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Online job portals as a tool for reducing information asymmetry in the labour market

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Abstract

Motivation: Information asymmetry remains a key cause of labour market inefficiency, raising search costs and degrading match quality. Online job portals have emerged as dominant intermediaries; yet platform proliferation and uneven data quality may simultaneously reduce asymmetry and generate new forms of it. In Belarus, this is compounded by 2025 regulatory changes requiring employers to prioritize the State Employment Service portal (gsz.gov.by), reshaping information flows.

Aim: This study assesses the role of online job portals in creating informational conditions conducive to reducing information asymmetry in Belarus by examining the trade-off between market coverage and data quality. It also evaluates the impact of 2025 legislative changes on vacancy content across portals and aggregators.

Results: Analysis of 2018–2025 data reveals a trend toward centralisation: vacancies on gsz.gov.by grew 2.5-fold, while the CV database expanded 6.5-fold. Content analysis of 300 vacancies shows substantial differences in skills data quality: rabota.by leads with 61% structured skills fields; gsz.gov.by records 8% with 100% classifier compliance; belmeta.com shows 0% structured fields. The 2025 reforms have driven retransmission of vacancies from the state portal to commercial platforms – 65% of rabota.by vacancies now link to gsz.gov.by – broadening coverage but risking the propagation of low-information descriptions. The study concludes that an integrated model is needed, combining the state portal's breadth with the higher data structuring standards of commercial platforms.

Keywords: information asymmetry, labour market, online job portals, Belarus

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1. Introduction

Information asymmetry is one of the central obstacles to efficient labour market functioning. Employers lack complete information about candidates' qualifications, skills, and motivations, while job seekers have limited visibility into working conditions, organisational culture, and career prospects. This bilateral asymmetry drives inefficient labour allocation, higher search and recruitment costs, elevated structural unemployment, wage distortions, and related adverse outcomes (Cardoso et al., 2015; Dato et al., 2016; Bar-Isaac et al., 2021; Golan, 2005).

Traditional labour market intermediaries – public employment services, staffing agencies, and print media – have historically mitigated asymmetry, but face serious constraints in the digital era: high transaction costs, limited geographic reach, slow information updating, and insufficient granularity of vacancy and candidate data.

Over the past two decades, online job portals have radically transformed labour market mechanisms. Digital platforms provide instant access to thousands of vacancies and CVs, reduce search costs on both sides of the market, enable sophisticated matching algorithms, and support real-time labour market monitoring. In Belarus, as in many other countries, online portals have become the dominant channel connecting employers and job seekers, largely displacing traditional institutions.

According to Cedefop (2019a), online job portals perform a critical transparency and signalling function: they reduce transaction costs, accelerate market clearing, and lower frictional unemployment through rapid information flows. In European practice, they are increasingly treated as sources of real-time labour market intelligence that complement traditional statistical methods.

Yet digitalisation also creates new challenges. The proliferation of portals with varying business models and data quality standards risks fragmenting the information space and generating new asymmetries. Existing research has several notable limitations. Most studies focus on developed countries with mature digital ecosystems (Carnevale et al., 2014; Cedefop, 2019a; Kureková et al., 2015; Napierala, 2023), leaving transition economies understudied. Research also tends to examine isolated aspects of portal functioning (Cedefop, 2019b) rather than offering a comprehensive framework for assessing their role in reducing asymmetry. Methodological approaches to comparing data quality across different portal types remain underdeveloped.

These gaps are particularly consequential for Belarus. Prior studies of the Belarusian online portal market (Vankevich & Zaitseva, 2020; Zaitseva, 2025) assessed leading portals by volume and information quality and developed a methodology for extracting and structuring vacancy data according to national classifiers (Vankevich & Kalinouskaya, 2021). However, none examined online portals through the lens of information asymmetry theory. The issue has gained urgency with the 2025 legislative changes: amendments to Belarus's employment law now require employers to publish vacancies on gsz.gov.by as a first priority before using other recruitment channels, fundamentally altering the architecture of labour market information exchange.

No study has yet systematically compared the effectiveness of different portal types – commercial, state-run, and aggregator – in creating informational conditions conducive to reducing information asymmetry, or offered evidence-based recommendations for designing an optimal digital labour market infrastructure.

The primary objective of this study is to assess the role of online job portals in creating informational conditions conducive to reducing information asymmetry in the Belarusian labour market, by examining the balance between market coverage (vacancy volume) and data quality (skills structuring), and to evaluate the impact of the 2025 regulatory changes on the digital ecosystem's effectiveness.

To this end, the study addresses four research tasks:

1. Identify key trends in the development dynamics of Belarusian online job portals over 2018–2025, including concentration of information flows;
2. Compare skills data structuring across a state portal, a commercial portal, and an aggregator to assess information quality for labour market participants;
3. Evaluate the impact of the 2025 legislative changes on the content structure and data quality of commercial portals;
4. Develop recommendations for an integrated digital labour market ecosystem that balances coverage and data quality.

