МАТЕМАТИЧНІ МЕТОДИ, МОДЕЛІ ТА ІНФОРМАЦІЙНІ ТЕХНОЛОГІЇ В ЕКОНОМІЦІ

DOI: https://doi.org/10.35774/econa2023.04.090 **JEL classification: C10, J24, O15**
UDC: 330.3:331

Olena TROFYMENKO
Doctor of Economic Sciences,
Professor,
Professor of the Department of Economic Cybernetics,
National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Ukraine
E-mail: o.o.trofymenko@gmail.com
ORCID ID: 0000-0002-2339-0377
ResearcherID: ABC-8040-2021
Scopus ID: 57223939703

Zhanna CHERNOUSOVA
Candidate of physical and mathematical sciences,
Associate Professor,
Associate Professor of the Department of Economic Cybernetics,
National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Ukraine
E-mail: zh.chernousova@gmail.com
https://orcid.org/0000-0003-0769-9048

Yaroslav SHMALII
National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Ukraine
E-mail: esmirnov067@gmail.com

THE USE OF TAXONOMIC ANALYSIS FOR THE PURPOSES OF HR ANALYTICS

Abstract
The article is devoted to the study of the effectiveness of an enterprise's HR strategy, taking into consideration the conditions of digitalization by applying taxonomic analysis as a component of HR analytics. The research is based on the HR concept of a new type according to the maturity model of HR-analytics, which determines the directions of support for systematic analytics and the implementation of its goals regarding the basis for making effective management decisions. The directions of applying taxonomic analysis in various areas are analyzed, in particular, to determine the level of solvency, to assess a company's development strategy, to study the effectiveness of management of the economic potential of enterprises, to assess the ability of an enterprise to implement an innovative strategy, etc. The expediency of implementing the taxonomic analysis method in the field of HR analytics, taking into account digitalization factors and HR metrics, is substantiated. Nine indicators are chosen for the calculation of the taxonomic indicator, namely: an ICTS subindex of the Global Innovation Index and investments in software and databases in Ukraine, which made it possible to take into account the external factors of digitization;

Received: 04.11.2023 **Accepted:** 01.12.2023 **Published:** 06.12.2023

Cite as: Trofymenko, O., Chernousova, Z., and Shmalii, Y. (2023). The use of taxonomic analysis for the purposes of HR analytics. *Economic analysis,* 33 (4), 90-98. DOI: https://doi.org/10.35774/econa2023.04.090

return on capital as an internal factor in digitalization; the staff turnover ratio, the level of working time loss, the average length of service, the average salary at the enterprise, profit per employee. According to the methodology, the researched indicators of the effectiveness of the HR strategy in the conditions of digitalization are divided into stimulators and destimulators. A graphic representation of the dynamics of the taxonomic indicator of the HR strategy effectiveness is given for the period from 2013 to 2022. It is recommended to implement targeted approaches to building a road map of HR digitalization, which will increase the efficiency of personnel management processes.

Keywords: HR analytics; digitalization; HR strategy; taxonomic analysis.

Introduction

In the conditions of the development of digitalization, the formation of Industry 4.0, 5.0, approaches to business process management, in particular, to personnel management, are changing. Thus, one of the modern concepts is the idea of Smart Human Resources 4.0 (SHR 4.0), which is a component of Industry 4.0. It is characterized by the use of digital technologies, the Internet of Things, big data, analytics and artificial intelligence, high-speed computing systems in personnel management. This determines the evolution of approaches to ensuring personnel management, in particular, the need to implement HR analytics to make effective decisions on devising an HR strategy. For instance, the maturity model of HR analytics, developed by Dirk Jonker, an expert in the field of personnel analytics and the founder of the Crunchr company, provides for the following stages of analytics development: 1) tactical HR, which involves the use of situational reporting; 2) operational HR, which involves the implementation of systematic reporting; 3) strategic HR, which presupposes the implementation of situational analytics; 4) HR of a new type, which involves the introduction of systematic analytics with a combination of a commercial approach to strategic decision-making, which will assist in keeping the direction of the functional HR strategy to ensure the profitability of an enterprise in general. That is why this study is based on the HR concept of a new type, and determines the directions for supporting systematic analytics and implementing its goals to help make effective management decisions. It is proposed to implement the method of taxonomic analysis to identify the effectiveness of a company's HR strategy based on HR metrics, as well as internal and external digitalization factors that positively affect the development of the company's HR analytics.

