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The holistic enterprise management approach: including labor migration into modeling the dynamics of the influence factors on functioning

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Today, enterprise management at all levels is focused on achieving specific goals, in particular by quickly responding to any deviations in the established indicators in order to eliminate the problem by making adequate decisions. In conditions of maximum imbalance of the economic situation in the country, which, for example, is a consequence of the latest pandemic, climate or military force majeure, the existing experience has limited effectiveness in application with regard to sustainability and inclusiveness of entities functioning. The reason is the need for a deeper understanding of the nature of the influence of a wide range of factors that will determine the further methodologically grounded and accountable course of achieving goals. The basis for a more adapted approach to management can be created by holism, which today has gone beyond the scope of a philosophical concept and practical approach in life and social sciences. The main advantage of holistic enterprise management is a generalized systematic vision of all internal and external processes, in particular, based on consideration of the different nature of the impact of the main factors. The study is based on the implications assessment related to data from the Ukrainian environment, due to the simultaneous deployment of several critical macro- and microlevel factors over demography and labor migration correspondingly. Thus, a unique situation has been created that allows testing new developments for the purpose of further improving the principles of enterprise management in other countries.

KEYWORDS

holistic enterprise management, labor migration, factors modeling, sectoral policy, cross-border collaboration

1 Introduction

The effectiveness of doing business is increasingly determined by the ability to synchronize internal business processes with changes taking place in the external and global environment. An example is COVID-19 pandemic, when the lag in digital transformation for most enterprises limited their interaction with consumers, and therefore caused a loss of position relative to competitors who were partially or fully able to interact with all counterparties in an online format. Another outcome that is only to be profoundly examined is a postponed impact of considerable pause in migration processes and presumed shift of intensive phase to post-pandemic period. Whilst in Ukraine as EU candidacy country that process is fostered by the past 3 years of full-scale military aggression, which undoubtedly caused millions of internally and externally displaced people. This circumstances had a decisive impact on all socio-economic processes not only in Ukraine, but also in the EU countries. The maximum uncertainty and critically high speed of change in the socio-economic situation on micro and macrolevels significantly reduces the previously acquired experience in managing an enterprise and drafting sectoral policies. Such conditions determine the necessity to find new, more progressive principles of management, grounded on more comprehensive and detached methodology toolkit for further investigations in the domain of complex processes that interconnect economic entities, demography, public policies and further progress regarding interdisciplinary research agenda. One of the options implemented in this study involves the use of knowledge about the holistic enterprise management approach that include labor migration into modelling the dynamics of the influence factors on functioning.

Sectoral entities as integral parts of the national economy operate within complex socio-economic and environmental systems, influenced by numerous interrelated factors such as macroeconomic conditions, population characteristics, and environmental constraints. In recent years, due to obvious reasons, labor migration has emerged as a significant driver of enterprise functioning, particularly in Ukraine where migration flows affect labor supply and skills availability. To capture this complexity, we adopt a holistic enterprise management approach that integrates diverse factors into a unified model. Notably, this study incorporates data from the State Statistics Service of Ukraine.

2 Literature review

2.1 Legal and regulatory frameworks in holistic enterprise management

The concept of holistic enterprise management emphasizes the integration of internal and external factors in guiding strategic decisions. The reviewed literature demonstrates how multiple dimensions—from legal and financial frameworks to risk and human resources management—contribute Saleh et al. (2020) explore the legal aspects of managing cryptocurrency assets within a national security framework. Although their focus is on digital assets, their discussion underlines the importance of a robust legal foundation and regulatory oversight—a principle that is equally critical in holistic management. In contexts where economic instability and rapid change are prevalent, such legal insights help

frame enterprise decisions within secure, compliant boundaries. Several studies offer a foundation for understanding and mitigating risks. Tamošiūnienė and Savčuk (2007) along with Stasytyte and Aleksienė (2015) analyze risk management practices in different organizational settings, highlighting that an enterprise's survival increasingly depends on the ability to forecast, identify, and neutralize risks. Drobyazko et al. (2020) further contribute by examining risk management within the framework of financial stability, while Karaim (2014) focuses on selecting anti-crisis management strategies. These insights collectively inform the dynamic modeling of enterprise performance in times of economic imbalance. The role of human capital and its dynamics stipulated by labor migration is central in the holistic model. Urba et al. (2022) and Chlivickas et al. (2010) provide evidence that integrating digital technologies and strategic HR management enhances organizational responsiveness and sustainability. Furthermore, Šarupičiūtė and Stankevičienė (2014) stress the critical position of HR departments across sectors, reinforcing that internal processes—especially in managing labor migration and workforce adaptation—must be holistically integrated into enterprise planning. Complementing this, Nikonenko et al. (2023) and Marchenko et al. (2023) bring to light the importance of time management and transitional strategies toward Industry 5.0, respectively, establishing a link between temporal dynamics and sustainable enterprise development. On a global level within angle of European integration, an investigation of labor demand satisfaction through migration in Bulgaria was profoundly studied by Krasteva et al. (2011). Recently, by Kotlyarevskyy et al. (2024) the challenges of international migration and sustainable development were structured on a macrolevel with interlinking towards sectoral insights.