Research hypothesis: The capacity of online portals to create informational conditions conducive to reducing information asymmetry depends on the balance between market coverage and data quality. The state portal dominates in coverage but lags in information quality, necessitating integration of both models to optimise the digital labour market ecosystem.

The article proceeds as follows. Section 2 reviews the theoretical foundations of information asymmetry, the role of online portals as information intermediaries, methodological approaches to data quality assessment, and regulatory experience in EU and Central and Eastern European countries. Section 3 describes the research design and methods. Section 4 presents empirical results: online portal market dynamics (4.1), skills data structuring across three portal types (4.2), and the impact of the 2025 legislative changes (4.3). Section 5 offers conclusions, practical recommendations, and directions for future research.

2. Literature review

2.1. Theoretical foundations of information asymmetry in the labour market

The theoretical framework for information asymmetry was established by George Akerlof, Michael Spence, and Joseph Stiglitz. Akerlof (1970), in his seminal “market for lemons” article, showed how quality uncertainty can drive high-quality goods from the market. Applied to labour markets, this implies that without reliable signals of candidate quality, employers offer average wages – demotivating highly skilled workers. Spence (1973) extended this insight with signalling theory: job seekers use education and credentials as observable proxies for productivity. Stiglitz (1975) complemented this with screening theory, showing how employers design mechanisms to elicit true candidate quality. Together, these contributions established a conceptual framework for understanding how agents attempt to overcome information asymmetry – while demonstrating that such mechanisms carry significant social costs.

Search theory developed in parallel, originating with Stigler’s (1961) foundational work on the economics of information. Diamond, Mortensen, and Pissarides subsequently developed search and matching theory, which has become the standard framework for analysing labour market frictions. Petrongolo and Pissarides (2001) systematised empirical evidence showing that lower search costs improve labour allocation efficiency and reduce frictional unemployment. The role of labour market institutions in shaping labour market efficiency has also been studied in the literature (Sordyl, 2024).

These theories, however, were developed in the pre-digital era, assuming fixed search costs, limited information processing capacity, and sequential

search. Contemporary digital platforms have transformed these parameters: algorithms process millions of vacancies in real time, and search has become parallel. Internet-based data sources expand analytical opportunities for monitoring labour market dynamics and tracking economic uncertainty in real time (Pietrucha & Gulewicz, 2025), but the quality and reliability of such data require systematic assessment.

In the context of online job portals, signalling and screening mechanisms take on new dimensions. Employers acting as screeners seek to filter candidates based on observable attributes such as educational credentials, work experience, and certified competencies – the informational inputs that portals help to standardise and present. Online portals facilitate this process by enabling the structured and comparable presentation of such signals across large numbers of applicants. At the same time, portals enable job seekers to signal their quality more effectively through structured profiles, skills endorsements, and portfolio materials. However, it is important to note that portals provide the infrastructure for signalling and screening; they do not eliminate information asymmetry *per se*. Whether asymmetry is actually reduced depends on the quality, completeness, and standardisation of the information presented – which is the central question addressed by the present study.

2.2. Empirical research on the impact of the internet on the labour market

From the early 2000s, the internet as a job search channel attracted active empirical attention. Autor (2001) was the first to systematically analyse its potential, arguing that online technologies should reduce search costs, expand geographic reach, and improve match quality through three channels: lower transaction costs, better information quality, and broader market access.

Early empirical results were, however, counterintuitive. Kuhn and Skuterud (2004), using U.S. Current Population Survey data for 1998–2000, found no significant effect of internet use on unemployment duration – and in some cases, a positive association with longer spells. They attributed this to self-selection: the internet was used disproportionately by those struggling to find work through traditional channels.

Stevenson (2009), analysing a longer period (1998–2006), found more nuanced results. Internet use significantly reduced job search duration in small towns and rural areas, where traditional channels are less effective, but had negligible effects in large cities – highlighting the importance of local labour market context.

By the late 2000s, the picture had shifted. Kuhn and Mansour (2014), using 2008–2009 data, found that internet job search was associated with significantly

shorter unemployment spells. They attributed this to rising internet penetration (which reduced self-selection), improved platform quality, and greater employer participation in online posting.

Faberman and Kudlyak (2019) added an important nuance: the impact of online job search depends not merely on internet use but on search intensity. Online platforms reduce the marginal cost of additional search, enabling job seekers to consider more vacancies within the same time investment.

2.3. Mechanisms for reducing information asymmetry: data quality and algorithms

Contemporary research focuses on the specific mechanisms through which online portals reduce asymmetry. Marinescu and Wolthoff (2020), using data from CareerBuilder.com, showed that the level of detail in vacancy descriptions, use of specific terminology, and transparency about working conditions significantly increase the volume of relevant applications – supporting the hypothesis that richer information improves match quality.