The method of taxonomic analysis for the purposes of economic research has been used in many works of Ukrainian researchers. For example, in his work [1] Pliuta V. noted that due to the fact that most economic phenomena are characterized by a multitude of different signs, the application of traditional methods becomes impossible, and then the taxonomy method is proposed. Sablina N. V. and Telychko V. A. used the taxonomy method to analyze the enterprise's internal resources [2]. Ivakhnenko I. S. in his work [3] proposed using the taxonomy method to determine the level of solvency of an enterprise. The scientific and methodological approach to the taxonomic assessment of the development strategy of alternative energy enterprises was developed by Klymchuk S. A. in [4]. Syrvetnyk-Tsarii V. V. and Duliaba N. I. [5] studied the use of taxonomic analysis for assessing the effectiveness of management of the economic potential of consumer cooperative trade enterprises. In his scientific article [6], Mykhailyk O. M. employed the taxonomy method to analyze the dynamics of a construction company's performance indicators and indicators characterizing the structure of its capital. The ability of enterprises to implement an innovative development strategy was assessed through the taxonomy method by Chaikovskyi Ye. O. in his work [7].

The taxonomy method for analyzing banks' financial security was applied by Davydenko D. A. in [8]. The work [9] described the financial potential of an enterprise's development on the basis of taxonomic analysis. Ivanova N. S. evaluated the ranking of types of economic activity of Ukraine with the help of taxonomic analysis [10]. Naumova M. A. and Liubinchak K. R. [11] conducted a taxonomic analysis of the state

of the labor market in the regions of Ukraine. The taxonomy method was applied to estimate the level of protection of intellectual capital of industrial enterprises in the scientific article by Kozhushko O. [12]. In her work, Hrynkevich S. S. [13] presented an algorithm for the taxonomic analysis of the development of human capital. Rubezhanska V. O. established that the most optimal and expedient way to investigate the indicators of regional labor markets is to use the taxonomic method [14]. In her paper [15], Bolotova O. O. proposed a methodological approach at enterprises, which helps reduce a number of indicators to one, give an unambiguous assessment of the situation, and make a decision on a personnel policy by analyzing several quantitative assessments of its components. Therefore, as can be seen from the analysis of papers, the method of taxonomic analysis is widely used in the field of human capital management. However, taking into account the modern conditions of digitalization and the need to improve HR processes and HR strategies, the indicators that reflect external and internal factors in enterprise digitalization need to be updated and this will allow for a more objective analysis of the effectiveness of an enterprise's HR strategy.

Presentation of the main research material

For the taxonomic analysis of the effectiveness of the HR strategy, we have used the data of the investigated enterprise for the period from 2013 to 2022. In order to ensure the confidentiality of the data of the commercial enterprise and keep commercial secrets, this enterprise was marked 'the investigated enterprise'. At the first stage, 9 indicators were chosen for making calculations. Those indicators characterize the factors in digitalization of the external and internal environment of the enterprise under study. For instance, for analyzing the external factors in digitalization, the following indicators were selected: an ICTS indicator - a sub-index of the Global Innovation Index, which made it possible to take account of the development of information and communication technologies in Ukraine; investments in software and databases in Ukraine. Such indicators helped take into consideration the conditions of digitalization at the macroeconomic level. Among the factors of the internal environment that determine the effectiveness of the HR strategy in the conditions of digitalization, there are such HR metrics as the staff turnover ratio, the level of loss of working time, the average length of service, the average salary at the enterprise, the profit per employee, as well as the indicator of the effectiveness of the fixed assets use - return on assets, as a factor that made it possible to take into account the level of using information technologies at enterprises.

At the second stage, the values of the elements of the observation matrix were standardized. For this, the average value for each indicator was determined.

The indicators were standardized according to the formula:

$$D_i = \frac{S_i}{\underline{S}} \quad (1)$$

where S_i is the value of the *i*-th indicator (index);

$\underline{S}$ is the average value for each indicator (index).

