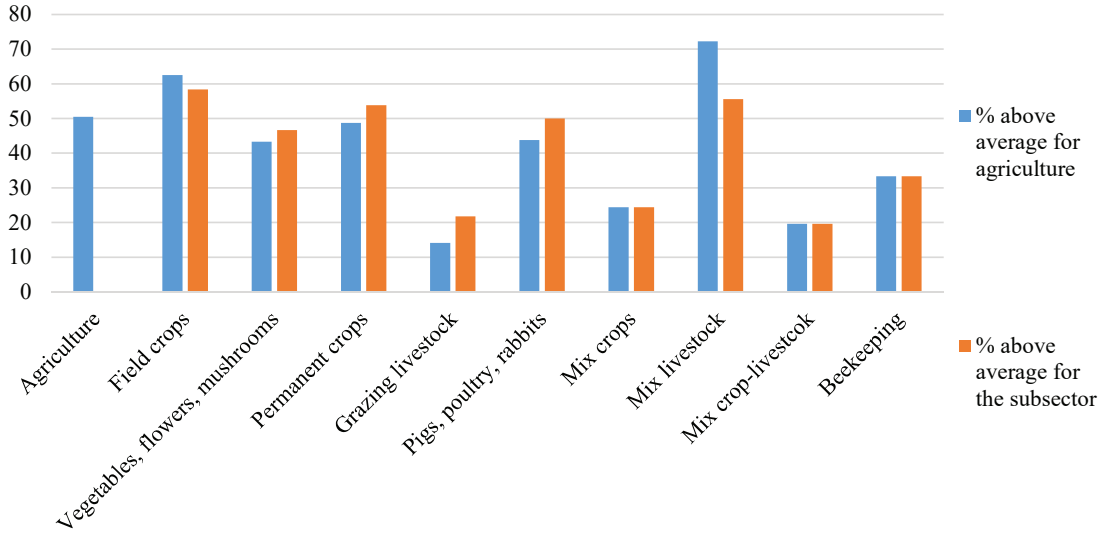


Fig. 4. Share of agricultural holdings with a level of competitiveness above the national average and the sub-sector in Bulgaria

The majority of Bulgarian farms have productivity and profitability, well below the national average. Also, a significant part of the farms have low financial capability, high dependence on external financing (loan, subsidies, etc.), and low ability to pay current liabilities. In addition, 32 % of country's farms have low adaptability to changes in the market environment (demand, prices, competition, etc.), 19 % have insufficient adaptability to the institutional environment and constraints (national and European requirements for quality, safety, environment, etc.), and 36 % have a low ability to adapt to changes in the natural environment (warming, extreme weather, drought, storms, etc.).

The survey also found that a significant part of the farms have serious problems with the effective provision of the necessary labor force (30 %), financing (21 %), innovations and know-how (27 %) and effective marketing of production and services (19 %). In addition, for every tenth farm there are major problems in the efficient supply of the necessary inputs, for every ninth – in effective supply of needed land and natural resources, and for every seventh – in effective supply of needed services. All this contributes to reducing sustainability and competitiveness of a good part of farming enterprises.

There is a significant variation in the level of competitiveness of farms with different production specializations (**Fig. 5**). The farms with the highest good competitiveness are in the bee sector, followed by field crops, mixed livestock, and mixed crop productions. Farms in a number of major sub-sectors are with a good competitiveness, but below the national average – permanent crops, vegetables, flowers and mushrooms, pigs, poultry and rabbits, and mixed crop-livestock. The weakest is the competitiveness of farms specializing in grazing livestock, which is at a low level.

The analysis of individual aspects of competitiveness of farms with different specializations shows that most are with low economic efficiency, contributing the most to deterioration of competitiveness (**Fig. 6**). Only farms, specializing in field crops, have good economic efficiency. Farms in beekeeping have the best financial endowment, followed by field crops and mixed crops. Financial endowment of farms, specialized in mixed crop and livestock production, vegetables, flowers and mushrooms, pigs, poultry and rabbits, and grazing animals, is below the national average, the latter group being close to the low level. Farms in beekeeping, mixed animal husbandry, and pigs, poultry and rabbits have the highest adaptability. Potential for adaptation to changes in the market, institutional and natural environment in farms in permanent crops, and mixed crop and livestock is below the industry average, and in farms with grazing animals – at a low level. Sustainability of most farms is relatively good and close to the national average. With lowest (but good) sustainability, are farms in grazing livestock. Sustainability of the other groups of farms is at a high level, with the maximum value for those, specialized in beekeeping.