Horton (2017) conducted a field experiment on oDesk (now Upwork), randomly providing employers with algorithmic candidate recommendations. Employers who received recommendations hired more quickly, and match quality – measured by subsequent ratings and rehiring probability – was significantly higher. This provides causal evidence that algorithms can improve matching efficiency.

Critical scholarship, however, points to potential downsides. Rani and Furrer (2021), studying gig economy platforms in developing countries, found that algorithmic opacity creates new forms of asymmetry: workers do not understand how ratings are formed or orders distributed, generating uncertainty and eroding bargaining power.

For the present study, these findings imply that assessing portal effectiveness cannot be reduced to vacancy counts. The structuring of skills information is critical, as it determines the feasibility of applying matching algorithms and the quality of initial candidate screening.

2.4. Online vacancies as a data source for labour market analysis

A parallel strand of literature uses online vacancy data for macroeconomic analysis. Askatas and Zimmermann (2015) demonstrated that internet data – including online vacancies, search queries, and social media – enable real-time labour market analysis, overcoming the publication lags and limited granularity of traditional statistics.

Kureková et al. (2015) compared online vacancy data with traditional labour market surveys across several European countries, identifying both

advantages (timeliness, skills granularity, text analysis potential) and limitations (incomplete market coverage, occupational and regional bias, vacancy duplication). They emphasised the need to validate online data against official statistics.

Hershbein and Kahn (2018) used online vacancy data to show that during and after the 2008–2009 recession, employers significantly raised educational and experience requirements even for positions where such requirements had not previously existed – interpreted as skill upgrading under conditions of labour supply surplus.

Turrell et al. (2019) developed a methodology for transforming unstructured vacancy texts into structured economic indicators using machine learning and NLP, enabling real-time tracking of skill demand and high-granularity regional analysis.

Cedefop (2019a), in a large-scale study of the EU online vacancy market, confirmed that online portals perform a critical transparency and signalling function, reducing transaction costs and contributing to faster market clearing. A critical reading of this literature, however, reveals persistent limitations: most studies rely on single-platform data, precluding assessment of cross-portal differences; and methodological challenges around representativeness, employer posting practices, and deduplication remain unresolved.

2.5. The role of the state: public employment services and regulation

A separate strand of literature examines public employment services in the digital era. International Labour Organization (ILO, 2023) analytical materials note that while many countries are developing digital vacancy matching channels, the maturity and integration of these solutions vary considerably. Key conditions for effective digital employment services include comprehensive market coverage (through regulatory requirements and employer incentives), integration with administrative data and digital registries, and the development of algorithmic and personalised matching tools, subject to data protection and non-discrimination requirements.

Card et al. (2018), in a meta-analysis of 207 active labour market programme evaluations, found that job search assistance – including online tools – ranks among the most cost-effective interventions, particularly in the short term, though effects vary substantially by programme design and context.

Belot et al. (2019) conducted an experiment providing unemployed individuals in the Netherlands with personalised online job search recommendations, finding a significant positive effect on employment probability – particularly for the long-term unemployed.

Mandatory vacancy posting on state portals, however, creates both opportunities and risks. It ensures maximum market coverage and equal in-

formation access, but risks formalisation: employers may post minimally informative descriptions to satisfy legal requirements while retaining detailed vacancies on commercial platforms. State portals also frequently lag behind commercial ones in interface quality and functionality, potentially limiting their practical effectiveness.

2.6. The context of Central and Eastern European Countries and Belarus

Most research on online labour market platforms is conducted in developed countries with high internet penetration and mature digital ecosystems. The specificities of Central and Eastern European (CEE) countries, where digital transformation unfolds against a backdrop of institutional weaknesses and structural labour market challenges, remain understudied.

For Belarus, prior studies (Vankevich & Zaitseva, 2020; Zaitseva, 2025) laid an important foundation by assessing the structure and dynamics of the online portal market, adapting the European Training Foundation methodology developed by Mercorio and Mezzanzanica (2019) for ranking online labour market data sources. However, these studies did not examine online portals through the lens of information asymmetry theory.

2.7. Gaps in the literature and the contribution of the present study

The literature review identifies four significant gaps. First, research on online labour market platforms is insufficiently connected to classical information asymmetry theory; no integrated conceptual model explains the specific mechanisms through which platform characteristics affect asymmetry reduction. Second, most studies focus either on quantitative indicators (vacancy volume, market coverage) or behavioural outcomes (unemployment duration), without systematically analysing skills data quality as a key parameter of platform effectiveness. Third, no systematic methodology exists for comparing different portal types – state-run, commercial, and aggregator – that accounts for the balance between coverage and data quality. Fourth, there is a near-total absence of research evaluating the effects of regulatory changes aimed at strengthening state portals in contexts of commercial platform dominance.

This study addresses these gaps through a comprehensive analysis of online job portals' role in creating conditions conducive to reducing information asymmetry in the Belarusian labour market, assessing portal effectiveness along two measurable dimensions – market coverage and skills data structuring – and examining how the 2025 regulatory changes affect this balance.