The standardized data are summarized in Table 3.

According to the methodology, it is necessary to determine the vector standard; for this, the indicators were divided into positive and negative factors. The elements of this vector are determined using coordinates and are formed based on the values of the indicators according to formula 2:

$$\{S_{0i} = s_{ij}\ (stimulator)\ \ S_{0i} = s_{ij}\ (destimulator) \quad (2)$$

Therefore, the vector-standard has the following form

R=(1,85;1,85;1,78;0,39;0,67;1,41;1,41;1,87;1,93)

where : S_1, S_2, S_3, S_6, S_7, S_8, S_9 – stimulator (+); S_4, S_5 – destimulator (-).

Table 1. Input data for analyzing the effectiveness of the HR strategy

Indicators/ Period	Years									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Labor productivity, thous. hrn.	37,1	36,5	35,0	38,3	37,7	32,0	27,1	19,2	70,2	46,7
ICTS	35,8	36,3	36,5	35,7	37,6	38,5	37,4	36,3	35,6	74,9
Return on assets, thous. hrn.	1,20	1,117	1,085	1,160	1,099	1,200	1,033	0,706	1,380	2,166
Staff turnover ratio, %	16,67	14,29	8,33	16,00	4,35	9,38	16,67	6,90	11,43	8,33
Level of loss of working time, %	1,21	0,81	1,21	1,62	1,21	1,21	1,62	1,21	0,81	1,21
Average length of service, years	8,0	8,5	7,0	9,0	10,0	11,0	9,5	12,0	10,0	14,0
Average salary thous. hrn.	14,37	17,49	16,17	15,37	15,10	9,87	10,33	9,39	12,08	19,69
Profit per employee, thous. hrn	5,23	40,77	40,76	34,30	24,72	14,34	8,60	4,72	43,39	15,24
Investment in software and databases	3478	3207	4908	6316	8196	9476	10215	12411	16644	11568

Table 2. An average value for each indicator of the HR strategy effectiveness

Index (indicator of the economic security system), S_i	Average value (Scep)
Labor productivity, thous. hrn.	38,0
ICTS	40,5
Return on assets, thous. hrn.	1,2
Staff turnover ratio, %	11,2
Level of working time loss, %	1,2
Average length of service, years	9,9
Average salary	14,0
Profit per employee	23,2
Investments in software and databases	8642,0

Table 3. Standardized indicators (indices) of the HR strategy effectiveness

Indices-indicators /Standardised values	*S1*	*S2*	*S3*	*S4*	*S5*	*S6*	*S7*	*S8*	*S9*
D_{2013}	0,98	0,88	0,99	1,48	1,00	0,81	1,03	0,23	0,40
D_{2014}	0,96	0,90	0,92	1,27	0,67	0,86	1,25	1,76	0,37
D_{2015}	0,92	0,90	0,89	0,74	1,00	0,71	1,16	1,76	0,57
D_{2016}	1,01	0,88	0,96	1,42	1,33	0,91	1,10	1,48	0,73
D_{2017}	0,99	0,93	0,90	0,39	1,00	1,01	1,08	1,07	0,95
D_{2018}	0,84	0,95	0,99	0,83	1,00	1,11	0,71	0,62	1,10
D_{2019}	0,71	0,92	0,85	1,48	1,33	0,96	0,74	0,37	1,18
D_{2020}	0,51	0,90	0,58	0,61	1,00	1,21	0,67	0,20	1,44
D_{2021}	1,85	0,88	1,14	1,02	0,67	1,01	0,86	1,87	1,93
D_{2022}	1,23	1,85	1,78	0,74	1,00	1,41	1,41	0,66	1,34

The 3rd stage is defining destimulators and stimulators

Table 4. Division of the investigated indicators (indices) of the HR strategy effectiveness into stimulators and destimulators

Index (indicator of the HR-strategy effectiveness)	Stimulator or destimulator
S1	Stimulator
S2	Stimulator
S3	Stimulator
S4	Destimulator
S5	Destimulator
S6	Stimulator
S7	Stimulator
S8	Stimulator
S9	Stimulator

To determine the taxonomic indicator of the effectiveness of HR strategies, the distance between individual observations (periods) and the vector-standard was calculated. The distance between the point with the figure of 1 and the *R0* point is calculated using the following formula:

$$E_{i0} = \sqrt{\sum_{i=1}^{m} (D_{ij} - D_{0j})^2} \quad (3)$$

where D_{ij} is the standardized value of the j-th indicator in the *i* period ;

D_{0j} is the standardized value of the i-th indicator in the standard.

