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CHALLENGES OF THE LABOUR MARKET AND EMPLOYMENT IN HUNGARIAN AGRICULTURE

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Abstract
During the past decades, a significant number of replacement workers from agriculture in Eastern European countries, including Hungary, have entered the labour market in other sectors (e.g. industry, services, etc.). This situation is now a thing of the past for various reasons. There is a significant shortage of labour in the agricultural sector, which is being filled by companies not only by seasonal work, but also by the employment of foreign workers. In this article, we will first analyse the emerging labour market trends in general and in Hungary from a theoretical and general socio-economic perspective (general employment situation, demographic changes, ageing, new educational trends and robotisation). Based on our previous and recent research, we have developed an analytical model based on which we can examine employment trends in the labour market of agricultural enterprises in Hungary. In the framework of our empirical research, we analysed the causes of labour shortages. We analysed the typical reasons that triggered labour shortages in the agricultural firms studied. In our research, we were able to demonstrate that, based on their size (organisational size), the companies studied use different tools and programmes to address their labour shortages.

Key words
Agriculture, Labour shortage, Labour retention, Foreign employees, Robotization

JEL code

INTRODUCTION

The significant changes in the labour market of the developed world are illustrated by the trend, that the share of the US workforce employed in agriculture has decreased to 1.3% and that of industry to 12.8%, while that of services has increased to 80% (U.S. Bureau of Labor Statistics, 2021) since the beginning of the 19th century. Similar trends are also shown by the European Union's labour market statistics (EU 2021). In this article, we will discuss how the above-mentioned changes have taken place in Hungary. We also show which factors have contributed to the decline in the share of people employed in agriculture in Hungary from 20% to 3% after the 1989 regime change. In our paper, we present a questionnaire-based survey based on our long-developed survey model, which is based on the internationally known Cranet survey (Parry et al. 2021) and on HR and labour market surveys conducted in Hungary for almost three decades (Karoliny, 2017).

Literature review

The economic, environmental, and social challenges in recent years have highlighted the strategic significance of the agricultural industry. Nonetheless, the viability of productive farms is a critical factor as they play a role in the local food supply, security, rural residents' ability to sustain their livelihood, and improved living standards (Čechura et al. 2022; Guiomar et al. 2018). The share of employment in the agriculture and food industry is close to 7.5% (Borda et al. 2022). The agricultural economy is undergoing constant structural change, which is

reflected in a reduction in the number of farms. This is a general phenomenon in Hungary and throughout

Europe (Breustedt & Glauben, 2007), while between 2010 and 2020 the number of farms in Hungary fell by around 30% (KSH, 2020). In particular, mainlysmall and livestock farms have ceased operations, while the share of farms mainly engaged in crop production has increased (KSH 2020).

Labour shortages

The agricultural sector, and specifically its organizations, have been grappling with labour shortages and unfavourable demographic patterns (Urbancová & Vrabcová, 2020) as well as labour emigration. Furthermore, agricultural employers encounter exceptional hurdles whilst trying to recruit and hold on to proficient personnel (Ramos & Reynaga 2023). Changes in the Hungarian agricultural labour market has decreased the labour supply to such an extent that a shortage of labour has emerged at a sectoral level. (Szőke & Kovács 2021). Capital-intensive organisations have attempted to counteract the decrease in available labour by implementing technological advancements and gauging labour shortages with the implementation of robotic systems. (Szabó-Szentgróti et al. 2023). In parallel, the high demand for manual labour in agriculture has necessitated the mobilisation of labour reserves and the acquisition of additional resources for production maintenance and development. Consequently, the sector is increasingly reliant on foreign workers. (Christiaensen et al. 2021). It also highlights new forms of organisational conflict due to cultural, remuneration and insurance differences. The importance of foreign labour is highlighted by the fact that 2.7 percent of individual work permits authorised in 2021 were issued for the agriculture, forestry, and fishing sectors (NFSZ [National Employment Service] 2021) and at the same time the source countries of foreign workers have changed. The inflow of foreign workers came mainly from the Far East (Vietnam, China, South Korea) and Central Asia (Kyrgyz & Kazakhs), with an increase in the share of workers from India and the Philippines (NFSZ 2021). The process has been supported by legislative changes during the pandemic that have made it easier for workers from certain countries to work through qualified temporary employment agencies (407/2021. (VII. 8.) Kormány Rendelet [Government Decree]). Another factor contributing to the persistence of the labour shortage is the increase in the average age of farmers, as the average age of farm managers has been steadily rising since 2010, with 55% of farm managers aged 40-64 and 35% aged 65 or over. (Farr-Wharton et al. 2023) initiatives to retain older workers are of strategic importance. In Europe, extending working life promotes active lifestyles and maintains social protection (Guiomar et al. 2018). The issue of succession is a complex one, exacerbated by the fact that there are more attractive sectors than agriculture for the younger generation to study and work in (Hamill, 2012).