3. Methods

The study combines quantitative analysis of online platform market dynamics with qualitative content analysis of skills data structuring in vacancies, enabling assessment of both the market coverage provided by different portal types and the quality of information available to labour market participants.

3.1. Comparative analysis of online job portal dynamics

To trace the evolution of the Belarusian online employment platform market, the study draws on data collected by the authors between 2019 and 2025 (Vankevich & Zaitseva, 2020; Zaitseva, 2025). The methodological basis is the European Training Foundation methodology for assessing and ranking online labour market information sources (Mercorio & Mezzanzanica, 2019), which involves systematic collection of data on website and vacancy characteristics and the construction of a source ranking model based on informativeness and reliability.

Adapting the ETF approach to Belarusian conditions enabled the capture of both long-term trends and the effects of recent regulatory changes. Data sources included publicly available portal statistics and materials from the authors' prior studies.

Portal selection followed the ETF methodology, based on rankings in Google and Yandex search results for the queries “work” (“работа”) and “vacancies” (“вакансии”), ensuring sample representativeness and reflecting actual user search behaviour. This approach provides a comprehensive picture of the market's competitive structure and enables identification of trends toward centralisation or diversification.

3.2. Content analysis of skills data structuring

To assess information quality, a comparative content analysis of vacancies was conducted across three platforms representing distinct models of online labour market functioning: the National Vacancy Bank (gsz.gov.by), the official state portal representing the institutionally regulated segment; the commercial portal rabota.by, representing the market-oriented matching segment; and the aggregator belmeta.com, representing the intermediary level that consolidates data from multiple sources. This selection ensures coverage of different models and enables identification of systemic differences in skills information presentation.

The sample comprised 300 vacancies, evenly distributed across three portals and five occupational groups: “accountant”, “sales manager”, “program-

mer”, “loader”, and “sales assistant”. These occupations were chosen to span a broad range of qualification levels – from low-skilled labour to highly qualified specialists – enabling analysis of how occupational specificity affects data structuring. While the sample does not claim full statistical representativeness, it provides a sufficient basis for qualitative comparative analysis and identification of key patterns.

Vacancies were assessed according to four criteria (Table 1):

- Skills field type (structuring). This criterion determined whether the vacancy contained a dedicated, explicitly labelled section for skills – such as a “Key Skills” or “Requirements” block listing specific competencies. Vacancies with such a section were classified as Type 2 (structured); those mentioning skills only within the body text, without explicit demarcation, as Type 1 (unstructured); and those with no skills information at all as Type 0;
- Presence of hard skills. This criterion recorded whether the vacancy specified concrete professional and technical competencies – for example, proficiency in software (1C, Excel, programming languages), knowledge of regulatory acts, or possession of relevant certificates;
- Presence of soft skills. This criterion captured the mention of personal, communicative, or behavioural qualities, such as responsibility, communication skills, stress tolerance, or initiative;
- Use of the classifier. This criterion determined whether the vacancy used an official job title or code from the state occupational classifier, or a free-form, non-standard – including marketing-oriented – title.

An illustrative example of the vacancy assessment is presented in Table 1. Assessment was conducted through manual analysis of vacancy text, enabling evaluation not only of the formal presence of information but also of its quality in terms of comprehensibility and utility for recruitment. Manual coding ensured that the linguistic and contextual nuances of different vacancy formats – difficult to capture through automated text processing – were appropriately accounted for.

3.3. Analysis of the impact of the 2025 regulatory changes

The dataset also enables assessment of the initial effects of the new employment legislation requiring employers to publish vacancies on gsz.gov.by as a first priority. Each vacancy was manually coded for markers indicating its legal status: the presence of a direct link to the State Employment Service portal (confirming compliance with the general statutory requirement); explicit designation as a “prospective” vacancy (which, under the 2025 legislation, exempts the employer from posting in the National Vacancy Bank); or the absence of both markers (classified as indeterminate compliance status).

4. Results

4.1. Dynamics of the online portal market in the Republic of Belarus

The development of Belarus's digital labour market ecosystem over the past 25 years has been characterised by a transition from quantitative growth to institutional transformation, driven by two primary forces: the national digitalisation strategy and amendments to employment legislation – specifically, Law No. 36-Z “On amendments to laws on employment of the population”.

Comparative analysis of online labour market structures suggests that Belarus gravitates toward a model with a strong state actor under conditions of high market concentration – a pattern shared by EU countries such as Cyprus, Denmark, France, Croatia, Sweden, and Finland, where state portals (Public Employment Services) function as aggregators consolidating vacancies from multiple private sources (Cedefop, 2019a). Unlike more fragmented markets dominated by private paid-posting platforms (e.g., Germany or the Netherlands), the Belarusian model exhibits more rigid centralisation around the state resource. EU experience suggests that the most conducive conditions for reducing information asymmetry are created where state portals partner with private ones – through automatic data exchange, as in Estonia or Belgium – rather than competing with them, thereby expanding audience reach without duplicating information.

