

# QUALITY MANAGEMENT OF THE INTEGRATED DEVELOPMENT OF UKRAINIAN LIGHT INDUSTRY ENTERPRISES

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## ABSTRACT

This research aims to form a comprehensive methodological approach to assessing the quality of the integrated development of Ukrainian light industry enterprises as a groundwork for effective managerial decision-making. The methodological research toolkit includes developing an integration map, and modelling and forecasting the results of integrated development. The proposed approach enables the comprehensive evaluation of companies' integration parameters and modelling of their future effectiveness. This comprehensive evaluation helps to justify the effectiveness of management decisions and increase the quality of integrated enterprise development, as well as their performance as a whole. Based on the formed map of enterprise integration, groups of enterprises were identified: forwards, strikers, defenders, and outsiders. Using integrated development modelling, the potential quality level of a 1% cost increase in integrated development and the volumes of product sales of the surveyed companies was determined with regard to the group distribution for the period up to 2025. A considerable increase in the efficiency of integrated development is provided for the forward companies. It has been found that a high-quality level of the management of integrated development in light industry enterprises requires a longer period of time compared to other groups of enterprises due to the slow pace of reducing the cost of integrated business development.

**Keywords:** Integrated Development, Quality, Performance, Efficiency, Integration Map, Cost of Integration

DOI: <http://dx.doi.org/10.15549/jeecar.v9i4.921>

## INTRODUCTION

Business integration is already an axiomatic condition for the existence of enterprises and

markets. Meanwhile, the evolution of institutional, economic and other processes forms the prerequisites for new forms of cooperation. The pace of change in the 21st

century has increased so intensely that it has become impossible to transform the company's resources and business processes as rapidly as before (Chang et al., 2019). Technologization, the competition for the consumer, and the introduction of new social and environmental standards increase costs and require joint efforts. The transformation of markets suggests using utterly different business models, which in the long term leads to alternative strategies and ways of obtaining rents (Veile et al., 2022). In this regard, exploring the potential benefits of companies' various cooperative actions is a matter of scientific concern and is not a trivial research task. Nowadays, integration, as part of the development process, is defined as crucial in achieving a high quality of enterprises and organizational activity. To that end, the improvement of management methods and tools to increase company performance, and the establishment of areas of the practical implementation of organizational and economic mechanisms of integrated development in enterprises is aimed at increasing company competitiveness (Hrebennikova et al., 2021). Thus, the efficiency of integrated development processes of the enterprises is essentially defined by quality of actions and the interactions of control elements, both internal and external, and the external integration of its development. Therefore, there is an objective necessity to set up a modern methodological toolkit for evaluating not only the effectiveness but also the quality of this integration in order to increase the synergistic effect. The widespread adoption of business technology integration completely alters the design and management of systems, both for manufacturing and sales operations, as well as for overall business development. This necessitates a thorough examination and adjustment of operating business models in all economic sectors (Bastas and Liyanage, 2019). Meanwhile, the options for integrating business technologies and the speed with which they are implemented are primarily determined by the availability of real opportunities to quickly adapt production to changing requirements in order to maintain competitiveness while acquiring new technologies and bringing modern products to market (Botelho et al., 2021).

Our research into developing a scientific approach to assessing the efficacy of integrated enterprise development, particularly in the light industry sector, is therefore relevant. For these

reasons, the study focuses on the current integration problem of the development processes of light industry enterprises. Since the formation of a company's adaptive and flexible structure, corporate culture, self-learning ability, innovation and the introduction of modern technologies currently provide for the integration of a business processes network, there is an objective need to develop a methodological toolkit for evaluating the effectiveness of enterprise integrated development. Meanwhile, improving the management of business entity development based on the methodological approach we suggest is particularly relevant for Ukrainian enterprises in the context of increasing competition in the domestic market, globalization and the integration of Ukraine into the EU. All the above-mentioned factors have determined the purpose of this study, which is to form a complete scientific approach for evaluating the quality of Ukrainian light industrial businesses' integrated development as a basis for making effective management decisions. The study has examined the formation of a system of enterprise development indicators based on an organic combination of principles and instruments of internal and inter-firm integration. An integrated firm's activity has been proven to be ensured by the operation of mechanisms of planning, organization, motivation, and control. A collection of techniques is proposed as part of the proposed methodological approach for the interaction of internal elements and subsystems, ensuring optimal integration processes at various stages of a company's development through the synchronization of internal business processes and their consistent behavior, and the determination of the optimal management impact depending on the level of activation and implementation of integration processes. Based on the developed integration map of the light industry enterprises, taking into consideration the conducted business diagnostics, implementing the integral indicators for the economic, organizational, informational, and intellectual module, and a comprehensive performance indicator, the study proposes to identify groups of enterprises and assess the quality level of their integrated development. Based on the formed enterprise integration map, groups of enterprises are determined as follows: forwards, strikers, defenders, and outsiders. The

research suggests an approach to diagnosing the quality level of integrated development, which enables a comprehensive evaluation of the parameters of companies' integration and modelling their effectiveness in the future. The research provides a toolkit that can contribute to the justification of managerial decision-making focused on increasing the quality of integrated enterprise development and the performance of their activities.

### LITERATURE REVIEW

Currently, one of the underlying aspects of an enterprise's competitiveness and performance is its integration into the global information landscape. The transformation processes connected with creating an integrated business model aimed at knowledge-intensive production, integrated development and building of infrastructure for intellectualization, and the formation of the enterprise's information space become important (Asaul et al., 2019). Ogai et al. (2020) analyzed the advantages of integrated development within the framework of business groups, highlighting their social and economic efficiency. They explained it with the help of the integration of traditional paternalism forms with the high efficiency of business behavior of staff employed at different organizational levels within large textile companies and their smaller satellites as well. According to Downs (2018), integrative thinking is aimed at urgent business problem-solving. Alac (2018) identified the factor of integration activities as a basis for increasing the efficiency of the business decision-making process. Imamuddin (2021) defined an integrated enterprise as a company that pursues a new aim in accordance with its management strategy and operations aimed not only at integrating production but also the formation of consumer value. Ruziyeva et al. (2019) studied the effectiveness of business development based on enterprise architecture and investment role analysis, the primary goal of which is to allow the company to make strategic decisions about the future state of operations and overall development.