2.2 Risk management as a strategic pillar in dynamic enterprise modeling

Existing enterprise management literature has increasingly emphasized holistic and systemic approaches, incorporating factors such as innovation, governance, and workforce development into performance models. Many recent studies apply multi-factor dynamic modeling to account for economic, social, and environmental influences on enterprise outcomes. However, these models rarely integrate labor migration as an explicit factor. Similarly, migration research typically focuses on macro-level effects (e.g., remittances, employment rates) and does not connect migration flows directly with meso- and microlevels performance. This indicates a clear research gap: there is a lack of comprehensive models linking labor migration with sectoral entities functioning.

The central research question of this study framework is: “How does including labor migration in a holistic management model influence the dynamics of the factors affecting enterprise functioning?” This reflects a gap in the literature, as existing enterprise models rarely integrate migration with other influence factors. Moreover, while a trend exists toward systemic multi-factor models of enterprise performance, the explicit inclusion of migration in enterprise analysis remains uncommon. Addressing this gap, the goal of this article is to develop and analyze a dynamic model of enterprise functioning that explicitly includes labor migration.

3 Methodology

To validate the necessity and demonstrate the possibility of applying holistic enterprise management in conditions burdened by rapid changes in external environment and business factors, the following methods were used: induction and deduction, comparison and systematization—to deepen the understanding of the principles of applying holism in enterprise management; synthesis and analysis—to quantitatively and qualitatively outline the nature of the influence of factors on the activities of the enterprise; morphological analysis—to prove the need, using the principles of holism, to observe all processes of the business environment holistically during the justification and adoption of each management decision; paired comparisons by the preference of options—to determine the significance of the influence of factors that will have a decisive impact on the activities of entities in the medium term, and therefore require constant consideration during the adoption and implementation of management decisions; graphical—for qualitative presentation of research results; abstract-logical—to form theoretical generalizations and conclusions of the study.

We begin by selecting a comprehensive set of influencing factors. Official statistical data from Ukraine (2022–2024) are used where available, supplemented by experts' values where needed. The chosen time range covers years with significant migration movements and reliable data collection. The analytical framework employs a structural (morphological) analysis scheme, combining factor categorization with expert weighting. We use the Delphi method to obtain consensus on factor relationships and importance. In two rounds of Delphi consultation, experts rated how each factor influences enterprise functioning and assigned relative weights. Because this study is model-driven, there were no direct survey respondents; instead, expert judgments replaced primary data collection.

4 Results

By 2022, Ukraine ranked 8th in the world among labor-exporting countries due to the fact that labor migration was relevant for 5–7 million citizens. The positive characteristics of the impact of this factor were formed due to the following points: an increase in the amount of remittances by labor migrants, which in 2021 reached 15.02 billion US dollars (for comparison, in 2015 this amount was only 7.0 billion US dollars), which was 17 times greater than total foreign investments and ensured the stabilization of the national economy; income from labor migrants reduced the severity of social problems for their families, since in the income structure such incomes averaged up to 42.6%; there was a decrease in the unemployment rate. Positive characteristics were also accompanied by the following negative ones: Ukraine annually spent up to 5% of GDP on the education system, and during mass emigration, the knowledge gained was used to create added value in another economy; deepening of the demographic crisis due to an increase in divorces and a decrease in the birth rate.

Importing countries, and we are focusing primarily on EU countries, in particular with better prospects for sustainable development of human capital and inclusive migration policies, were also marked by a dual impact of labor migration. The positive characteristic can be considered: an increase in the quality of the labor

market supply with the transformation of labor migration into emigration, which contributes to the improvement of the demographic situation. The negative characteristic is: an increase in the burden on social infrastructure and a worsening of the social cohesion.

For Ukrainian labor migrants, the following were and remain stimulating, and therefore positive: a higher level of wages (for example, compared to Poland, the difference is three times, and compared to Germany - 6.5 times). The negative characteristic can be considered: involvement in low-skilled jobs with the inability to apply the acquired knowledge; physical exertion, which provokes the occurrence of chronic diseases with limited access to the health care system; loss of contact with family members, which creates a problem of upbringing act without proper parental care.