Data for 2018–2025 (Table 2) reveal a clear shift from relatively balanced vacancy distribution between state and private portals to clear dominance by *gsz.gov.by*. This reflects a process of information flow concentration and the consolidation of the state portal's role as the primary vacancy aggregator. The CV database on the state portal grew more than sixfold (648.4%), reflecting both expanded functionality and growing job seeker trust in official digital employment channels. Private portals – primarily *rabota.by* – nonetheless retain leadership in accumulated human capital, with over 3.27 million CVs in 2025, underscoring their continued importance as specialised channels, particularly for highly qualified and IT professionals.

The total number of active online job portals in Belarus declined by approximately one third over the review period (from roughly 15 to 10 active portals). This consolidation may improve data quality and standardisation, but warrants attention to risks of monopolisation and reduced diversity of job search channels.

To assess portal effectiveness as Big Data sources, the 2020 and 2025 studies applied ranking methodologies based on website characteristics and vacancy parameters (skills description completeness, salary data availability,

geographic coverage, etc.) using the ETF methodology (Mercorio & Mezzanzanica, 2019). Table 3 presents the ranking dynamics.

The data indicate a shift in the portal hierarchy, reflecting a transition from the quantitative dominance of private platforms to the qualitative superiority of the state resource in terms of information structuring.

The following key trends in the Belarusian online job portal market can be identified:

1. Despite more than 10 active platforms, the majority of traffic and vacancies are concentrated on 3–4 leading resources (gsz.gov.by, rabota.by, praca.by, belmeta.com). The commercial segment leader remains rabota.by (part of the hh.ru ecosystem), which accumulates the highest-quality vacancies and CVs;
2. The State Employment Service portal (gsz.gov.by) has substantially increased its vacancy volume. Whereas in 2019 it was regarded primarily as a database for low-skilled labour, by 2025 its role as the central information hub has become critical;
3. Leading portals have introduced mobile applications, automatic matching algorithms, and analytics tools, substantially reducing the time costs of initial candidate screening;
4. The mandatory primary publication requirement has conferred on gsz.gov.by the status of the most representative source for monitoring labour demand;
5. Private portals are evolving into service platforms offering employer branding and career counselling, while the state portal focuses on ensuring comprehensive statistical vacancy records.

4.2. Skills data structuring on online portals

The content analysis results (Table 4) reveal substantial differences in approaches to presenting skills information across portal types.

The commercial portal rabota.by demonstrates a high level of formalisation and standardisation: 61% of vacancies contain a structured skills field, 100% include explicit hard skills, and 60% include soft skills. This enhances data quality and facilitates precise, efficient personnel matching using contemporary algorithmic methods.

The state portal, fulfilling its institutional function, is characterised by more formal and less informative vacancy descriptions. Despite full compliance with the occupational classifier (100%), only 8% of vacancies contain a structured skills field, 32% include explicit hard skills, and 25% include soft skills. This reflects the administrative nature of publications, which are oriented toward regulatory compliance rather than optimising the employment process.

Belmeta, as an aggregator, demonstrates limited informativeness due to the retransmission of simplified data from primary sources. The absence of

structured skills fields (0%) and low granularity of hard and soft skills (0%) reduce the value of aggregated vacancies for competency analysis and effective matching. Approximately 15% of vacancies use the state occupational classifier.

These findings point to the need to integrate the advantages of different models. The state portal should develop structured skills description functionality while preserving normative accuracy and comprehensive coverage. Commercial platforms, in turn, can serve as sources of granular data and innovative matching tools, but require alignment with state classifiers to ensure systemic compatibility.

4.3. Impact of the 2025 legislative changes on commercial portal content

Analysis of the data in Table 5 yields several important conclusions. The high share of vacancies containing a direct link to the National Vacancy Bank (65% on *rabota.by*) confirms the effectiveness of creating a unified information space in which commercial platforms function as retransmitters of the state database. The share of vacancies marked as “prospective” (15–20%) reflects the scale of employers’ use of the legal exemption to preserve recruitment flexibility. The considerably higher share of vacancies without a link or “prospective” designation on *belmeta.com* (37%) may indicate a “grey zone” or slower business adaptation to the new legislative requirements.

Overall, the dominance of vacancies originating from the National Vacancy Bank leads to the automatic propagation of the state interface’s limitations across the broader market: employers seeking to comply with the law copy formal descriptions, which explains the deficit of soft skills data and rigid classifier adherence identified in the previous section.

The 2025 regulatory changes have thus produced significant centralisation of information flows, but at the cost of declining data quality on commercial portals through the mechanical replication of formalised state portal descriptions.

5. Conclusion

5.1. Main findings

This study provides a comprehensive assessment of the informational capacity of online job portals in Belarus, confirming the hypothesis that the ability of a digital ecosystem to create conditions conducive to reducing information asymmetry depends on the balance between quantitative market coverage and qualitative data content.