Complex and highly adaptive networks of partners are established to create the artworks, while each such network is supported by its own individual experience. The same holds true for the complex ecosystems emerging in industries

to find new ways to create value (Abbas et al., 2019). Companies must work jointly with a wide range of partners to combine the underlying technologies, applications, software, and services to ensure an integrated solution. The need for partnerships is intensified by rapidly changing technologies and growing consumer demands with due regard to customizing satisfaction (Hedvall et al., 2019). The best approach for companies is to intensively participate in developing a new landscape of interactions with partners and competitors. Many leading companies build partnership networks and/or join existing ones. The main challenge is to effectively form and manage ecosystems while using them to maximize value and gain a competitive advantage (Parida and Wincent, 2019).

Research which helped to determine the synergistic effect of integration became particularly popular. Bashir and Farooq (2019) considered the synergetic effect of integrating knowledge management, innovative business models, and an independent company. Khalatur et al. (2020), Trach et al. (2019), Novikova (2018) considered the synergetic effect as a result of an integrated combination of several projects, providing the maximum increase in the cost of the company. Trad and Kalpić (2020) studied the evaluation of the synergetic effect because of the integration of enterprises into a business structure. According to Azatbek et al. (2019), businesses should focus on measuring and maintaining sufficient competitive strength and intellectual growth. Ikram et al. (2018), Kaur et al. (2019), Dykan et al. (2021) considered the evaluation of the synergistic effect in the process of enterprise development from the perspective of the integration of its supply chains. Handayani and Nirwan (2019) stated that firms should pay more attention to the integrated environment and a shared understanding of customer value based on the findings from research of a logistics company.

According to Al Hadidi and Baghdadi (2019), traditional interaction is achieved with the activity's details in mind, resulting in a costly integration architecture that does not take into account the semantic part of the interaction. Samani et al. (2019) considered the integration model of enterprise development in the context of a risk-based quality management system.

There are three main directions regarding the

understanding of integrated business development in modern literature: 1) as a process of becoming a single entity (restructuring, interaction, merger, sequence of specific steps in this context) (Hughes et al., 2020); 2) as a result of interaction with other market actors (unification, system, synergetic effect) (Eggert et al., 2018); 3) as both a process and a result of interaction between companies and their stakeholders (Juntunen et al., 2019). Without reducing the value of all modern scientific works, it should be stated that the existing array of definitions does not precisely clarify what the processes of substantiating the companies' interactions and mergers are. Resources are the starting point for decision-making for integrated development (Hein et al., 2019).

It should be recognized that the nature of integration has changed significantly, as the understanding of resources has been dramatically transformed in the 21st century. In general, integrated development can be understood as a strategic process that optimizes the costs and benefits of all stakeholders by pooling resources, leading to qualitative transformations in their functioning processes (Kiesnere and Baumgartner, 2019). This definition shifts the focus towards examining the company's resources that are valuable to other participants in the cooperative process. From this standpoint, it is not the integration process itself that is important, but its economic prerequisites based on the analysis of motivation for ownership and management, and the use of resources.

Despite the active use of the term "integration" in the research, the interpretations of integrated development are multifaceted, periodically fragmented, and superficial. The expansion of the characteristics and types of integration associations, along with the described costs and benefits related to this, is steadily growing. Meanwhile, the following paradox can be noted: theorists often do not keep up with reality and are forced to describe the processes that have already taken place in the markets. Nevertheless, a general and, above all, advanced understanding of what is happening will enable the identification of effective business models for both traditional and electronic markets. Nowadays, cooperation tends to have different objectives, structures, and results than in the

past. Therefore, it becomes necessary to study integration from the perspective of a new focus, considering intelligent, integrated solutions; the goals of achieving innovative leadership and market speed; and a shift from a rigid value chain to highly adaptive ones.