Regarding Ukrainian enterprises, the following positive characteristics of labor migration can be distinguished: employees who have worked for a certain time outside the country gain valuable experience of working in conditions of higher technological development of production, and therefore there are fewer investments in human capital at the corporate level. Negative ones are the shortage of qualified personnel and the need to increase labor costs in conditions of competition for labor with foreign entities.

Foreign enterprises have the opportunity to use cheaper labor from among labor migrants, and therefore raise the level of labor at a slower pace. The negative characteristic is formed due to the problems of social adaptation of labor migrants and personnel turnover due to the constant search for better options for realizing personal potential without being tied to a permanent place of residence.

In general, we demonstrate that in relation to each subject of interaction, it is possible and necessary to consider the distinctive nature of the action of a certain factor. Holistic management is not limited to identifying and tracking changes in the influence of a factor on the enterprise. It is necessary to form a holistic vision, that is, the manifestations of the factor in relation to all subjects in order to understand their further activity, which is the necessary basis for making management decisions. That is, the decision is made not on the basis of the current situation, but on how the activity of all subjects may change in the short and medium term. Yes, it must be agreed that such management principles are an order of magnitude more complicated than the approach common today, when there is a problem, solution options are formed, the best alternative according to a certain criterion is chosen, and the level of achievement of the set tasks is subsequently assessed based on the available additional costs. Holistic management is based on the initial problem, but then an additional idea is formed about the current and possible activity of all subjects of the process. This is logical, since the result is determined by both the actions of the enterprise and all other interaction subjects. When considering labor migration, we also emphasized another important parameter: the simultaneous positive and negative impact of a factor. This reflects the basic principle of holism, that is, a holistic view of all spectra. Thus, each of the characteristics has a different intensity of action, so they need to be distinguished with the subsequent establishment of the significance of the cumulative effect. In the conditions of an individual enterprise, it is extremely difficult to model such complex systems that would simultaneously take into account the different nature of the impact of the main factors on all subjects of the interaction process. Therefore, at the initial level, it is advisable to conduct modeling directly for the enterprise, and then,

based on the established priority, consider possible grounds for strengthening or weakening a limited number of factors at the expense of other variables. A certain simplification allows you to maintain a vision of all integrity when processing a fairly limited amount of information. It should be recalled that the desire for maximum accumulation of information is not justified, since as such it complicates the decision-making process. The above addition is also based on the fact that all factors are interconnected, that is, paying attention to a limited number of priority ones, the effect of less important ones will be indirectly taken into account.

First of all, we will emphasize that we will consider the impact of military situation directly in relation to the enterprise, specifying their nature, as well as indirectly indicating the connection with other factors. We will make a reservation that every war entails the population and material losses, deterioration of the environmental situation, and inhibition of processes that should contribute to achieving Sustainable Development Goals. The large-scale military aggression in Ukraine is estimated since February 2022 and has been ongoing for the past 3 years. This does not allow us to determine any total losses, but it is indicative that GDP in 2022 decreased by 29.1%.

In conclusion, we state that to substantiate the theoretical principles of the use of holistic enterprise management, we considered two factors: labor migration and military situation. The results obtained demonstrate both relevant options for influence and connections with other factors. We will prove the possibility of practical application by mathematical modeling. The caveat is that we are talking about demonstrating a somewhat simplified version, based on the format of publishing the results. At the same time, the advantage is to take into account the operating conditions of Ukrainian enterprises, which are characterized by maximum dynamism and the influence of a wide range of factors, but this provides developments that will be appropriate even in a more sustainable economies.

The purpose of modelling is to establish a list of key factors, understand the nature of the significance of their simultaneous influence to form the necessary basics for elaboration of policies and applied managerial decisions. The key difference is in the practical application of the principles of holism in relation to management.

What is new is the conscious vision of the need to take into account not only key factors, but also the distinction between the intensity of their influence and the nature, when the latter can be both positive and negative in relation to various aspects of the functioning of a particular enterprise. There is a generalization of these basic considerations graphically in Figure 1.

Achieving the task, i.e., forming an analytical toolkit for elaboration of policies and making management decisions, requires the sequential implementation of three steps. The first step is to evaluate alternative scenarios. The experts involved $n = \frac{n \times (n-1)}{2}$ in the assessment need to make comparisons, where is the number of criteria at the same level. In our case, we are talking about five possible options for changing the influence of each factor that dominates the formation of the conditions for the functioning of each enterprise, respectively, it is necessary to make 10 comparisons of different pairs of such changes.

When establishing a matrix of pairwise comparisons of cases of changing the influence of the main factors, they were compared in pairs in relation to the general goal—maintaining the sustainable development prospects and stability of the entities in the conditions of the most dynamic operating environment based on the adoption of qualitatively prepared sectoral policies and management decisions (Table 1). The sums of the elements of the columns of the matrix of pairwise comparisons of threats can be seen in Tables 2, 3.