First, analysis of 2018–2025 market dynamics reveals a radical shift from a competitive model to state centralisation. The 2025 legislative changes consolidated the State Employment Service portal as the central hub of information flows, mitigating the data fragmentation characteristic of early digitalisation – but creating new challenges associated with the monopolisation of search channels.

Second, comparative content analysis reveals a systemic quality gap between the state and commercial segments. While commercial portals (exemplified by *rabota.by*) achieve near-100% structuring of professional requirements (hard skills), the corresponding figure on the state portal is only 32%. The State Employment Service portal currently performs primarily a formal administrative record-keeping function, while commercial platforms remain the primary tools for effective candidate-vacancy matching.

Third, assessment of the 2025 regulatory changes reveals an “information convergence” effect: commercial portals and aggregators have become active retransmitters of the state database (up to 65% of *rabota.by* vacancies link directly to *gsz.gov.by*). However, this has led to the mechanical copying of simplified vacancy descriptions, reducing overall market informativeness and impeding the use of AI-based matching algorithms.

5.2. Practical recommendations

On the basis of empirical findings and international experience, three directions for developing the digital labour market ecosystem are proposed:

1. Transition to competence-based matching. The primary development vector for the National Vacancy Bank should be the introduction of systems capable of analysing specific skills – not merely job titles – requiring technological modernisation of the state interface;
2. Development of public-private partnerships. Rather than administratively displacing private platforms, a unified information space should be created through API integration, combining the state resource’s comprehensive coverage with the data depth and innovative algorithms of commercial portals;
3. Standardisation of transparency. Introducing recommendations for mandatory disclosure of salary ranges and structured skills lists would reduce search transaction costs and improve labour resource allocation efficiency.

5.3. Limitations and directions for future research

The study is limited by the short time elapsed since the 2025 reforms took effect. More broadly, the methodological design has several inherent limitations that should be acknowledged.

First, the content analysis is based on a purposive sample of 300 vacancies distributed across five occupational groups and three portals; while sufficient for qualitative comparative analysis, it does not claim full statistical representativeness. Second, the study evaluates informational inputs — the completeness and structure of vacancy descriptions — rather than outcomes such as hiring speed, match quality, or employer satisfaction. Accordingly, the study assesses the informational conditions that may facilitate signalling and screening processes but does not and cannot directly measure a reduction in information asymmetry in the classical sense of Akerlof (1970), Spence (1973), and Stiglitz (1975). Third, manual coding, while enabling nuanced assessment of vacancy content, introduces potential subjectivity; inter-coder reliability was not formally assessed. These limitations define the boundaries of interpretability of the findings.

A promising direction for future research is examining how enhanced data transparency and the introduction of competence-based matching algorithms affect job search duration and skills deficit reduction in the Belarusian economy.

References

- Akerlof, G. A. (1970). The market for “lemons”: Quality uncertainty and the market mechanism. *The Quarterly Journal of Economics*, 84(3), 488–500. <https://doi.org/10.2307/1879431>.
- Askitas, N., & Zimmermann, K. F. (2015). The internet as a data source for advancement in social sciences. *International Journal of Manpower*, 36(1), 2–12. <https://doi.org/10.1108/IJM-02-2015-0029>.
- Autor, D. H. (2001). Wiring the labor market. *Journal of Economic Perspectives*, 15(1), 25–40. <https://doi.org/10.1257/jep.15.1.25>.
- Bar-Isaac, H., Jewitt, I., & Leaver, C. (2021). Adverse selection, efficiency and the structure of information. *Economic Theory*, 72, 579–614. <https://doi.org/10.1007/s00199-020-01300-1>.
- Belot, M., Kircher, P., & Muller, P. (2019). Providing advice to jobseekers at low cost: An experimental study on online advice. *The Review of Economic Studies*, 86(4), 1411–1447. <https://doi.org/10.1093/restud/rdy059>.
- Card, D., Kluve, J., & Weber, A. (2018). What works? A meta-analysis of recent active labor market program evaluations. *Journal of the European Economic Association*, 16(3), 894–931. <https://doi.org/10.1093/jeea/jvx028>.
- Cardoso, A. R., Guimarães, P., & Portugal, P. (2015). *Information frictions and labor market outcomes* (IZA Discussion Paper No. 9070). Retrieved 10.02.2026 from <https://docs.iza.org/dp9070.pdf>.
- Carnevale, A. P., Jayasundera, T., & Repnikov, D. (2014). *Understanding on-*