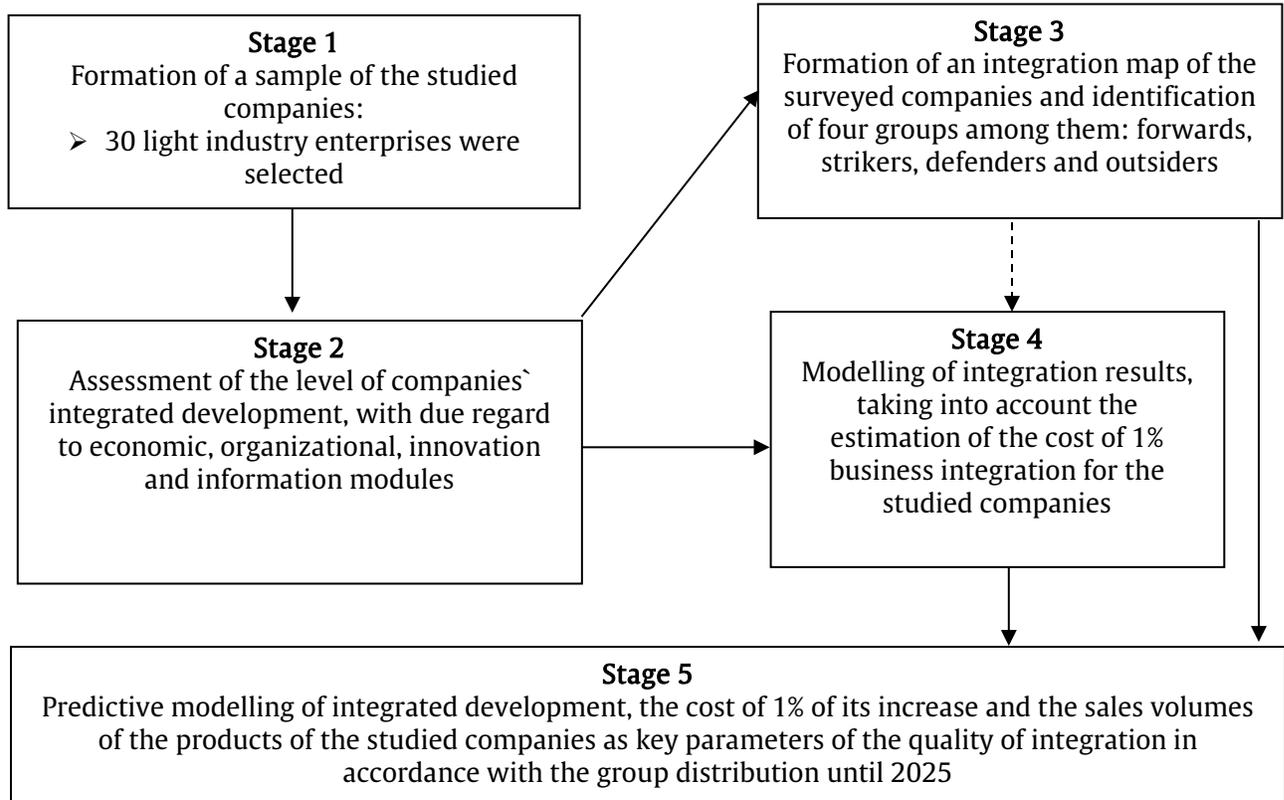
Thus, the scientific guidelines in the field of research on the integration of development are multidirectional and multidimensional. Meanwhile, the issue of assessing the quality of such a process remains insufficiently defined. Evaluating the level of integration becomes specifically important for light industry companies in Ukraine, taking into consideration the need to increase the effectiveness of their development as a whole. This necessitates the establishment of mechanisms for analysis, planning and encouraging the effectiveness of the development of light industry enterprises. Therefore, the purpose of this research is to provide a comprehensive scientific approach for evaluating the quality of the integrated development of Ukrainian light industrial businesses as a basis for making effective management decisions. And, therefore, the aim of the research is to propose an integrated methodological approach for evaluating the quality of light industry businesses' integrated development in Ukraine as a basis for effective management decisions.

## METHODOLOGY

The methodology of this study involves the application of a comprehensive diagnostic tool of the companies' development level, taking into account modelled indicators of sales volumes, the level of integration and the cost of a 1% increase for the groups of companies under study by 2025. The logic of the survey is given in Figure 1.

For the study, 30 Ukrainian light industry businesses from various sub-sectors were chosen: "Gloria", "Rosa" (Kyiv), "Strichka", "Ovetri" (Dnipropetrovsk region), "Lesia", "Arsaniya" (Zhytomyr Region), "Edelvika", "Novovolynsk garment factory" (Volyn region), "Teksterno" (Ternopil region), "Lileya", "Volodarka" (Vinnitsa Region), "Goryn" (Khmelnitsky Region), "Orion", "Fabryka Prut" (Chernivtsi region), "Kalyna", "Trottola" (Lviv region), "Tysmenytsia" (Ivano-Frankivsk region), "Rivne factory of nonwoven materials", "Rivne-Styl" (Rivne region), "Santa Ukraine" (Mykolaiv region),

"Modessa" (Odesa region), "Cherkasy silk mill" (Cherkasy region), "Shovkova nytk" (Zaporizhzhya region), "Bereginya", "Desna", "Lybid" (Chernihiv region), "Loteks", "Svit" (Poltava region), "Zoryanka", "Sabina" (Kirovograd region).



**Figure 1.** Stages of the research conduction

Source: formed by the authors

Development diagnostics were conducted for each of them based on key performance metrics for the economic, organizational, inventive, and information modules as of 2019.

The approach and methodological toolbox for measuring the success of an enterprise's integrated development are based on an integral indicator, which takes into account the component integration modules according to the formula (1):

$$Ef_{id} = \alpha \cdot Ef_{eco} + \beta \cdot Ef_{org} + \gamma \cdot Ef_{inf} + \delta \cdot Ef_{inn} \quad (1)$$

where  $Ef_{id}$  is the effectiveness of the enterprise's integrated development;  $Ef_{eco}$ ,  $Ef_{org}$ ,  $Ef_{inf}$ ,  $Ef_{inn}$  is the development efficiency in accordance with the integrated economic, organizational, informational, and innovative

module; and  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$  are the corresponding weighting coefficients of the importance of the relative indicators.  $Ef_{eco}$ ,  $Ef_{org}$ ,  $Ef_{inf}$ ,  $Ef_{inn}$ .

The evaluation of integrated development is based on measures of organizational, economic, informational, and inventive integrated module performance, the effect of which is defined by weighting variables ( $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$ ). The hierarchy analysis approach is used to assess their relative value. The essence of this strategy is the problem's hierarchical breakdown and the current rating score with alternate remedies. The creation of a set of indicators characterizing the economic, organizational, informational, and innovative integrated module's development performance is expressed through an integrated assessment that considers the total number of individual indicators, indicating the level of

development effectiveness in separate directions.

In order to determine the costs of the transition of light industry enterprises to the principles of integrated development, a modeling method was used. For 30 Ukrainian enterprises based on the developed alternative investment projects to increase the level of integration, an assessment of the possible increase in the level of savings as a result of integration and the average cost of 1% of integration for the studied companies was assessed.

The analysis of the modeling results is based on the fact that each level of integration has a beneficial amount of investment.