The obtained values of the distance between the point with the figure of 1 and the *R0* point were formed in Table 5.

Further, the obtained value of the distance is the starting point for calculating the indicator of the HR strategy efficiency.

The taxonomic indicator of the level of the HR strategy effectiveness was determined according to the formula:

$$F_i = 1 - v \quad (4)$$

where: *v* is the deviation of the distance between the point with the figure of 1 and R_0 from the value of the feature distance.

A number of other indicators must be identified right before making calculations. To do this, it is important to calculate the average distance using the following formula:

$$E_0 = \frac{1}{m}\sum_{i=1}^{m} E_{i0}$$

where: m is the number of periods;

E_{i0} is the distance between the point with the figure of 1 and the R_0 point.

Table 5. The value of the distance between the point with the figure of 1 and the *R0* point

The distance between the point with the figure of 1 and the *R0* point	Value
E_{2013}	3,03
E_{2014}	2,45
E_{2015}	2,28
E_{2016}	2,40
E_{2017}	2,08
E_{2018}	2,37
E_{2019}	2,85
E_{2020}	2,81
E_{2021}	1,49
E_{2022}	1,56

To calculate the average value of the square root of the mean square of the difference between the feature values, the following formula is employed:

$$Q_0 = \sqrt{\frac{1}{m}\sum} \quad (E_{i0} - \underline{E_0})^2 \qquad (6)$$

where: Q_0 is the average value of the square root of the mean square of the difference in the values of the features.

$\underline{E_0}$ is the average distance

Let us determine the distance by the formula:

$$E_0 = \underline{E_0} + 2\underline{Q_0}\, v_i = \frac{e_{i0}}{e_0} \qquad (7; 8)$$

where: v_i is the deviation of the distance between the point with the figure of 1 and the R_0 point from the value of the distance of the features;

E_0 is the distance.

The calculated values of these indicators are summarized in Table 6.

Table 6. Determination of the taxonomic indicator of the level of the HR strategy effectiveness (it is necessary to take into account the value of additional indicators).

Indicator	Value
$\underline{E_0}$	2,33
Q_0	0,49
E_0	3,31

Based on the calculations, the taxonomic indicator of the HR strategy effectiveness was identified (Fig. 1). High values of this indicator suggest high values of stimulators in specific years, and if the level of the indicator is low then the values of stimulators are low too.

On the basis of the constructed taxonomic indicator (Fig. 1), it is possible to see a complex and synthetic characteristic of the values of the features. For example, the lowest values of the HR strategy effectiveness were observed in 2013 (0.08), in 2019 (0.14) and 2020 (0.15). In general, the taxonomy coefficient of the investigated enterprise is unstable during the analyzed periods. The closer the indicator is to one, the higher the effectiveness of the HR strategy is. In 2021, the indicator reached its highest value of 0.55, while in 2013, it was the lowest - 0.08. In 2021, the indicator reached its maximum value due to the closer values of the features to the standard, which indicates that the stimulators generally increased that year.

In order to improve the effectiveness of the HR strategy, it is important to introduce strategic measures aimed at increasing the stimulator indicators and reducing the destimulator indicators. For this, in particular, it is vital to

adopt targeted approaches to building the road map of HR digitalization.

Conclusions

To ensure an effective HR strategy at the enterprise, it is essential to take into account external and internal factors influencing management decisions, and implement HR analytics, which is based on appropriate HR metrics for analysis. In this study, the authors calculated a taxonomic indicator that characterizes the overall effectiveness of the enterprise's HR strategy, taking into account internal factors that identify the efficiency of strategic planning in the field of HR and contain indicators of the security of digitalization processes at both macro and micro levels. Taxonomic analysis can be an additional method for the analysis of HR metrics at the enterprise, which will help determine the factors that need to be strengthened and, in the future, this will ensure the necessary strategic directions for their growth.