Employee retention

Macroeconomic and societal changes indicate that labour shortages in sectors with a high demand for labour are a major challenge (Gelencsér et al. 2020). There are several possible means to increase workplace engagement, but effective implementation requires a strategic approach and a consciously developed concept (Al-Dalahmeh et al. 2020). Research indicates that organisations of varying sizes may encounter different levels of staff turnover, resulting in distinct retention challenges specific to their size. (Ikram et al. 2021; Jalil et al. 2021). In the area of retention, important factors include the leadership style of supervisors, ensuring that decision-making and problem-solving are within the employee's remit, and supporting career progression and skills development. This is complemented by the need to provide flexibility in

working arrangements, which has come to the fore since the pandemic (Hays, 2023; Singh 2019), which cannot be interpreted for agricultural workers. According to (Gelencsér et al.

2020) other determinants are appreciation, a constructive work atmosphere, job stability and a competitive wage system.

Also, essential criteria for employee retention are employee satisfaction (Gode 2019; Irabor & Okolie 2019) and motivation (Harder et al. 2014), as well as process-oriented performance appraisals (Kozák, 2023), that focus on positive feedback, which develops corporate culture, improves workplace climate, and increases employee loyalty. In line with this, it is important that the employee is aware of his or her responsibilities (job description), knows and identifies with the objectives of the company and his or her role in the company. If the employee's values fit with the company culture, this has a positive impact on retention (Inabinett & Ballaro 2014). The results of Gelencsér et al. (2023) show that there is a link between corporate culture, individual values and employee retention.

In a competitive employment environment, employer branding is also becoming increasingly important, as well as a long-term human resources (HR) strategy to attract and retain the right people. Tanwar & Prasad (2016) research show that there is a positive relationship between employer branding and organisational commitment. Attracting, recruiting, and retaining talented human capital is a primary goal of any organisation (Hadi & Ahmed 2018), which provides a competitive advantage for employers (Lenny & Ahmad, 2019).

Agriculture is also increasingly characterised by a multicultural environment, where effective communication between a diverse workforce ensures high levels of performance and productivity of human and intellectual capital (Okoro & Washington 2012). Regarding the retention of foreign workers, consideration should be given to transparency in recruitment and contracting, fair wages, healthy and safe working conditions, and the possibility of allowing family members of foreign workers to work (Ramos & Reynaga 2023). Prasetyo et al. (2021) also identify the role of communication as a key factor in workforce retention.

Based on the literature review, the following research question has been formulated: Do agricultural organisations of different sizes show differences in their retainment and management of labour shortages? The following hypotheses related to the research question have been formed:

- According to H(1), firms of different sizes in the agricultural sector consider different factors important for retaining employees.
- According to H(2), agricultural firms of different sizes use different programs (e.g., performance appraisal systems, career management, employee brand building) to address labour shortages.

MATERIAL AND METHODS

Our study used snowball sampling.144 farms engaged in agricultural production and services completed the online questionnaire in the summer of 2022. In our study, small farms have 0-9 employees, medium-sized farms have 10-250 employees, and large farms have 251 or more employees. Diagram 1 shows the distribution of agricultural organisations by size. About one third (31.2%) of the surveyed organisations were small and 59% of them were medium-sized organizations. The share of large organisations is approximately 10%.