Econometric analysis of the results of simulation suggests that there is the following correlation between the volume of production and the level of integration for a particular option of investment (1):

$$\varphi_{\tau}(\Delta Int) = int_{0\tau} + int_{1\tau}\Delta Int \quad (1)$$

where  $\Delta Int$  is the level of integration (%);

$\tau$  is the index of the investments size option,  $\tau = 1,5$ ;

$\varphi_{\tau}(\Delta Int)$  is the volume of output for the investment size option  $\tau$ ;

$int_{0\tau}, int_{1\tau}$  are parameters of an econometric model for an integrated investment option.

According to the proposed method for constructing the integrated investment projects for the output, the expectation of the function of output volumes  $\varphi_{\tau}(\Delta Int)$  of a random variable  $\Delta Int$  with a distribution density  $f(\Delta Int)$  which, for the case of a normal distribution law, has the following form (2):

$$f(\Delta Int) = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{(\Delta Int-m)^2}{2\sigma^2}} \quad (2)$$

where  $m$  is the expectation of the savings level as a result of integration;

$\sigma$  is the average deviation of the expectation of the savings level as a result of integration.

The expectation of the function of output volumes (3):

$$M[\varphi_{\tau}(\Delta Int)] = \int_{-\infty}^{+\infty} \varphi_{\tau}(\Delta Int) f(\Delta Int) d\Delta Int \quad (3)$$

Substituting into the real limits of integration and replacing specific mathematical models, we

can get:

$$\begin{aligned} M[\varphi_{\tau}(\Delta Int)] &= \int_0^{20} (int_{0\tau} + \\ int_{1\tau}\Delta Int) &\cdot \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{(\Delta Int-m)^2}{2\sigma^2}} d\Delta Int = \\ \frac{int_{0\tau}}{\sigma\sqrt{2\pi}} &\int_0^{20} e^{-\frac{(\Delta Int-m)^2}{2\sigma^2}} d\Delta Int + \\ \frac{int_{1\tau}}{\sigma\sqrt{2\pi}} &\int_0^{20} \Delta Int e^{-\frac{(\Delta Int-m)^2}{2\sigma^2}} d\Delta Int = \\ int_{0\tau} &\left[ \varphi\left(\frac{20-m}{\sigma}\right) + \varphi\left(\frac{m}{\sigma}\right) \right] + \\ \frac{int_{1\tau}}{\sigma\sqrt{2\pi}} &\int_0^{20} \Delta Int e^{-\frac{(\Delta Int-m)^2}{2\sigma^2}} d\Delta Int \end{aligned} \quad (4)$$

where  $\varphi(y)$  is the Laplace integral function of the parameter  $y$ .

To find the integral  $\frac{1}{\sigma\sqrt{2\pi}} \int_0^{20} \Delta Int e^{-\frac{(\Delta Int-m)^2}{2\sigma^2}} d\Delta Int$ , we put  $x = \frac{\Delta Int-m}{\sigma}$  and take  $x$  for the new variable. Thus, we have  $\Delta Int = x\sigma + m$ , while  $d\Delta Int = \sigma dx$ . After replacing the variables, we get:

$$\begin{aligned} \frac{1}{\sigma\sqrt{2\pi}} \int_0^{20} \Delta Int e^{-\frac{(\Delta Int-m)^2}{2\sigma^2}} d\Delta Int &= \\ \frac{\sigma}{\sqrt{2\pi}} \int_{-m/\sigma}^{(20-m)/\sigma} (x\sigma + m) e^{-\frac{x^2}{2}} dx &= \\ \frac{\sigma}{\sqrt{2\pi}} \int_{-m/\sigma}^{(20-m)/\sigma} x\sigma e^{-\frac{x^2}{2}} dx + \frac{\alpha}{\sqrt{2\pi}} \int_{-m/\sigma}^{(20-m)/\sigma} e^{-\frac{x^2}{2}} dx &= - \\ \frac{\sigma}{\sqrt{2\pi}} \int_{\frac{m}{\sigma}}^{\frac{(20-m)}{\sigma}} e^{-\frac{x^2}{2}} d\left(-\frac{x^2}{2}\right) + m \left[ \varphi\left(\frac{20-m}{\sigma}\right) + \varphi\left(\frac{m}{\sigma}\right) \right] &= \\ \frac{\sigma}{\sqrt{2\pi}} \left[ e^{-\frac{m^2}{2\sigma^2}} - e^{-\frac{(20-m)^2}{2\sigma^2}} \right] + m \left[ \varphi\left(\frac{20-m}{\sigma}\right) + \varphi\left(\frac{m}{\sigma}\right) \right] \end{aligned} \quad (5)$$

The final formula for finding the required expectation of output is:

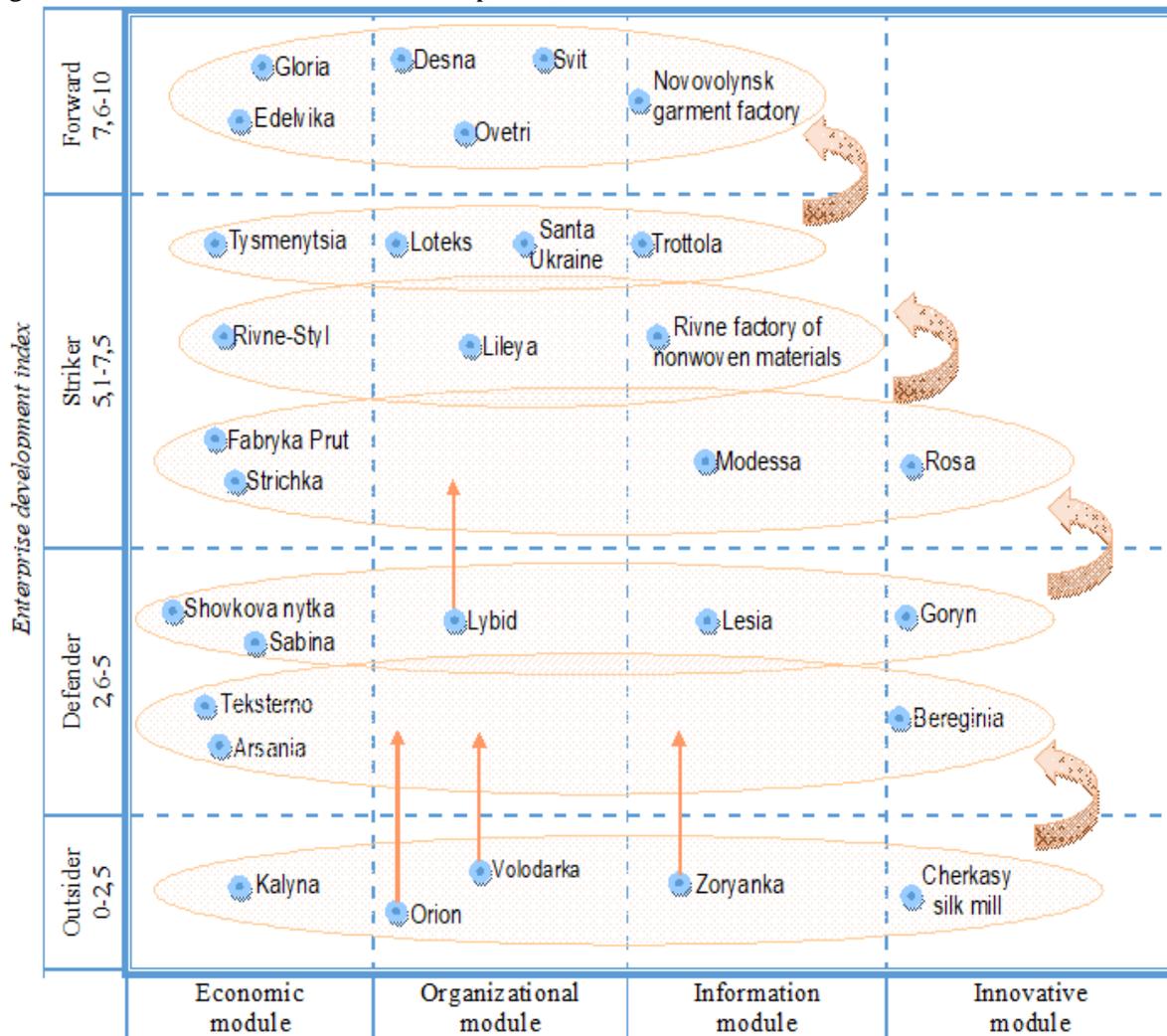
$$\begin{aligned} M_{\tau} = M[\varphi(\Delta Int)] &= int_{0\tau} \left[ \varphi\left(\frac{20-m}{\sigma}\right) + \varphi\left(\frac{m}{\sigma}\right) \right] + \\ int_{1\tau} &\left\{ m \left[ \varphi\left(\frac{20-m}{\sigma}\right) + \varphi\left(\frac{m}{\sigma}\right) \right] + \frac{\sigma}{\sqrt{2\pi}} \left( e^{-\frac{m^2}{2\sigma^2}} - \right. \right. \\ &\left. \left. e^{-\frac{(20-m)^2}{2\sigma^2}} \right) \right\} \end{aligned} \quad (6)$$

The proposed approach to defining and planning the consequences of enterprise development allows the light industry to take into consideration the determinants of integration, as well as to take measures to improve the performance of the company to create a favorable investment climate for business.

## RESULTS

A map of the integration of these companies was created based on the conducted business diagnostics of the studied companies,

determination of integrated coefficients by four modules (economic, organizational, informational, and intellectual), as well as their integrated performance indicator (Fig. 2).



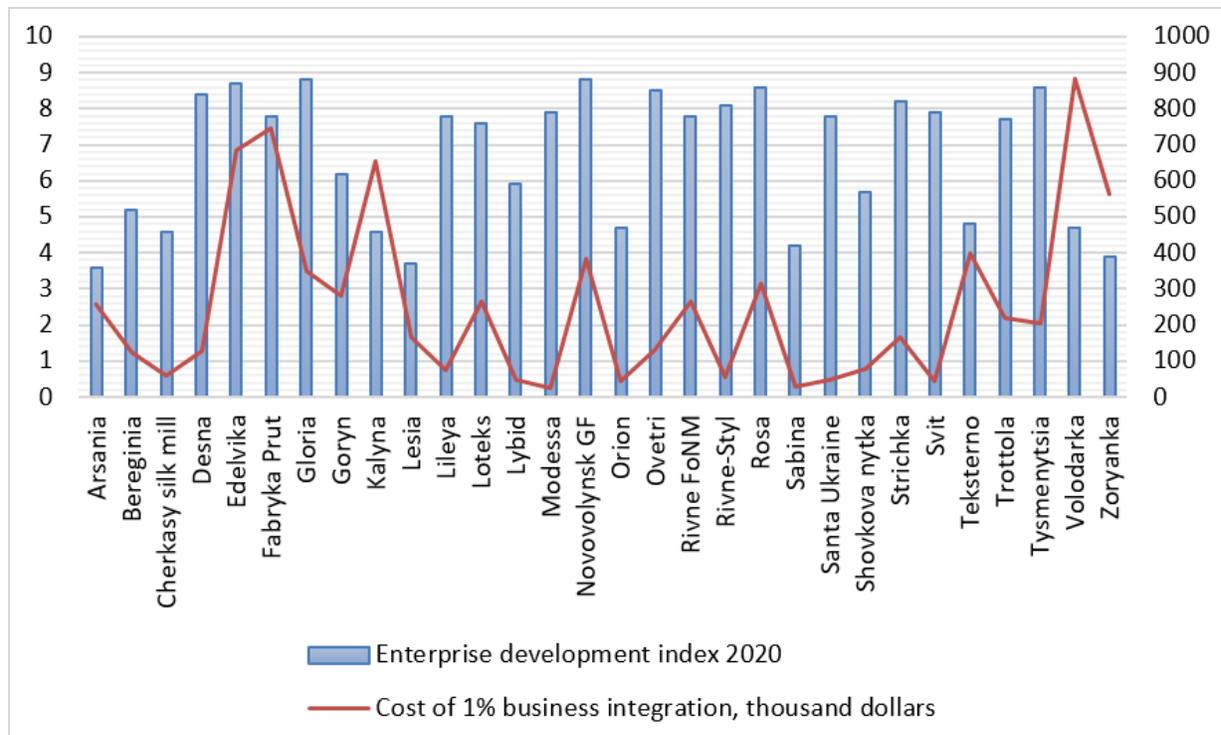
**Figure 2.** Map of the integration of the studied enterprises of the Ukrainian light industry