The second step is to compare alternative scenarios. Since there are eight main factors and five options for changing their influence in the hierarchy, it is necessary to conduct, $n \times \frac{m \times (m-1)}{2}$ where is the number of alternatives, that is, it is necessary to compare 140 options for the development of the situation (Tables 4–12).

Options for the development of the situation (alternative development scenarios) are compared for each of the criteria. In this case, there is only one level of criteria, so a pairwise comparison of alternatives is carried out for each of the eight criteria (see Tables 4, 7, 10).

The same was done for PV (+) and NV (–), and grounded on the intermediate calculations that moves on to the next stage.

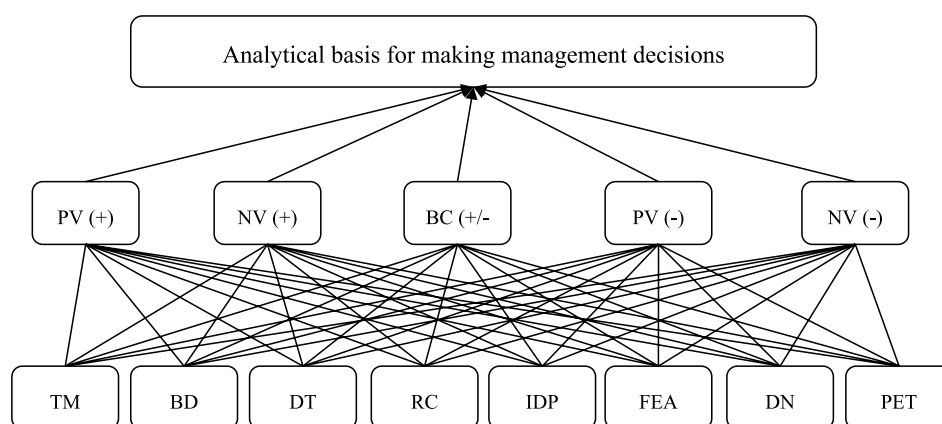


FIGURE 1

Modeling the significance and nature of the impact of factors on enterprise management where PV—positive impact; NV—negative impact; BC—lack of change; TM—labor migration; BD—military situation; DT—digital transformation; RC—refugees outside the country; IDP—internally displaced persons; FEA—foreign economic activity; DN—population well-being; PET—political instability and economic transformations.

TABLE 1 Matrix of pairwise comparisons of alternative scenarios for the development of the situation.

	PV (+)	NV (+)	BC	PV (−)	NV (−)
PV (+)	1	1	1	1	5
NV (+)	1	1	1	1	1
BC	1	1	1	1	1
PV (−)	1	1	1	1	2
NV (−)	1/5	1	1	1/2	1

TABLE 2 The sums of the column elements of the pairwise comparison matrix, presented in the form of Table 1.

μ_3	μ_1	μ_2	μ_3	μ_4	μ_5
S_j	0.267	0.196	0.193	0.222	0.122

TABLE 3 Determination of the level of inconsistency of the pairwise comparison matrix, which is presented in the form of Table 1.

Indicator	κ_{\max}	CI	CR
Calculation results	5.289	0.072	0.064

CI—consistency index; CR—consistency ratio. These are standard AHP measures used to assess the reliability of judgments in the pairwise comparison matrices. A $CR \leq 0.1$ indicates acceptable consistency.

TABLE 4 Matrix of pairwise comparisons of factors with increasing positive influence.

NV (+)	TV	BD	DT	RC	IDP	FEA	DN	PET
TV	1	1	2	1	4	1/3	1/2	4
BD	1	1	1	1	1	1/4	1/3	5
DT	1/2	1	1	1	1	1/6	2	7
RC	1	1	1	1	1	1/5	1/4	4
IDP	1/4	1	1	2	1	1/7	1/6	8
FEA	3	4	6	5	7	1	3	6
DN	2	3	1/2	4	6	1/3	1	5
PET	1/4	1/5	1/6	1/4	1/8	1/6	1/5	1

TABLE 5 The sums of the column elements of the pairwise comparison matrix, presented in the form of Table 4.

λ_j	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_{17}	λ_{18}
S_j	0.117	0.085	0.096	0.077	0.064	0.368	0.172	0.021

TABLE 6 Determination of the level of inconsistency of the pairwise comparison matrix, which is presented in the form of Table 4.

Indicator	κ_{\max}	CI	CR
Calculation results	8,986	0,141	0,099

The third step is the synthesis of priorities. Establishing the level of influence of a certain factor on the enterprise management process (synthesis of priorities) β is carried out according to the formula.

TABLE 7 Matrix of pairwise comparisons of factors with increasing negative impact.