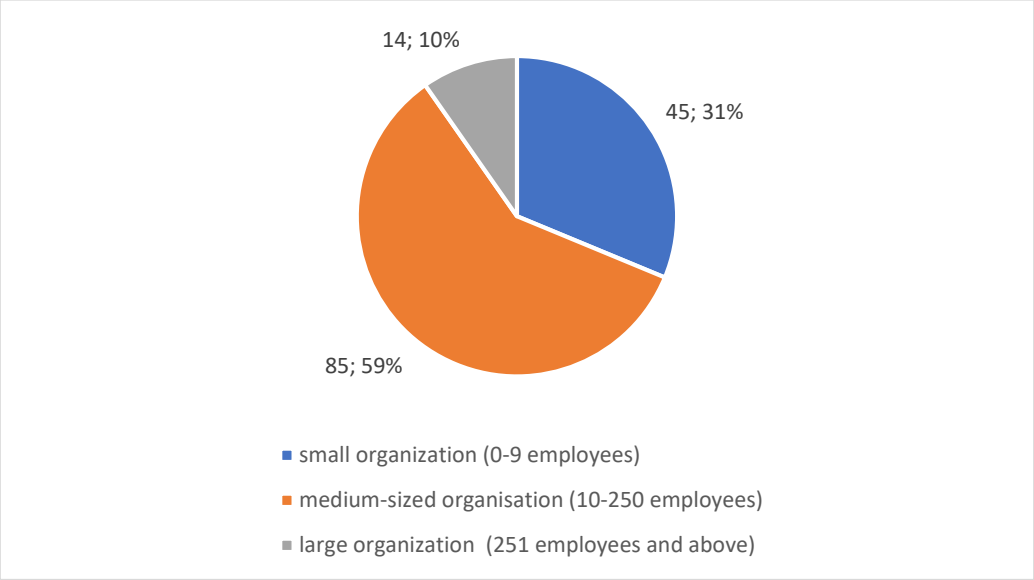

Figure 1. Distribution of agricultural organizations in the study by the number of employees
Source: Authors' own work

Figure 2 shows the distribution of the ownership structures of the organisations in the study. Nearly 90 percent of the farms in our sample were domestically owned, with foreign ownership accounting for less than 10 percent. This figure is consistent with the general trend of increasing domestic ownership in certain sectors (e.g., banking, energy, etc.).

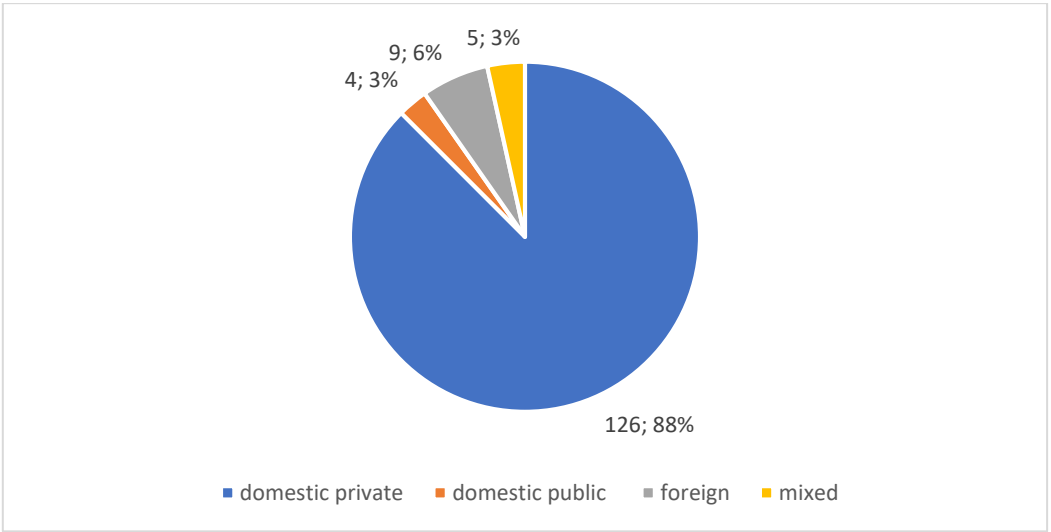

Figure 2. Distribution of farms by ownership
Source: Authors' own work

The distribution by turnover is shown in Figure 3. More than one third of the farms have an annual turnover between HUF 120,000,000 and HUF 1.2 billion. Only three farms (2.1%) in the sample had a turnover above HUF 120 billion.