Source: author's development

The studied companies can significantly increase their performance by establishing integrated relationships and business processes. The peculiarity of the proposed map is determining the direction of stimulating the growth of both an individual enterprise and a group of potentially integrated partners since less developed companies cannot impact the decrease in the level of development of others during the integration process. Meanwhile, due to integration with similar economic units, they are able to achieve a greater level. When

combining them according to the suggested group distribution and calculating the integrated development index for each firm, taking into account the proposed modules, an increase in level should be seen in all enterprises.

In order to determine the quality of integration for these companies at the present stage, modelling of the coefficient of integration and, respectively, the cost of increasing 1% of business integration has been conducted (Fig. 3).



**Figure 3.** The modelled results of the integration of the investigated enterprises for 2020

Source: created by the authors

Each company has specific operational features, reflected not only in the level of integration but also in the cost of its increase. Therefore, business integration can be effective and incur low costs to increase it for one company and another; it can be quite a comprehensive and costly process. For most of the surveyed companies, the cost of increasing integration, compared to its current level, is in the range of US\$ 50,000 to 300,000. The highest cost of increasing integration belongs to the company Volodarka, with an average level of integration compared to other light industry enterprises. This is primarily due to the development of the foreign economic activity of this company, particularly exports to France, Germany, Poland, and Slovakia. Therefore, Volodarka is more focused on integrating with foreign companies for market expansion. But since this company is a part of a group of outsider companies, this area is not sufficiently justified. A similar situation is typical for Fabryka Prut, Edelvika, and Kalyna, which have close cooperation with Turkish (products import) and American and European companies (products export). It also should be noted that these companies belong to different groups on the

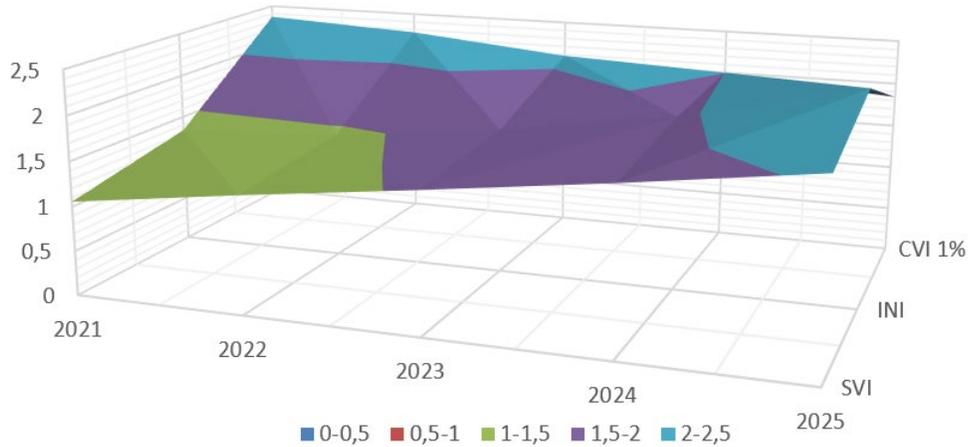
integration map: Volodarka and Kalyna – outsiders, Fabryka Prut – striker, Edelvika – forward. This confirms the lack of mutual connection between the level of development integration and the cost of its increase.

In order to determine the quality of integrated development of the studied companies in accordance with their group distribution, the anticipation of their integrated development (Integrity Index – INI), the cost of a 1% increase (Conditional value index of 1% integration – CVI 1%) and sales volumes (Sales volume index – SVI) based on the indices of these indicators resulting from changes in investment parameters has been taken into account. In this case, we consider the high level of integrated development quality from the moment SVI begins to exceed CVI, i.e., the growth rate of sales exceeds the cost of increasing the level of business integration. The simulated results on the quality of integrated development of forwarding companies are displayed in Fig. 4.

Forward companies tend to have an increase in sales due to an increase in the level of development; nevertheless, the cost of integration tends to decrease at the same time but at a very slow pace. A high level of integration

quality is forecasted only from 2024. Taking into account that these companies are the market leaders in Ukraine, they should move to international integration. This will encourage the

expansion of markets and acceleration of high-quality integrated enterprise development.