PV (+)	TV	BD	DT	RC	IDP	FEA	DN	PET
TV	1	2	3	7	4	5	8	9
BD	1/2	1	2	6	3	4	7	8
DT	1/3	1/2	1	5	1	3	6	7
RC	1/7	1/6	1/5	1	1	1	2	3
IDP	1/4	1/3	1	1	1	2	5	6
FEA	1/5	1/4	1/3	1	1/2	1	4	5
DN	1/8	1/7	1/6	1/2	1/5	1/4	1	4
PET	1/9	1/8	1/7	1/3	1/6	1/5	1/4	1

TABLE 8 The sums of the column elements of the pairwise comparison matrix, presented in the form of Table 7.

λ_j	λ_{21}	λ_{22}	λ_{23}	λ_{24}	λ_{25}	λ_{26}	λ_{27}	λ_{28}
S_j	0,039	0,238	0,151	0,054	0,103	0,067	0,030	0,018

TABLE 9 Determination of the level of inconsistency of the pairwise comparison matrix, which is presented in the form of Table 7.

Indicator	κ_{\max}	CI	CR
Calculation results	8,505	0,072	0,051

TABLE 10 Matrix of pairwise comparisons of factors with constant influence.

BC	TV	BD	DT	RC	IDP	FEA	DN	PET
TV	1	2	4	3	5	7	6	8
BD	1/2	1	3	6	4	2	5	5
DT	1/4	1/3	1	4	2	2	3	3
RC	1/3	1/6	1/4	1	1/3	1/5	2	1
IDP	1/5	1/4	1/2	3	1	1/3	2	2
FEA	1/7	1/2	1/2	5	3	1	4	4
DN	1/6	1/5	1/3	1/2	1/2	1/4	1	1
PET	1/8	1/5	1/3	1	1/2	1/4	1	1

TABLE 11 The sums of the column elements of the pairwise comparison matrix, presented in the form of Table 10.

λ_j	λ_{31}	λ_{32}	λ_{33}	λ_{34}	λ_{35}	λ_{36}	λ_{37}	λ_{38}
S_j	0.345	0.231	0.123	0.041	0.068	0.0118	0.036	0.038

TABLE 12 Determination of the level of inconsistency of the pairwise comparison matrix, which is presented in the form of Table 10.

Indicator	κ_{\max}	CI	CR
Calculation results	8.596	0.0856	0.060

We have the following system of equations for calculating the values of priorities for all scenarios:

$$\beta_1 = \mu_1 \times \lambda_{11} + \mu_2 \times \lambda_{21} + \mu_3 \times \lambda_{31} + \mu_4 \times \lambda_{41} + \mu_5 \times \lambda_{51};$$

$$\beta_8 = 0,267 \times 0,021 + 0,196 \times 0,018 + 0,193 \times 0,038 \\ + 0,222 \times 0,028 + 0,122 \times 0,045 = 0,029$$

$$\beta_2 = \mu_1 \times \lambda_{12} + \mu_2 \times \lambda_{22} + \mu_3 \times \lambda_{32} + \mu_4 \times \lambda_{42} + \mu_5 \times \lambda_{52};$$

$$\beta_3 = \mu_1 \times \lambda_{13} + \mu_2 \times \lambda_{23} + \mu_3 \times \lambda_{33} + \mu_4 \times \lambda_{43} + \mu_5 \times \lambda_{53};$$

$$\beta_4 = \mu_1 \times \lambda_{14} + \mu_2 \times \lambda_{24} + \mu_3 \times \lambda_{34} + \mu_4 \times \lambda_{44} + \mu_5 \times \lambda_{54};$$

$$\beta_5 = \mu_1 \times \lambda_{15} + \mu_2 \times \lambda_{25} + \mu_3 \times \lambda_{35} + \mu_4 \times \lambda_{45} + \mu_5 \times \lambda_{55};$$

$$\beta_6 = \mu_1 \times \lambda_{16} + \mu_2 \times \lambda_{26} + \mu_3 \times \lambda_{36} + \mu_4 \times \lambda_{46} + \mu_5 \times \lambda_{56};$$

$$\beta_7 = \mu_1 \times \lambda_{17} + \mu_2 \times \lambda_{27} + \mu_3 \times \lambda_{37} + \mu_4 \times \lambda_{47} + \mu_5 \times \lambda_{57};$$

$$\beta_8 = \mu_1 \times \lambda_{18} + \mu_2 \times \lambda_{28} + \mu_3 \times \lambda_{38} + \mu_4 \times \lambda_{48} + \mu_5 \times \lambda_{58};$$