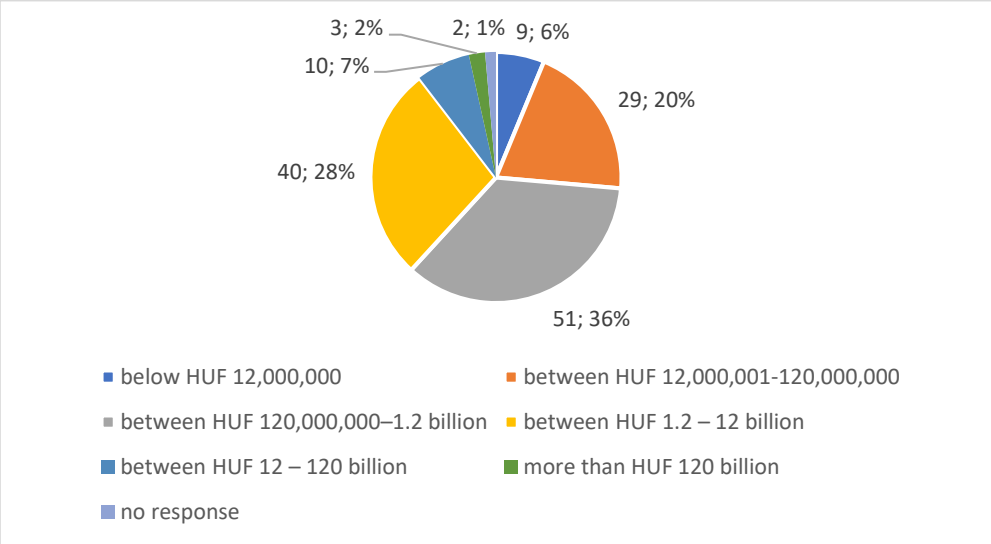

Figure 3. Distribution of the organizations by annual revenue
Source: Authors' own work

The questionnaire used in the survey contained a total of 24 questions. The questionnaire contained both closed and open-ended questions. In the case of closed questions, respondents were asked to choose the most typical answers from the answers listed relative to the topics of the study, in a one-respondent manner. The questionnaire consisted of the following main topics:

- main data and characteristics of the agricultural farm participating in the study,
- fluctuation and labour shortages,
- organisational measures related to labour retention,
- opinions and experiences with robotisation (Poór et al.,2023).

The results obtained from the analysis were recorded in Microsoft Excel spreadsheets, which provided an easy way to examine the data with statistical methods. Our empirical study is considered ex-post (Usunier et al. 2017), i.e., it relies on opinions and factual data about the observation period to investigate the opinions of each agricultural farm. We used the SPSS 27.0 software package to evaluate the data. In order to find the correlations between background variables and individual responses, a cross-tabulation analysis was performed by testing the Crammer coefficient. The results of the statistical tests were considered significant at $p<0.05$. One-way analysis of variance (ANOVA) was used to statistically analyse the correlations between the background variables.

Results and discussions

The SPSS 27.0 software package was used to evaluate the results. Our statistical analysis is severely limited by the small size of the sample, so conclusions relative to causal relationships can only be drawn in a few cases. Therefore, the results of the tests that prove causality are complemented by descriptive statistical analyses. To process the results, labour retention and labour shortage management were assessed first.

Respondents were asked to rate how much they agreed with the answers to the questions on a Likert scale ranging from 1 to 5, where 1 means not at all and 5 means I completely agree.