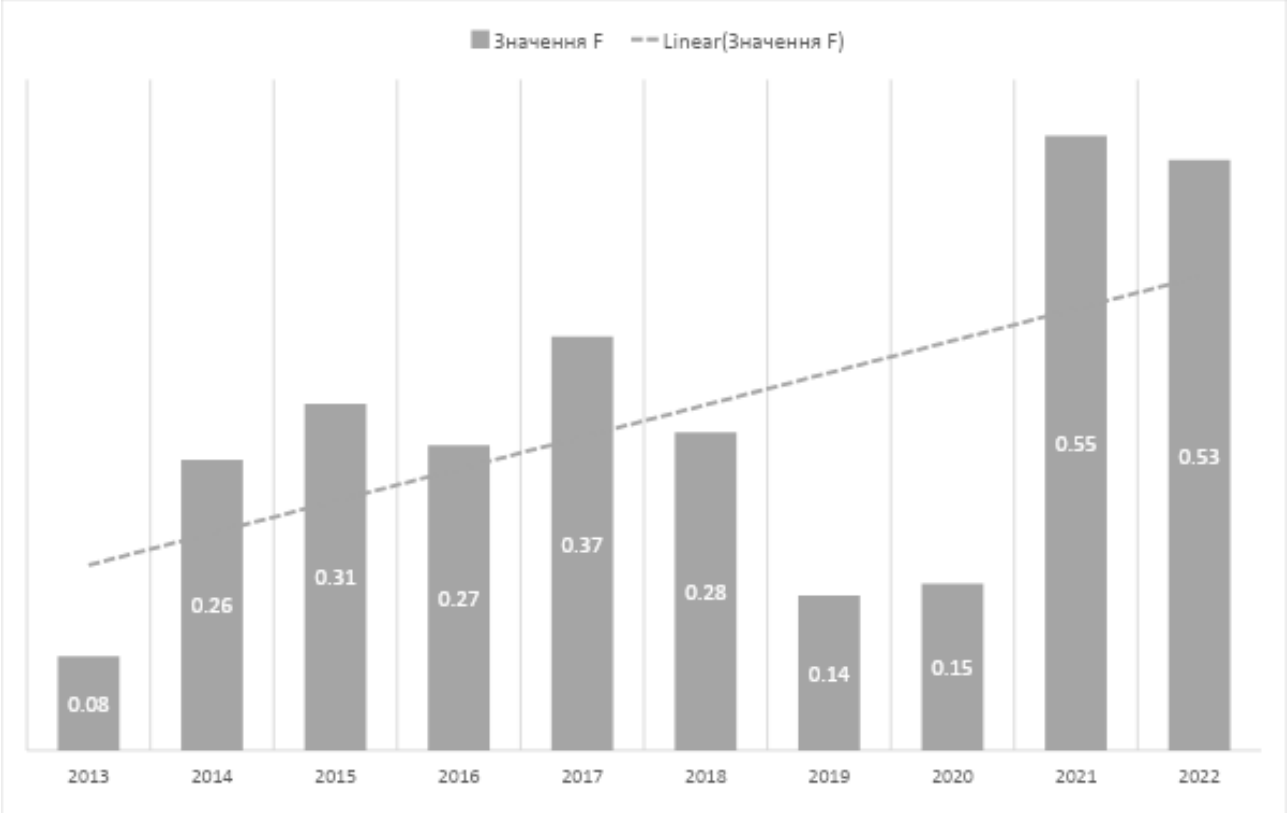

Figure 1. Dynamics of the taxonomic indicator of the level of the HR strategy effectiveness for 2013-2022

СПИСОК ВИКОРИСТАНИХ ДЖЕРЕЛ

1. Плюта В. Порівняння багатомірного аналізу в економічних дослідженнях: Методи таксономії і факторного аналізу. Статистика. 2012. 151с.
2. Саблина Н. В., Теличко В. А. Использование метода таксономии для анализа внутренних ресурсов предприятия. *Бизнес Информ*. 2009. № 3. С. 78-82.
3. Івахненко І. С. Застосування таксономічного аналізу для визначення рівня платоспроможності підприємства. URL: http://www.rusnauka.com/15_NNM_2012/Economics/10_110686.doc.htm.
4. Климчук С. А. Таксономічний аналіз стратегії розвитку підприємств альтернативної енергетики. *Економічний Вісник НТУУ «КПІ».* 2014.
5. Дуляба Н. І., Сирветник-Царій В. В. Таксономічний аналіз як інструмент виявлення можливостей забезпечення розвитку ефективності управління економічним потенціалом підприємств торгівлі споживчої кооперації. *Глобальні та національні проблеми економіки*. 2016. №9. С.419-423.