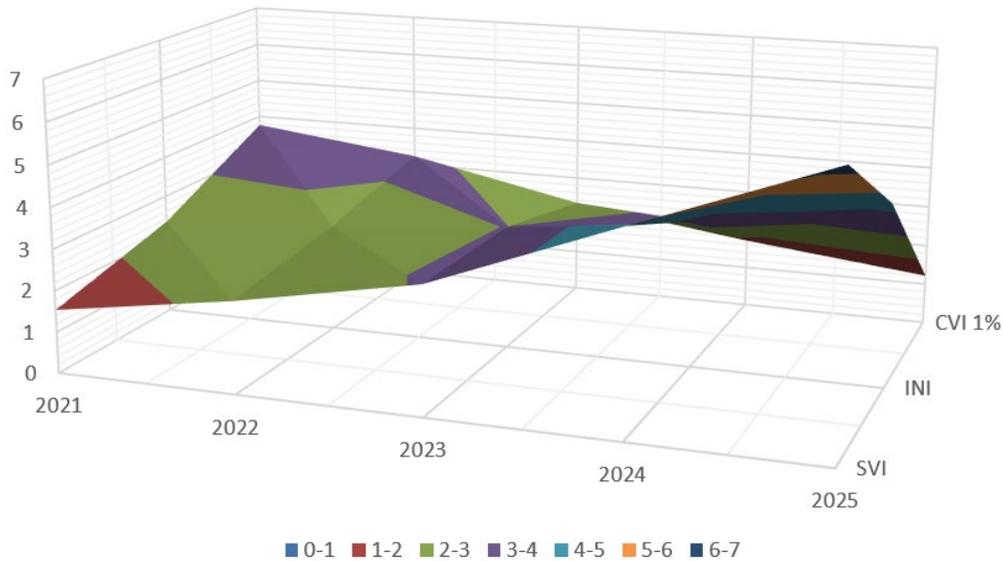


**Figure 4.** The anticipated indices of sales volumes, level of integration, and cost of 1% of its increase for the studied forward companies by 2025

Source: created by the authors

The anticipated results on the quality of integrated development of striker companies are

shown in Fig. 5.



**Figure 5.** The anticipated indices of sales volumes, level of integration, and cost of 1% increase for the studied striker companies by 2025

Source: created by the authors

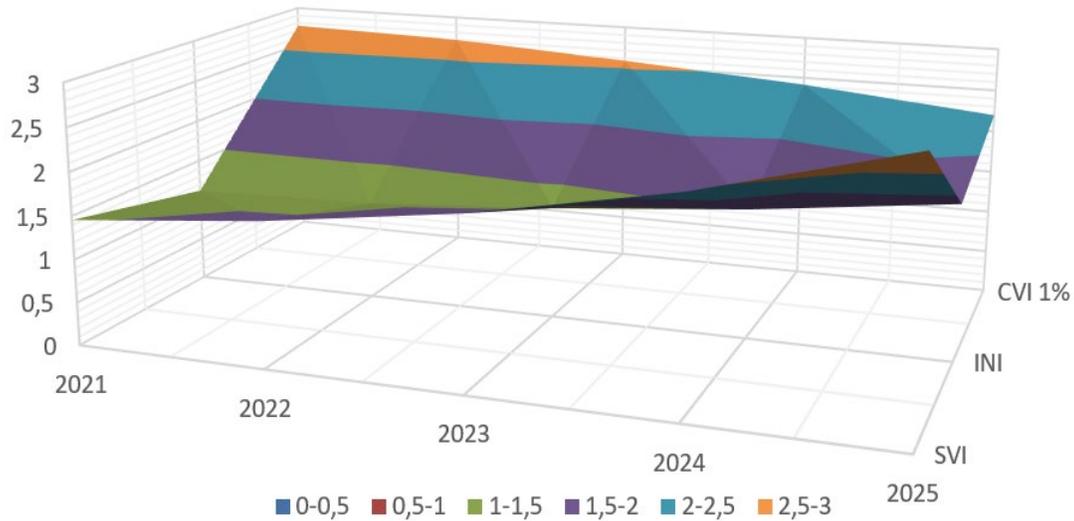
Striker companies have the opportunity to significantly increase sales as a result of the integration of their development. The mutually reinforcing potential of these companies creates a synergistic effect and promotes high-quality

integrated development in 2.5 years. That is, starting in 2023, companies can reach a qualitatively new level of development and implement joint business projects in order to move a group forward and strengthen their

foreign market position.

are shown in Fig. 6.

The anticipated results on the quality of integrated development of company defenders



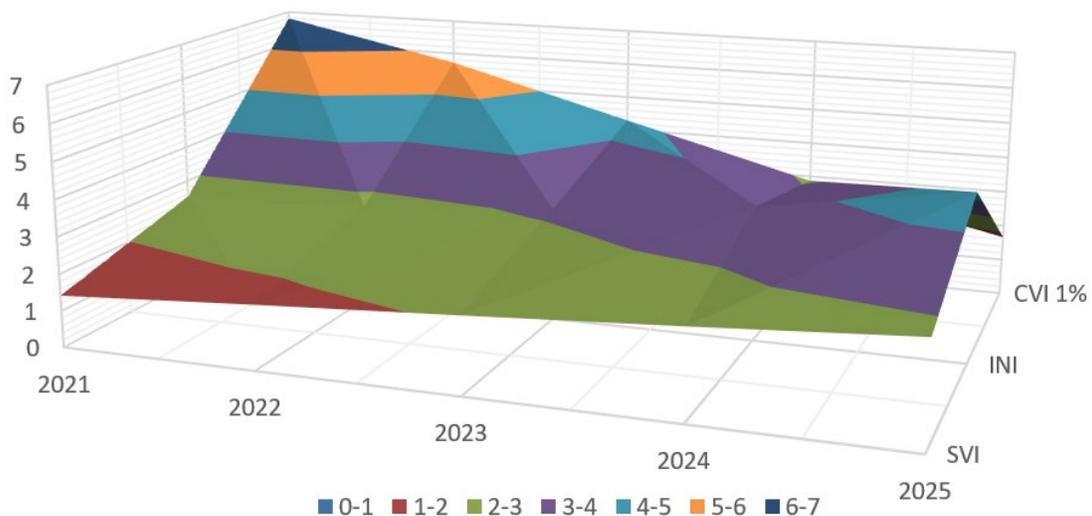
**Figure 6.** The anticipated indices of sales volumes, level of integration, and cost of 1% increase for the studied companies' defenders by 2025

Source: created by the authors

Defender companies have low growth rates in all indicators of integrated development quality. The main factor in this is the unstable position of most market companies, which affects the cost of increasing the level of development integration. Also, it can be stated from the integration map that not all integration modules have business support in this group. But in general, defender

companies can be qualitatively integrated starting from 2024.