Most indicators of competitiveness of farms, specializing in field crops, have values higher than the national average (**Fig. 7**). Only in terms of adaptability to the institutional environment and efficiency of service provision, these farms have lower than average levels. Competitiveness of farms, specialized in field crops, is maintained by high productivity, liquidity, financial autonomy, adaptability to the market environment, efficiency in the supply of land material, and inputs, finance, services and innovation, and efficient realization of output. Main factors for reducing competitiveness of these farms are low productivity and profitability, and low level adaptability to the natural environment.

Many indicators of competitiveness of farms, specialized in vegetables, flowers and mushrooms, have values lower than the national average (**Fig. 7**). In many respects, these farms have higher than average positions – profitability, adaptability of the market environment, efficiency in the supply of land and natural resources, labor, materials, machinery and biological resources, services, and in the sale of products and services. For maintaining the competitive position of these farms are high financial autonomy, efficiency in the supply of land and natural resources, labor, materials, equipment and biological resources, services, and sales of products and services. Main factors for reducing the competitiveness of those farms are low productivity, productivity, profitability, financial capability, and adaptability to the natural environment.

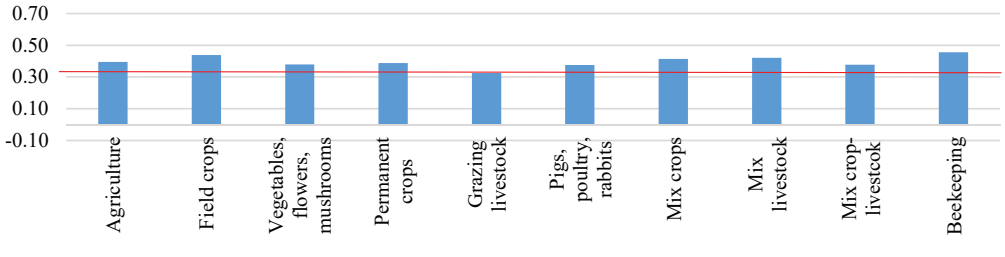


Fig. 5. Competitiveness of agricultural holdings with different specialization in Bulgaria

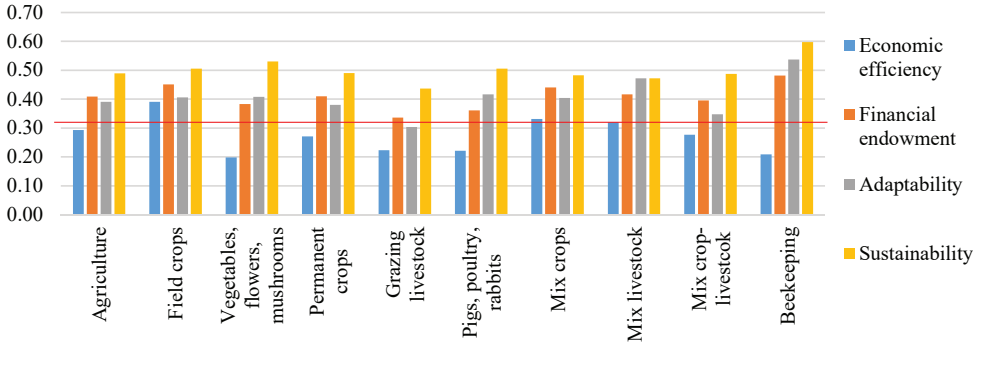


Fig. 6. Level of competitiveness of agricultural holdings with different specialization by main criteria for competitiveness in Bulgaria

The majority of indicators for competitiveness of farms, specialized in permanent crops, have values lower than the national average (**Fig. 7**). In some areas, these farms have better-than-average positions, such as financial autonomy, adaptability to the institutional environment, and efficiency in the supply of finance, services and innovation. Fams competitiveness is maintained by high financial autonomy, adaptability to the institutional environment, efficiency in the supply of land and natural resources, services and innovation. Most important for deterioration of competitive position of these farms are low productivity, profitability, financial capability, adaptability to the market and natural environment.