In the case of the question relative to labour shortage, a response value of 1 means: currently not applied, while a response value of 5 means: the programmes is applied. In addition to the ANOVA test, an LSD post hoc test was also run during the analysis to determine which groups were significantly different from the others.
In this paper, we present only results at significance level $p \leq 0.05$. Based on the ANOVA test, significant differences in labour retention were found in the case of two variables: *opportunity for career development* ($(F(2)= 3.057, p=0.050)$ and *predictable career path* ($(F(2)= 5.152, p=0.007$).
The post hoc test showed a significant difference in the opportunities for career development between small and large organisations ($p=0.015$) and between medium and large organisations ($p=0.036$). The variable of opportunities for career development may be of particular importance, as experience shows that employees are often willing to work for a lower salary if the organisation teaches them the skills they need for their jobs and careers. By gaining new competencies, employees improve their knowledge, which can result in greater self-confidence, which in turn can help them to move up the career ladder to a higher position in the organisation. There are a lot of opportunities for career development in agriculture, for example, participating in courses, attending conferences, agricultural expos or visiting farms.
The post hoc test of a predictable career path also showed a significant difference between small and large organisations ($p=0.002$) and between medium and large organisations ($p=0.005$).
The average scores are shown in Table 1.

Table 1. Factors influencing staff retention

Opportunities for career development	**Average**	**St. deviation**
Small organisation	3.186	1.200
Medium-sized organisation	3.325	0.868
Large organisation	3.928	0.828
Predictable career path	**Average**	**St. deviation**
Small organisation	3.121	1.187
Medium-sized organisation	3.262	0.882
Large organisation	4.071	0.730

Source: Authors' own research

Regarding the importance of career development opportunities for the staff in labour retention, large organisations confirmed the importance of this variable ($m=3.928$), while the other two groups of organisations (small and medium-sized organisations) took a neutral position. The employer still has a crucial role in how employees can develop their careers, as it is the employer who offers the opportunities. Research shows that the main reason for job changes is often the lack or uncertainties of career development.
Large organisations agreed that a predictable career path in staff retention is very important ($m=3.928$), while the other two groups of organisations (small and medium-sized organisations) took a neutral position. It is assumed that small and medium-sized enterprises also agree with the importance of a predictable career path, but their financial possibilities are limited, and their small size prevents them from providing such an opportunity.

The next question of the survey focused on the programmes used to address labour shortages and to retain staff.

Perhaps one of the most effective tools to support workforce retention is the performance appraisal system, which is based on employees' need for recognition, development opportunities and the pursuit of personal goals (Karoliny 2017). The introduction of such a system is particularly important in business enterprises, as it connects the goals of the organisation and the individual. The challenge lies in how the work of employees can be measured and what motivational tools are suitable to encourage them to improve their performance.

In agriculture, there are several tools to do this, such as measuring feed consumption, weight gain testing, broken egg count, milk quality, animal health, etc. The ANOVA test showed correlation between managing labour shortages and the performance appraisal system ((F(2)= 5.044, p=0.008). The post hoc test showed a significant difference between small organizations and medium-sized organizations (p=0.023) and between small and large organizations (p=0.004) in this respect.

As the Hungarian labour market has become increasingly competitive in recent years, company car has become an increasingly important policy tool of human resources and recruitment to attract the employees needed. A company car is a status symbol, but it also plays a key role in retaining employees and strengthening loyalty. Thus, it is not surprising that the *company car allowance* shows significant differences ((F(2)= 4.976, p=0.008) between small and medium organisations (p=0.049), small and large organisations (p=0.003).

Based on the post hoc test, there is also a significant difference in *career management* ((F(2)= 6.507, p=0.002), between small and large organisations (p=0.001), medium-sized and large organisations (p=0.004). Larger farms are now trying to make agriculture more attractive to young people by using dual training and apprenticeship programmes, and are also trying to support career goals by organising and running leadership training programmes as a succession policy tool. Bonafarm Group's management training programme is a good example. Based on the post hoc test, a further significant difference in *individual development programmes* ((F(2)= 3.764, p=0.026) was found between small and large organisations (p=0.007) and between medium-sized and large organisations (p=0.026).