- line job ads data*. Georgetown University Center on Education and the Workforce. Retrieved 10.02.2026 from https://cew.georgetown.edu/wp-content/uploads/2014/11/OJAD.Tech_.web_.pdf.
- Cedefop. (2019a). *The online job vacancy market in the EU: Driving forces and emerging trends*. Publications Office of the European Union. Retrieved 21.01.2026 from <http://data.europa.eu/doi/10.2801/16675>.
- Cedefop. (2019b). *Online job vacancies and skills analysis: A Cedefop pan-European approach*. Publications Office of the European Union. Retrieved 21.01.2026 from <http://data.europa.eu/doi/10.2801/097022>.
- Dato, S., Grunewald, A., Kräkel, M., & Müller, D. (2016). Asymmetric employer information, promotions, and the wage policy of firms. *Games and Economic Behavior*, 100, 273–300. <https://doi.org/10.1016/j.geb.2016.09.013>.
- Faberman, R. J., & Kudlyak, M. (2019). What does online job search tell us about the labor market? *Economic Perspectives*, 1, 1–15.
- Golan, L. (2005). Counteroffers and efficiency in labor markets with asymmetric information. *Journal of Labor Economics*, 23(2), 373–393. <https://doi.org/10.1086/428705>.
- Hershbein, B., & Kahn, L. B. (2018). Do recessions accelerate routine-biased technological change? Evidence from vacancy postings. *American Economic Review*, 108(7), 1737–1772. <https://doi.org/10.1257/aer.20161570>.
- Horton, J. J. (2017). The effects of algorithmic labor market recommendations: Evidence from a field experiment. *Journal of Labor Economics*, 35(2), 345–385. <https://doi.org/10.1086/689213>.
- International Labour Organization. (2023). *Public employment services and active labour market policies for transitions: Global report Part I. Response to mega trends and crises*. International Labour Office. Retrieved from <https://doi.org/10.54394/TYMB4838>.
- Kuhn, P., & Mansour, H. (2014). *The internet as a labor market matchmaker: How effective are online methods of worker recruitment and job search?* (IZA Discussion Paper No. 8458). Retrieved 10.02.2026 from <https://wol.iza.org/uploads/articles/18/pdfs/internet-as-a-labor-market-matchmaker.pdf>.
- Kuhn, P., & Skuterud, M. (2004). Internet job search and unemployment durations. *American Economic Review*, 94(1), 218–232. <https://doi.org/10.1257/000282804322970779>.
- Kureková, L. M., Beblavý, M., & Thum-Thysen, A. (2015). Using online vacancies and web surveys to analyse the labour market: A methodological inquiry. *IZA Journal of Labor Economics*, 4, 18. <https://doi.org/10.1186/s40172-015-0034-4>.
- Marinescu, I., & Wolthoff, R. (2020). Opening the black box of the matching function: The power of words. *Journal of Labor Economics*, 38(2), 535–568. <https://doi.org/10.1086/705903>.

- Mercorio, F., & Mezzanzanica, M. (2019). *Feasibility study for Tunisia and Morocco to identify, validate and rank web job vacancy sources – practical guidance*. European Training Foundation. Retrieved 12.02.2026 from https://www.etf.europa.eu/sites/default/files/2020-11/big_data_lmi_tunisia_morocco_landscaping_ojv_sources_2019_web.pdf.
- Napierala, J. (2023). *The feasibility of using online job advertisements in analysing unmet EU demand* (Cedefop working paper No. 18). Publications Office of the European Union. Retrieved from <http://data.europa.eu/doi/10.2801/10233>.
- Petrongolo, B., & Pissarides, C. A. (2001). Looking into the black box: A survey of the matching function. *Journal of Economic Literature*, 39(2), 390–431. <https://doi.org/10.1257/jel.39.2.390>.
- Pietrucha, J., & Gulewicz, M. (2025). Measuring macroeconomic uncertainty using internet search data: The case of Poland. *Ekonomia i Prawo. Economics and Law*, 24(3), 259–278. <https://doi.org/10.12775/EiP.2025.13>.
- Rani, U., & Furrer, M. (2021). Digital labour platforms and new forms of flexible work in developing countries: Algorithmic management of work and workers. *Competition & Change*, 25(2), 212–236. <https://doi.org/10.1177/1024529420905187>.
- Sordyl, M. (2024). Labour market institutions – the problem of definition and measurement. *Ekonomia i Prawo. Economics and Law*, 23(4), 595–610. <https://doi.org/10.12775/EiP.2024.30>.
- Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355–374. <https://doi.org/10.2307/1882010>.
- Stevenson, B. (2009). The internet and job search. In D. H. Autor (Ed.), *Studies of labor market intermediation* (pp. 67–86). University of Chicago Press. <https://doi.org/10.3386/w13886>.
- Stigler, G. J. (1961). The economics of information. *Journal of Political Economy*, 69(3), 213–225. <https://doi.org/10.1086/258464>.
- Stiglitz, J. E. (1975). The theory of “screening”, education, and the distribution of income. *American Economic Review*, 65(3), 283–300.
- Turrell, A., Speigner, B., Djumalieva, J., Copple, D., & Thurgood, J. (2019). *Using job vacancies to understand the effects of labour market mismatch on UK output and productivity* (Bank of England Staff Working Paper No. 737). Bank of England. <https://doi.org/10.2139/ssrn.3210525>.
- Vankevich, A., & Kalinouskaya, I. (2021). Better understanding of the labour market using Big Data. *Ekonomia i Prawo. Economics and Law*, 20(3), 677–692. <https://doi.org/10.12775/EiP.2021.040>.
- Vankevich, E. V., & Zaitseva, O. V. (2020). Онлайн-порталы вакансий: перспективы использования в практике регулирования рынка труда Республики Беларусь [Online job portals: the future of labor market regulation in the Republic of Belarus]. *Digital transformation*, (2), 33–42. <https://doi.org/10.38086/2522-9613-2020-2-33-42>.