All competitiveness indicators of farms, specialized in grazing livestock, have values lower than the national (**Fig. 7**). Low productivity, profitability, financial capability, liquidity, and adaptability to the market, institutional and natural environment contribute the most to their unsatisfactory competitiveness while high efficiency in the supply of services is a main factor for raising their competitive positions.

Most competitiveness indicators of farms, specialized in pigs, poultry and rabbits, have values lower than the national average (**Fig. 7**). In several respects, these farms have better positions – adaptability to the market and institutional environment, efficiency in the supply of land and natural resources, labor and services. Most important for maintaining the competitiveness of these farms are high efficiency in the supply of land and natural resources, labor and services, while critical are low productivity, profitability, financial capability, liquidity, and adaptability to changes in the natural environment.

Many of the indicators of competitiveness of farms specialized in mixed crops, have values lower than the national (**Fig. 7**). This type of farms has relatively better than average positions in profitability, financial capability, liquidity, adaptability to the market, institutional and natural environment, and efficiency in the supply of land and natural resources, materials, equipment and biological resources. and in the realization of products and services. Central to maintaining the competitiveness of these farms are high efficiency in the supply of land and natural resources, materials, machinery and biological resources and services. At the same time, the competitive position of mixed crop farms is compromised by low productivity, income, and adaptability to changes in the natural environment.

Many of the competitiveness indicators of mixed livestock farms are higher than the national average (**Fig. 7**). The farms, specialized in this field, are superior to other farms in terms of productivity, profitability, financial capability, liquidity, adaptability to the institutional and natural environment, efficiency in the supply of finance and innovation, and in the sale of products and services. The other indicators of competitiveness of this type of farms are lower or around the average levels for the country.

The high adaptability to the institutional environment and the efficiency in the supply of finances and services contribute the most to maintaining the competitive positions of the mixed livestock farms. At the same time, however, the indicators of productivity, profitability, and efficiency in labor supply are low and limit the improvement of the overall competitiveness of these farms.

Almost all indicators of competitiveness of mixed crop-livestock farms are lower or close to the national ones (**Fig. 7**). These farms are above average only in terms of financial autonomy and efficiency in the supply of labor and services. High financial autonomy and efficiency in the supply of land and natural resources, materials, machinery and biological resources and services contribute the most to their competitive position. At the same time, low productivity, profitability, financial capability, and adaptability to changes in the market and natural environment are critical for farms competitiveness.