Substituting the corresponding values from [Tables 1, 5, 8, 11](#) into the system of equations, we obtain the following priority values for all the scenarios considered:

$$\beta_1 = 0,267 \times 0,117 + 0,196 \times 0,339 + 0,193 \\ \times 0,345 + 0,222 \times 0,133 + 0,122 \times 0,221 = 0,220$$

$$\beta_2 = 0,267 \times 0,085 + 0,196 \times 0,238 + 0,193 \\ \times 0,231 + 0,222 \times 0,105 + 0,122 \times 0,183 = 0,159$$

$$\beta_3 = 0,267 \times 0,096 + 0,196 \times 0,151 + 0,193 \\ \times 0,123 + 0,222 \times 0,104 + 0,122 \times 0,163 = 0,122$$

$$\beta_4 = 0,267 \times 0,077 + 0,196 \times 0,054 + 0,193 \\ \times 0,041 + 0,222 \times 0,093 + 0,122 \times 0,073 = 0,068$$

$$\beta_5 = 0,267 \times 0,064 + 0,196 \times 0,103 + 0,193 \\ \times 0,068 + 0,222 \times 0,056 + 0,122 \times 0,146 = 0,080$$

$$\beta_6 = 0,267 \times 0,368 + 0,196 \times 0,067 + 0,193 \times 0,118 \\ + 0,222 \times 0,312 + 0,122 \times 0,109 = 0,216$$

$$\beta_7 = 0,267 \times 0,172 + 0,196 \times 0,030 + 0,193 \times 0,036 \\ + 0,222 \times 0,169 + 0,122 \times 0,060 = 0,105$$

Interpretation of the results requires a combination of the generalizations made above regarding the nature of the influence of each factor and the actual values obtained. The highest total priority is retained by such a factor as “labor migration,” since the value β_1 was 0.220. Above, we stipulated the significance of the impact of labor migration on the current phase of external and internal dynamics. Military situation had a considerable impact on the opportunities of the working-age population leaving Ukraine to participate in the labor market of the EU countries. The existing experience of Ukrainian labor migrants and the current difficult situation in the country are circumstances that must be taken into account by policy designers and enterprise managers, based on the existing attraction to the limited supply on the labor market due to the desire of the population to more profitably utilize their capacities.

5 Discussions

In the discussion chapter, the holistic management model is compared and contrasted with alternative approaches proposed in other recent studies, highlighting both commonalities and distinct differences. [Liu and Li \(2019\)](#) propose an information system for clinical pathway management that integrates knowledge management with learning organization principles. While their focus is on settings, the underlying concept of dynamic integration resonates with holistic enterprise management. Both approaches advocate for systems that are not static but adapt in real time to evolving challenges. [Kopytko et al. \(2023\)](#) provide an analysis of personnel management within the framework of safety and security in engineering enterprises, particularly under Industry 4.0 conditions. Their findings underscore the strategic role of human resource management—a theme also central to the holistic model. However, the holistic approach broadens this perspective by embedding HR considerations within a wider network of factors, including legal and risk management dimensions. The work of [Kmec \(2011\)](#) on temporal hierarchies in risk identification offers a nuanced perspective on how timing influences decision-making processes. Similarly, [Kim \(2020\)](#) examines the interplay between risk management and optimal capital structure under ambiguity. Both studies highlight the necessity of considering the temporal evolution of risks and financial parameters—a key element that the holistic management framework incorporates to address both short-term shocks and long-term strategic planning.

Comparative studies by [Petryshyn et al. \(2022\)](#), [Bazyliuk et al. \(2019\)](#), and [Sylkin et al. \(2019\)](#) focus on anti-crisis management, institutional dynamics, and the application of crisis management processes. Their analyses reveal that effective crisis management is inherently multidimensional. The holistic model builds on these findings by advocating for an integrative approach where crisis response, risk management, and sustainable development are not isolated activities but interconnected processes.

Finally, [Beglytsia et al. \(2021\)](#), [Lobanova \(2009\)](#), and [Al-Tarawneh \(2020\)](#) add depth to the discussion by addressing the ethical dimensions and the value of communication in human resources management. These works remind us that the social and ethical

implications of management practices are as vital as technical and operational considerations. The holistic approach thus not only accounts for measurable risks and processes but also integrates ethical practices and effective communication channels, ensuring that enterprise decisions are socially responsible and widely supported.

Obviously, that is a mutually challenging, but vital prospect, in a process of Ukraine accession to EU to establish simultaneously sustainable and inclusive demographic and labor migration policies that could help social and economic development with regard to national well-being and efficient sectoral management. As a prominent features for efficient uptake of such approaches, grounded on importance labor migration ratios, presented in study, there could be sustainable introduction of balanced and integrated measures as:

- cross-border unification of sectoral personnel qualifications, capacity building and trainings grades;
- institutionalization of online and distant employment capacities into a unified skills certification programs;
- initialization of sustainable procedures concerning cross-border smooth onboarding with domestic tax and social authorities;
- elaboration of labor mobility toolkit for financial services inclusion;
- establishment of bi- and multilateral regional programs of conditional-grounded labor migration;
- investigation of incentivization for official labor migration instead of gray zone practices.