One possible way of addressing labour shortages is to build the right employee brand, which aims to attract and retain the right people in the long run, while increasing the engagement and commitment of existing employees. Significant differences were found in *employee brand building* ((F(2)= 7.815, p=0.001), with post hoc test showing differences between small and large organisations (p=0.001) and medium and large organisations (p=0.001). The post hoc test also showed significant differences in the *organisation of training courses* ((F(2)= 4.751, p=0.010) between small and large organisations (p=0.003). The mean scores are illustrated in Table 2.

Table 2. Use of performance appraisal system

Performance appraisal system	Average	St. deviation
Small organisation	2.567	1.014
Medium-sized organisation	2.075	1.122
Large organisation	1.538	0.967
Company car allowance	**Average**	**St. deviation**
Small organisation	2.894	1.180
Medium-sized organisation	2.412	1.259
Large organisation	1.714	1.204
Career management	**Average**	**St. deviation**
Small organisation	3.324	1.001
Medium-sized organisation	3.025	1.104
Large organisation	2.071	1.384
Individual career development programme	**Average**	**St. deviation**
Small organisation	2.837	1.142
Medium-sized organisation	2.605	1.132
Large organisation	1.846	0.987
Building an employee brand	**Average**	**St. deviation**
Small organisation	3.297	1.023
Medium-sized organisation	3.153	1.174
Large organisation	1.928	1.328
Organisation of training courses	**Average**	**St. deviation**
Small organisation	2.921	1.023
Medium-sized organisation	2.474	1.266
Large organisation	1.785	1.311

Source: Authors' own research

The average score shows that large organisations have a lot more programmes to address labour shortages (e.g., building employee brand) than medium-sized and small organisations. This is probably related to the fact that large organisations (due to their size of workforce) develop and follow a more complex and conscious HR strategy, which uses more HR processes to address staff shortages.

The following paragraphs present our descriptive statistical results. Without being exhaustive, Table 3 summarises the organisational measures taken by the organisations in the study to retain employees. Other categories include flexible working hours, restructuring, priority health support, etc. The data clearly show that home office as a retention tool is the most

popular among 29.1% of respondents. The use of retention measures supported by government measures (12.2%) and working time reduction (10.3%) are less frequent among respondents.

Only 4.7% of survey respondents reported measures to reduce wages and only 1.8% had been forced to send their employees on unpaid leave or did not pay other fringe benefits linked to their salary.

Table 3. The frequency of use of tools of workforce retention

labour retention tools	frequency	percentage
home office	31	29.1%
no actions taken	18	16.9%
retention measures supported by government measures	13	12.2%
working time reduction	11	10.3%
wage increase	6	5.6%
miscellaneous	6	5.4%
reduced wages	5	4.7%
unpaid leave	2	1.8%
non-payment of other fringe benefits	2	1.8%
total	94	100%

Source: Authors' own research

The exposure to the coronavirus epidemic crisis (for the firms/organisations in the study) in relation to staff retention is summarised by firm size in Table 4. The results show that 80% of small organisations with less than 10 employees were not affected by the pandemic in terms of staff retention. Large organisations with more than 250 employees were the most affected (35.7%).

Table 4. Exposure of organisations to the pandemic in terms of staff retention

Has the organisation been affected by the pandemic in terms of staff retention?	**Small organisation**	**Medium-sized organisation**	**Large organisation**
Yes	20%	22.4%	35.7%
No	80%	77.6%	64.3%
Total	100%	100%	100%

Source: Authors' own research

The impact of the Ukrainian-Russian war on labour retention is summarised by the size of the organisations in Table 5. The feedback shows that more than three quarters (81.5%) of medium-sized organisations of between 10 and 250 employees were not affected by the Ukrainian-Russian war in terms of staff retention. More than one third (35.7%) of the large organisations surveyed reported that they had felt the impact of the war in this respect.

Table 5. The impact of Russsia's war in Ukraine on labour retention

Has the organisation been affected by the Ukraine-Russia war in terms of staff retention?	Small organisation	Medium-sized organisation	Large organisation
Yes	26.7%	18.8%	35.7%
No	73.3%	81.5%	64.3%
Total	100%	100%	100%

Source: Authors' own research

Table 6 shows that more than half (55.6%) of small organisations of fewer than 10 employees were not affected by labour shortages. However, more than two thirds (71.4%) of large organisations surveyed were affected.