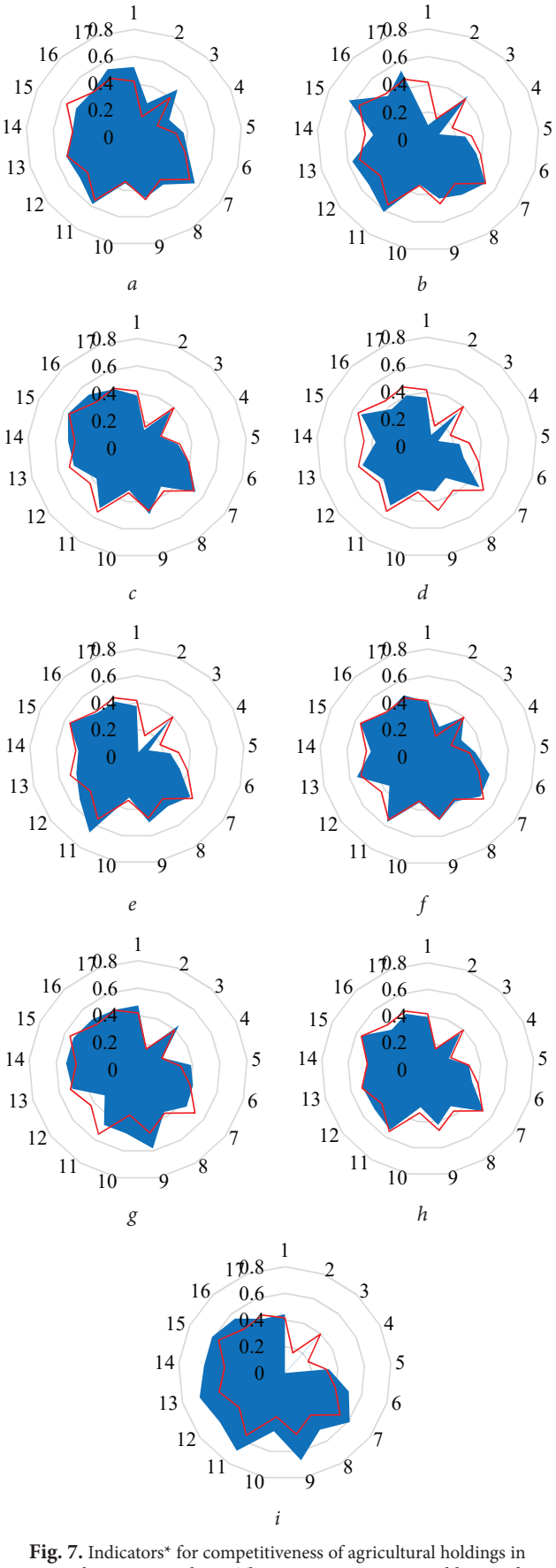


Fig. 7. Indicators* for competitiveness of agricultural holdings in major subsectors in Bulgaria The main signature: *a* – Field crops; *b* – Vegetables, flowers and mushrooms; *c* – Permanent crops; *d* – Grazing livestock; *e* – Pigs, poultry and rabbits; *f* – Mixed crops; *g* – Mixed livestock; *h* – Mixed crop-livestock; *i* – Beekeeping

Almost all indicators of competitiveness of farms, specialized in beekeeping, are higher than the national average, with the exception of productivity, profitability, income and efficiency in the sale of products and services (**Fig. 7**). Farm competitiveness is favored by high level of financial autonomy, adaptability to the institutional environment, efficiency in the supply of resources, services and innovation, while low productivity and profitability are the factors that worsen the competitive position.

The assessment of competitiveness for farming enterprises shows that the majority of specialized in field crops and mixed livestock has a level of competitiveness above the national average (**Fig. 4**). The lowest share of farms with the competitiveness, exceeding the national one, is in the sectors of grazing animals, mixed crop-livestock, mixed crops, and beekeeping. There are big differences in the share of farms in the different types of specialization, exceeding the average for the respective subsector. While in field crops 58 % of farms are competitive above the average for this subsector, in mixed crop-livestock farms they are only 20 % (**Fig. 4**). The largest share of farms with high competitiveness is in beekeeping, field crops, pigs, poultry and rabbits, and mixed livestock, while the smallest in farms, specialized in grazing animals (**Fig. 3**). At the same time, the share of farms with low competitiveness in each type of specialization is significant. Only in mixed livestock farms there are no ones with low competitiveness.

5. Conclusion

The multicriteria assessment of competitiveness levels of farming enterprises in Bulgaria found that it is at a good level, as the low adaptive potential and economic efficiency contribute to the greatest extent to diminishing the competitiveness of local producers. Particularly critical for maintaining the competitive position of farms are low productivity, profitability, financial capability and adaptability to changes in the natural environment, in which areas public support for farms and their management development strategies should be directed. More than a third of all farms in the country have a low level of competitiveness, and if timely measures are not taken to increase competitiveness by improving the management and restructuring of farms, adequate state support, etc., a large part of farms will cease to exist in the near future. Most competitive are farms in the beekeeping sector, followed by field crops, mixed livestock and mixed crop production, and the lowest are farms, specialized in grazing animals.

The proposed holistic approach for assessing farms competitiveness is to be refined and applied more widely and periodically. Analyzes are to cover farms of different legal type, size, ecological and geographical location, etc. Accuracy and representativeness of data used is to be enhanced by increasing the number of surveyed farms, applying statistical methods, special „training" of participants, etc. All this requires closer cooperation with producer organizations, agricultural advisory service and other stakeholders, and improvement of the system for collecting agricultural information in the country.

Acknowledgments

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