To further enhance the analytical clarity of the findings, as well as prospective direction for further investigation (including highly desirable piloting and methodology probation) it would be beneficial to systematize the discussed migration-related policies in a hierarchical generalized classification on the national, bilateral and regional/European level. Whereas, an impactful and efficient policy design, eventually, should be anticipated as a blended toolkit of mentioned enforcement activities. Certainly, more valid and actual outcomes should be envisaged from implementation of such methodological approach for those regional clusters being involved into EU integration processes as though their demographic, taxational, educational, labor, migration and other key policies are in a dynamic phase. Certainly, there is a long way ahead of such methodological exercises but there is a systemized and structured approach that enables further human-centered inclusive interdisciplinary research prospects and collaborations.

6 Conclusion

Holism, as a philosophical trend and applied mixture of life and social sciences, has gone through many stages of rethinking, which has allowed to expand the scope of its application. Its main advantage can be defined as a holistic vision of all internal and external processes, which allows to understand and interconnect the circumstances that have already determined the state of a certain system and will have a decisive influence in the future. At the same time, attention is focused not only on the system itself, but primarily on the entire set of determining factors, the intensity of whose influence can change. These advantages are best suited

for the purposes of enterprise management due to the high dynamics of changes in the operating environment. The conditions for doing business in turbulent, dynamic and transitive environments are characterized by critically high uncertainty, which is due not only to the further transformation of the national economies, but also to the active challenges of ecological, military and climatic essence that could influence labor migration. The formed theoretical principles of holistic management were supported by modeling, the results of which determined the list of factors that should be taken into account in a comprehensive manner during the development and implementation of management decisions in the short and medium term. The difference in the calculations is that the different characteristics of the action of each factor were taken into account, that is, both positive and negative.

The results obtained are valuable not only for domestic enterprises, but in general for decision substantiation and business governance in any complex environments, since they demonstrate an important holistic vision of all processes in critically difficult conditions of conducting activities for long-term survival. A higher level of stability of the economic situation will allow to increase and expand the horizons of modeling, that is, not to be limited to 1 year, and thus create the necessary information basis for developing inclusive accountable governance approaches in policymaking as well as sectoral management tactics and strategies.

In conclusion, this article presented a novel holistic framework for modeling enterprise functioning that explicitly incorporates labor migration alongside with others factors. These findings extend existing enterprise management literature by highlighting an under-explored influence and by illustrating the utility of the integrated approach.

6.1 Limitations

The model has not been empirically validated using direct data from companies or field studies; the analysis relies on official statistics and expert judgment rather than primary surveys, which may introduce biases or oversimplifications.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Author contributions

YK: Writing – original draft, Supervision, Writing – review & editing, Conceptualization. VS: Conceptualization, Writing – review & editing, Writing – original draft. IP: Writing – original draft, Writing – review & editing, Investigation. TS: Writing – original draft, Writing – review & editing, Formal analysis, Methodology. AK: Writing – original draft, Visualization, Writing – review & editing, Validation. IB: Investigation, Writing – original draft, Writing – review & editing, Formal analysis. AS: Conceptualization, Project

administration, Writing – review & editing, Supervision, Writing – original draft.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