The anticipated results on the quality of integrated development of outsider companies are shown in Fig. 7.



**Figure 7.** The anticipated indices of sales volumes, level of integration, and cost of 1% increase for the studied outsider companies by 2025

Source: created by the authors

Even though companies are outsiders, a significant increase in sales is possible due to the increase in the level of integration. Considering the high conditional cost of integration, access to the high-quality level of this process is achievable only from 2024. Meanwhile, the peculiarity of this group of companies is the possibility of some companies, namely Orion, Volodarka, and Zoryanka, to move to a group of defenders in order to fill the insufficient modules of integration.

### DISCUSSION

The advantage of this research is the proposed methodological toolkit for diagnosing the effectiveness of integrated enterprise development. Its application has demonstrated that two critical conditions previously achieved by the results of other studies are required to ensure effective enterprise development. The conditions mentioned earlier also include an effective enterprise management quality system (Alsawafi et al., 2021). Furthermore, the company requires a high or sufficient competitiveness level (Tarigan et al., 2021), as well as its investment attractiveness (Binh et al., 2020; Zholonko et al., 2021). Studies indicating that effective business development depends on the educational and professional potential of the staff include Alhusen and Benna (2021). The proposed methodological approach takes into consideration equivalent tools in four key areas and integrates them into a set of four clusters.

The universality of the approach proposed in this study is based on the fact that diagnostics do not necessarily presuppose its limitation to four modules in the process of assessing the level of business development. Their number may be larger or smaller, depending on the specifics of the company and the industry in general. At the same time, it is possible to transform the system of indicators for carrying out diagnostics of the level of enterprise development according to the selected clusters. This enables its use in light industry companies, as well as in other industries. Meanwhile, taking into account the business goals and all stakeholders, it is feasible to create a unique set of key performance indicators (Amankwah-Amoah, et al., 2019).

The orbital technique is a feature of this study. Its implementation has demonstrated how enterprises can efficiently allocate resources in the selected four clusters (Tomashuk and

Tomashuk, 2021; Khanizad and Montazer, 2021). But at the same time, companies also have the opportunity to improve the overall management level and accelerate the pace of development. Our study can be applied in strategic management, as identifying the orbital level of the company's development can provide the basis for making informed decisions and various measures to optimize the development of various enterprises.

The study can become a platform to raise top management awareness of alternative options for a business development strategy and improve strategic planning effectiveness (Zhang et al., 2021). Furthermore, the application to the work of the integrated development evaluation based on the construction of the corresponding orbital makes it possible to analyze the effectiveness of the company's development process for specific clusters holistically, compare alternative development paths, identify possible deviations in a timely manner, make adjustments, and make the necessary amendments to the enterprise's activities. This feature of the study has general directions in the context of risk management (McMaster et al., 2020).

The limitations of this study should be pointed out, however. In the context of integration, there are opportunities to analyze a particular pattern, but it is not certain that all enterprises will apply it equally or actively. Each company has its own specific internal operating environment supporting its business processes and capabilities.

### CONCLUSION AND RECOMMENDATION

The theoretical contribution of this study is the development of the integration map of light industry enterprises based on the conducted business diagnostics, the determination of integral coefficients by four intellectual modules (economic, organizational, informational, and intellectual), and integral performance indicators allow distinguishing groups of enterprises and assessing the level of quality of their integrated development. The contribution of the research for business practice consists in the proposed approach enabling the comprehensive evaluation of the parameters of companies' integration and modeling of their effectiveness in the future. The study, therefore, can become a significant complement to the comprehensive toolkit of business development strategy, taking into account the rapidly changing enterprise

environment, increasing their flexibility and adaptability to changes, and determining qualitative characteristics of business process integration.

The proposed approach to the formation of the integration map of light industry enterprises based on the results of business diagnostics, determination of integrated coefficients by economic, organizational, informational, intellectual modules, and an integrated performance indicator allows distinguishing groups of enterprises consisting of forwards, strikers, defenders, and outsiders. In this case, the actual integration level results show a high conditional value of 1% integration for Volodarka, Fabryka Prut, Edelvika, and Kalyna. These companies actively cooperate with foreign companies and do not focus on integrating Ukrainian enterprises into the domestic market. Moreover, according to the map, these companies belong to different groups, which confirms the lack of correlation between the level of development integration and the cost of its increase.

Based on the modeling of integrated development, the cost of 1% of its increase and sales of the studied companies, its potential level of quality has been determined in accordance with the group distribution by 2025. There is the opportunity for strike companies to move quickly to a qualitatively new level of integrated development – in 2.5 years. This is facilitated by the adaptability, overall performance and potential of these enterprises. A significant increase in the efficiency of integrated development is expected for forward companies, but a high level of quality in this aspect requires the longest period of time in comparison with the other groups of enterprises. The reason for this is the slow decline in the notional cost of integrated business development. The possibility of a rapid transition to a qualitatively new level of integrated development is determined by striker companies. This is facilitated by these enterprises' adaptability, overall performance and potential. A considerable increase in the efficiency of integrated development is suggested for forwarding companies. It has been found that a high-quality level in this regard requires a long period of time compared to other groups of enterprises due to the slow reduction rate of the conditional cost of business development integration.

A limitation of this study is that the projections generated may be altered by events related to Russia's invasion of Ukraine. However, it is important to note that deviations may be both negative and positive, as against the backdrop of the war, a significant integration of all spheres of the Ukrainian economy into the European space is taking place. This may accelerate the formation of networks of relationships with foreign companies in the same industry.

In the future, the study can be expanded based on examining integration processes at the international level for companies from different countries and regions, as well as other industries. Future research may deepen the proposed approach by broadening the array of company development indicators and creating software to justify alternative business integration options and consumer values.

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