Table 6. The impact of the Russia–Ukraine war on labour shortages

Has the organisation been affected by staff shortages?	Small organisation	Medium-sized organisation	Large organisation
Yes	44.4%	58.8%	71.4%
No	55.6%	41.2%	28.6%
Total	100%	100%	100%

Source: Authors' own research

The percentage of organisations employing foreign workers by the size of the organisation is shown in Table 7. It can be seen that 97.7% of small farms with fewer than 10 employees do not employ foreign workers. Even the number from respondents of medium-sized and large

organizations which employ foreign workers is below 15%. This indicates that the vast majority of the organisations in the sample do not employ foreign workers.

Table 7. Employment of foreign workers in responding organisations

Are foreign workers employed in the organisation?	Small organisation	Medium-sized organisation	Large organisation
Yes	2.3%	14.1%	14.3%
No	97.7%	85.9%	85.7%
Total	100%	100%	100%

Source: Authors' own research

Table 8. shows which hypotheses have been accepted. It can be seen from the table that all hypotheses have been accepted.

Table 8. Validation of hypotheses

Hypotheses	Has the hypothesis been confirmed?
According to H(1), firms of different sizes in the agricultural sector consider different factors important for retaining employees.	Yes
According to H(2), agricultural firms of different sizes use different programs (e.g., performance appraisal systems, career management, employee brand building) to address labour shortages.	Yes

Source: Authors' own research

Conclusions

According to the KSH agricultural census survey (2020), 234 000 organisations are engaged in agricultural activities in Hungary. Hungarian agriculture is undergoing a continuous restructuring, which results in a fall in the number of smaller farms and an increase in the number of larger farms (Valkó 2022). The remaining organisations are experiencing a seasonality in their labour needs. For example, the sector employs a lot more people during the harvest season than during the winter season (Hamar 2015). According to some estimates, agriculture is short of about 100,000 workers (Tóth 2023). Taking these aspects into account, we sought to answer our research question on labour retention, to which we have found the following answer: Organisations of different sizes in agriculture differ in the importance they attach to labour retention factors and programmes they use to address labour shortages.

Hypothesis H(1) is confirmed. Large firms can provide employees with a more predictable career path and better individual career development opportunities compared to small and medium-sized firms, which can also increase their labour retention capacity. In our view, this partly contributes to the phenomenon of labour migration from agriculture to larger organisations, which explains the decreasing number of small farms in Hungarian agriculture (Valkó 2022).

Hypothesis H(2) is confirmed. Large firms are more likely to use modern HR-processes than small and medium-sized organizations. Large companies are more likely to be able to provide company cars to employees than small organisations because they are financially strong. Financial strength is of paramount importance in this sector because wages in agriculture are below the national economy average (Csipkés 2022). Accordingly, financially strong firms gain a competitive advantage in the domestic economy over other organisations in agriculture not only through fringe benefits, but also through their ability to provide higher wages to employees compared to their competitors.

Based on the results, we make the following recommendations for companies operating in domestic agriculture: 1) farms should have an organisational strategy that incorporates HRM strategy; 2) when designing an HR strategy, it should be also be taken into account that organisational size has an impact on staff retention and management of labour shortages; 3) companies should take into account good HR practices (as presented in our article), but be sure to adapt them to their own structure, taking into account organisational size. 4) Consider that agriculture is a specific sector and therefore HRM faces unique challenges in terms of staff retention and labour shortage management. It follows that HR tools that may help other sectors to retain staff and manage labour shortages may not work for agriculture. This may be due to the seasonal employment of manual workers, which is specific to agriculture (Hamar 2015).

Limitation

There are three methodological limitations of our research. The first of these is that our sample is not representative, so research results are not suitable for drawing conclusions for the entire population and are therefore only valid for the sample. The second factor that limits the generalisability of the conclusions is that although the post hoc tests show significant differences, these differences are not very high when looking at the 5-point scales, in most cases by a few decimal points. It follows that these differences show minor differences between different organisations. However, the usability of our research is strengthened by the fact that our sample includes agricultural enterprises that are key players in Hungarian agriculture.

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