References

- Al-Tarawneh, K. I. (2020). Business ethics in human resources management practices and its impact on the organizational performance. *Bus. Theory Pract.* 21, 402–411. doi: 10.3846/btp.2020.11344
- Bazyliuk, V., Shtangret, A., Sylkin, O., and Bezpalko, I. (2019). Comparison of institutional dynamics of regional development publishing and printing activities in Ukraine: methodological and practical aspects. *Bus. Theory Pract.* 20, 116–122. doi: 10.3846/btp.2019.11
- Beglytsia, V., Antonova, L., Kozlova, L., Datsii, O., and Datsii, N. (2021). System of concepts communications of state institutions and society as the basis of national security and socio-economic stability. *Financ. Credit Act. Probl. Theory Pract.* 3, 549–556. doi: 10.18371/fcaptp.v3i38.237487
- Chlivickas, E., Papšienė, P., and Papšys, A. (2010). Human resources: strategic management aspects. *Bus. Manag. Econ. Eng.* 8, 51–65. doi: 10.3846/bme.2010.04
- Drobnyak, S., Barwinska-Malajowicz, A., Slusarczyk, B., Chubukova, O., and Bielialov, T. (2020). Risk management in the system of financial stability of the service enterprise. *J. Risk Financial Manag.* 28, 1214–1227. doi: 10.1002/ijfe.2471
- Karaim, M. (2014). Selection of the optimal variant of a anti-crisis management solution in the process of ensuring the economic security of a engineering enterprise. *Econ. Manage. Enterprises Engin. Industry* 4, 123–134.
- Kim, H. (2020). Risk management and optimal capital structure under ambiguity. *Financ. Res. Lett.* 40:101752. doi: 10.1016/j.frl.2020.101752
- Kmec, P. (2011). Temporal hierarchy in enterprise risk identification. *Manag. Decis.* 49, 1489–1509. doi: 10.1108/00251741111173952
- Kopytko, M., Liubokhynets, L., Kalinin, A., Sai, L., and Bala, O. (2023). Personnel management in the system of ensuring safety and security of the engineering enterprise in the conditions of industry 4.0. *Int. J. Saf. Secur. Eng.* 13, 547–554. doi: 10.18280/ijse.130317
- Kotlyarevskyy, Y., Voloshchuk, K., Bosak, A., Berest, I., Shliakhetko, V., and Karaim, M. (2024). International migration management and sustainable development: challenges against the background of increasing globalization, changes in commerce, COVID-19, and war. *J. Ecohumanism* 3, 1347–1356. doi: 10.62754/joe.v3i4.3665
- Krasteva, A., Otova, I., and Staykova, E. (2011). Satisfying labor demand through migration in Bulgaria 2004–2009. Vol. 6. European Migration Network. p. 22–35. Available online at: https://ec.europa.eu/home-affairs/sites/homeaffairs/files/what-we-do/networks/european_migration_network/reports/docs/emnstudies/labour-demand/03.bulgaria_national_report_satisfying_labour_demand_throug_migration_final_version_28january2011.pdf (Accessed March,15, 2025).
- Liu, J. L., and Li, K. (2019). An information system of clinical pathway management based on the integration between knowledge management and learning organization. *Ingénierie Systèmes Inform.* 24, 473–480. doi: 10.18280/isi.240503
- Lobanova, L. (2009). Human resources management value in knowledge-based society. *Bus. Theory Pract.* 10, 233–246. doi: 10.3846/1648-0627.2009.10.233-246
- Marchenko, O., Guk, O., Borutska, Y., Pacheva, N., and Zaichenko, V. (2023). Ensuring sustainable development of the enterprise during the transition to industry 5.0. *Int. J. Sustain. Dev. Plann.* 18, 1149–1154. doi: 10.18280/ijssdp.180418
- Nikonenko, U., Maksymenko, D., Holovachko, V., Golubka, Y., and Guk, O. (2023). Accounting and auditing time management: a model for enterprise sustainable development planning. *Int. J. Sustain. Dev. Plann.* 18, 2883–2889. doi: 10.18280/ijssdp.180926
- Petryshyn, N., Mykytyn, O., Malinowska, O., Khalina, O., and Kirichenko, O. (2022). Risk management system at an engineering enterprise in conditions of ensuring security. *Int. J. Saf. Secur. Eng.* 12, 525–531. doi: 10.18280/ijse.120414
- Saleh, A. J., Alazzam, F. A. F., Khalaf, K., and Zavalna, Z. (2020). Legal aspects of the management of cryptocurrency assets in the national security system. *J. Secur. Sustain. Issues* 10, 235–247. doi: 10.9770/jssi.2020.10.1(17)
- Šarupičiūtė, J., and Stankevičienė, A. (2014). The place of human resource management department in private and public sector organisations in Lithuania. *Bus. Theory Pract.* 15, 93–102. doi: 10.3846/btp.2014.09
- Stasytyte, V., and Aleksienė, L. (2015). Operational risk assessment and management in small and medium-sized enterprises. *Bus. Theory Pract.* 16, 140–148. doi: 10.3846/btp.2015.568
- Sylkin, O., Kryshchanovych, M., Zachepa, A., Bilous, S., and Krasko, A. (2019). Modeling the process of applying anti-crisis management in the system of ensuring financial security of the enterprise. *Bus. Theory Pract.* 20, 446–455. doi: 10.3846/btp.2019.41
- Tamošiūnienė, R., and Savčuk, O. (2007). Risk management in Lithuanian organizations - relation with internal audit and financial statements quality. *Bus. Theory Pract.* 8, 204–213. doi: 10.3846/btp.2007.29
- Urba, S., Chervona, O., Panchenko, V., Artemenko, L., and Guk, O. (2022). Features of the application of digital technologies for human resources management of an engineering enterprise. *Ingénierie Systèmes Inform.* 27, 205–211. doi: 10.18280/isi.270204

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