6. Михайлик О. М. Альтернативний підхід до визначення інтегрального показника оптимальної структури капіталу будівельного підприємства. *Східна Європа: економіка, бізнес та управління*. 2016. Випуск 4 (04). С.183-188.

7. Чайковський Є. О. Оцінювання ефективності реалізації інноваційної стратегії розвитку підприємств. *Сучасні проблеми економіки і підприємництво*. 2016. Випуск 18. С.81-88.

8. Давиденко Д. А. Використання метода таксономії для аналізу фінансової безпеки банку. URL: http://www.rusnauka.com/14_ENXXI_2012/Economics /1_110616.doc. htm.

9. Криховецька З. М., Щипайло С. І., Кропельницька С. О. Таксономічний аналіз фінансового потенціалу розвитку підприємства. *Економіка та держава*. 2021. № 11. С. 90-97.

10. Іванова Н. С. Оцінка рейтингу видів економічної діяльності методом таксономічного аналізу. *Ефективна економіка*. 2016. № 12.

11. Наумова М. А., Любінчак К. Р. Таксономічний аналіз стану ринку праці регіонів України. *Економіка і організація управління*. 2019. № 1 (33). С. 74-84.

12. Кожушко О. Використання методу таксономії для оцінки рівня захисту інтелектуального капіталу промислових підприємств URL: http://www.library.tane.edu.ua/images/ nauk_vydannya/5SIjDC.pdf.

13. Гринкевич С. С. Модель регулювання розвитку людського капіталу на основі таксономічного аналізу. Соціально-економічні проблеми сучасного періоду України. *Економіка та управління національним господарством.* 2015. Випуск 1 (111). С.59-65.

14. Рубежанська В. О. Методологія оцінки функціонування регіональних ринків праці з позиції системного підходу. *Науковий вісник Херсонського державного університету.* 2017. Випуск 25. Частина 2. С. 73-76.

15. Болотова О. О. Методичний підхід щодо оцінки ефективності менеджменту персоналу підприємства. *Вісник ХНТУ*. 2019. №4(71). С. 125-130.

REFERENCES

1. Pliuta, V. (2012). *Comparison of multivariate analysis in economic research: Methods of taxonomy and factor analysis*. Statistics.

2. Sablyna, N. V., and Telychko, V. A. (2009). Using the taxonomy method to analyze the enterprise's internal resources. *Business Inform*, 3, 78-82.

3. Ivakhnenko, I. S. (2012). Application of taxonomic analysis to determine the level of solvency of the enterprise. http://www.rusnauka.com/15_NNM_2012/Economics/ 10_110686.doc. htm.

4. Klymchuk, S. A. (2014). Taxonomic analysis of the development strategy of alternative energy enterprises. *Economic Bulletin of NTUU "KPI"*.

5. Duliaba, N. I., Syrvetnyk-Tsarii, V. V. (2016). Taxonomic analysis as a tool for identifying opportunities to ensure the development of the effective management of the economic potential of consumer cooperative trade enterprises. *Global and national economic problems,* 9, 419-423.

6. Mykhailyk, O. M. (2016). An alternative approach to determining the integral indicator of the optimal capital structure of a construction enterprise. *Eastern Europe: Economy, Business and Management*, 4 (04), 183-188.

7. Chaikovskyi, Ye. O. (2016). Evaluation of the effectiveness of implementing an innovative strategy of enterprises' development. *Modern problems of the economy and entrepreneurship*, 18, 81-88.

8. Davydenko, D. A. (2012*). Using the taxonomy method to analyze the bank's financial security*. http://www.rusnauka.com/14_ENXXI_2012/Economics /1_110616.doc. htm.