Zaitseva, O. V. (2025). Онлайн-источники данных о рынке труда: классификация, характеристик и подходы [Online labour market data sources: Classification, characteristics, and ranking approaches]. *Belarusian Economic Journal*, (3), 69–82. DOI: 10.46782/1818-4510-2025-3-69-82.

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Appendix

Table 1. Excerpt from the assessment of vacancies for the query “Programmer” on the portal rabota.by

No.	Vacancy (Organisation)	Skills Field Type (0–2)	Hard Skills (0–1)	Soft Skills (0–1)	Use of Classifier (0–1)
1	Middle Automation QA Engineer (Itransition)	2	1	1	0
2	1C Programmer (Zhofre Labortekhnika)	2	1	1	0
3	Senior Unity Developer (IkonGames LLC)	2	1	1	0
4	Intern Developer (Sintegriko LLC)	2	1	1	0
5	Middle PHP Developer (Sportdata LLC)	2	1	1	0
6	C++ Developer (Valun Soft LLC)	2	1	1	0
7	Sales Development Representative (HYPERVSN)	2	0	1	0

Source: Own preparation based on data of portal rabota.by.

Table 2. Dynamics of key indicators of the main online job portals in the Republic of Belarus, 2018–2025

Portal	Indicator	September 2018	September 2019	April 2020	July 2025	Growth rate 2025/2018, %
gsz.gov.by	Vacancies	87 613	97 678	85 402	216 263	246.8
	CVs	2 981	2 968	3 218	19 329	648.4
	Organisations	120 882	122 133	135 479	n/a	112.1 (2020 vs. 2018)
rabota.by (formerly jobs.tut.by)	Vacancies	31 165	27 766	18 848	33 129	106.3
	CVs	1.76 million	2.05 million	2.18 million	3.27 million	185.8
	Organisations	31 165	27 766	18 848	8 556	27.5



praca.by	Vacancies	10 461	15 604	14 064	15 367	146.9
	CVs	246 815	308 976	349 977	546 816	221.5
	Organisations	71 196	84 261	89 077	125 433	176.2
belmeta.com	Vacancies	n/a	122 409	70 161	130 249	106.4 (2025 vs. 2019)
	CVs	n/a	n/a	n/a	n/a	–
	Organisations	n/a	1 113	n/a	3 972	356.9 (2025 vs. 2019)

Source: Own preparation based on online portal data and Vankevich & Zaitseva (2020); Zaitseva (2025).

Table 3. Comparative dynamics of online job portal rankings calculated using the ETF methodology

Portal	Ranking 2020 (position/coefficient)	Ranking 2025 (position/coefficient)
gsz.gov.by	3 (0.871)	1 (0.184)
belmeta.com	3 (0.871)	2 (0.120)
rabota.by (formerly jobs.tut.by)	1 (0.941)	3 (0.112)
praca.by	1 (0.941)	4 (0.112)
joblab.by	1 (0.941)	5 (0.104)
riv.by	9 (0.665)	6 (0.098)
kufar.by	2 (0.918)	7 (0.097)

Source: Own preparation based on online portal data and Vankevich & Zaitseva (2020); Zaitseva (2025).

Table 4. Results of the analysis of skills data structuring on online portals in the Republic of Belarus

Analysis criterion	National Vacancy Bank (gsz.gov.by)	Rabota.by	Belmeta.com (aggregator)
Share of vacancies with dedicated structured skills fields (Type 2), %	8.0	61.0	0.0
Share of vacancies with explicit Hard Skills, %	32.0	100.0	0.0
Share of vacancies with explicit Soft Skills, %	25.0	60.0	0.0
Use of the state occupational classifier (OKRB), %	100.0	0.0	~15.0

Source: Own preparation.

Table 5. Distribution of vacancies by source of origin and legal status

Category	rabota.by, %	belmeta.com, %
Vacancies with a direct link to the State Employment Service (general procedure)	65	48
Vacancies with a “prospective” designation (lawful exemption)	20	15
Vacancies without a link and without a designation (indeterminate status)	15	37

Source: Own preparation based on online portal data and Vankevich & Zaitseva (2020); Zaitseva (2025).