9. Krykhovetska, Z. M., Shchypailo, S. I., Kropelnytska, S. O. (2021). Taxonomic analysis of the financial potential of an enterprise's development. *Economy and the state*, 11, 90-97.

10. Ivanova, N. S. (2016). Evaluation of the ranking of types of economic activity using the method of taxonomic analysis. *Efficient economy,* 12.

11. Naumova, M. A., Liubinchak, K. R. (2019). Taxonomic analysis of the state of the labor market in the regions of Ukraine. *Economics and management organization*, 1 (33), 74-84.

12. Kozhushko, O. (n.d.). *Using the taxonomy method to assess the level of protection of intellectual capital of industrial enterprises*. http://www.libraru.tane.edu.ua/images/nauk_vydanny a/5SIjDC.pdf.

13. Hrynkevych, S. S. (2015). The model of regulating the development of human capital based on taxonomic analysis. *Socio-economic problems of the modern period of Ukraine. Economics and management of the national economy*, 1 (111), 59-65.

14. Rubezhanska, V. O. (2017). Methodology for evaluating the functioning of regional labor markets from the standpoint of a system approach. *Scientific Bulletin of Kherson State University*, 25(2), 73-76.

15. Bolotova, O. O. (2019). A methodological approach to assessing the effectiveness of an enterprise's personnel management. *Bulletin of Kherson National Technical University*, 4(71), 125-130.

Олена Трофименко, доктор економічних наук, професор, професор кафедри економічної кібернетики, Національний технічний університет України «Київський політехнічний інститут імені Ігоря Сікорського», Україна
Жанна Черноусова, кандидат фізико-математичних наук, доцент, доцент кафедри економічної кібернетики,
Національний технічний університет України «Київський політехнічний інститут імені Ігоря Сікорського», Україна
Ярослав Шмалій, Національний технічний університет України «Київський політехнічний інститут імені Ігоря Сікорського», Україна

ВИКОРИСТАННЯ ТАКСОНОМІЧНОГО АНАЛІЗУ ДЛЯ ЦІЛЕЙ HR-АНАЛІТИКИ

Анотація
Стаття присвячена дослідженню ефективності HR-стратегії підприємства з врахуванням умов цифровізації шляхом застосування таксономічного аналізу як складової HR-аналітики. Дослідження базується на концепції HR нового типу відповідно до моделі зрілості HR-аналітики, що визначає напрями підтримки систематичної аналітики та реалізації її цілей щодо базису у прийнятті ефективних управлінських рішень. Проаналізовано напрями застосування таксономічного аналізу в різних сферах, зокрема, для визначення рівня платоспроможності, для оцінки стратегії розвитку підприємства, для дослідження ефективності управління економічним потенціалом підприємств, для оцінювання спроможності підприємства реалізувати інноваційну стратегію та ін. Визначено доцільність реалізації методу таксономічного аналізу в сфері HR-аналітики з врахуванням факторів цифровізації та HR-метрик. Було обрано дев'ять індикаторів для проведення розрахунку таксономічного показника, а саме: субіндекс Глобального інноваційного індексу ICTS та інвестиції в програмне забезпечення та бази даних в Україні, що дозволили врахувати зовнішні фактори цифровізації; капіталовіддача як внутрішній фактор цифровізації; коефіцієнт плинності, рівень втрат робочого часу, середній стаж, середня заробітна плата на підприємстві, прибуток на одного працівника в якості HR-метрик. Відповідно до методології здійснено поділ досліджуваних показників ефективності HR-стратегії в умовах цифровізації на стимулятори та дестимулятори. Наведено графічне зображення динаміки таксономічного показника рівня ефективності HR-стратеиії а період 2013 – 2022 рр. Рекомендовано впроваджувати цільові підходи щодо побудови дорожньої карти цифровізації HR, що дозволить збільшити ефективність процесів з управління персоналом.

Ключові слова: HR-аналітика; цифровізація; HR-стратегія; таксономічний аналіз.

Як цитувати: Трофименко О., Черноусова Ж., Шмалій Я. Використання таксономічного аналізу для цілей HR-аналітики. *Економічний аналіз.* 2023. Том 33. № 4. С. 90-98. DOI: https://doi.org/10.35774/econa2023.04.090