

Investments in corporate training of truck drivers in truck fleets: comparative economic assessment of mentoring and standard instruction in the conditions of highway transportation

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Abstract. The relevance of the study is based on the task of increasing the economic efficiency of truck fleet operation under conditions of military-economic instability, the transformation of logistics markets, and increasing requirements for long-distance freight traffic safety, where the quality of training of truck drivers directly affects the costs, risks and competitiveness of carriers. The purpose of the article was to provide a comparative economic evaluation of investments in mentoring and standard training as alternative models for the corporate training of drivers of freight truck fleets. The method of research was a set of statistical analyses of indicators of development of transport industry, empirical examination of the level of professional competencies of drivers (n=21) using a four-level evaluation system (59 test questions, 100-point scale), correlational analyses of the dependence of knowledge on intensity of professional experience ($R^2 = 0.6364$; for the most difficult level $R^2 = 0.83$), as well as comparative economic analyses of corporate training methods. The result was that the contribution of the transport industry to GDP of Ukraine decreased from 6.36% in 2014 to 4.05% in 2025; however, the sales volume of services of freight road transport has been growing (in 2015 it has grown in 4.4 times which proves the adaptive ability of the industry and gives the reason to invest into human resources). It was determined the structure dominance of the small-size businesses (96% enterprises that are provide 52% of services), which is critically sensitive to the costs of driver's errors. The testing results revealed high knowledge in the sphere of technical components of truck drivers (63.9%) and low in the segment of real road situations (41.5%); 15 of the 21 respondents were not able to meet the average value threshold of 50% which gives to predict a significant level of errors during real driving of trucks. It was shown the non-linear dynamics of the dependence of knowledge on the level of experience, where with the growth of the latter the average score is reduced by 20-25 points. This proves the necessity of systematized up-to-date driving knowledge. Practical relevance is in providing opportunities of implementing proposed model of corporate mentoring to improve costs and safety of fleet transportation, and to develop professional responsibility culture of drivers.

Keywords: transport industry, level of professional competence, regulatory discipline, adherence to schedules, profitability of logistics operations.

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Introduction

Operation of truck fleets in the long-haul segment is characterized by rising operational complexity, tougher requirements to road safety, strict compliance to international regulatory standards, and a need for stable productivity of long-distance drivers. Under such conditions, human capital of truck drivers is becoming a critical production resource, influencing the fuel efficiency indicators, vehicle technical safety, trouble-free transportation, on-time delivery, and profitability of logistics flows [1]. At the same time, in the majority of truck fleets driver training practices still are institutionally inert, limited to ad-hoc, short-term and mostly regulatory-compliance-oriented instruction.

Not considered here are the behavioral, cognitive and technical points related to the professional adaptation of drivers (management of fatigue, handling high-risk situations, economic driving, interaction with digital telematics technology, making decisions in stressful environments ... [2]) to the conditions of long-distance transport. There is a gap between the formal training and the driver's real preparedness for operational challenges, leading to higher costs of repairs, fuel, costs and penalties, accidents and personnel rotation.

Another form of corporate training is mentoring, where the integration of new drivers into the production environment takes a longer time thanks to the transfer of his/her practical knowledge, support on routes, correction of behavior and the acquisition of high-level professional skills. Although the interest in mentoring programs for transport logistics grows, management decisions concerning their implementation are challenged by the absence of well-defined economic grounds to do so [3]. Fleet managers must be able to demonstrate whether further mentoring investments will be repaid by lower operating costs, better productivity and larger residual risks.

Analysis of the existing scientific research and publications. In the modern scientific literature, the issue of truck driver training is usually discussed within the framework of traffic safety and the observance of formal training standards, but the outcome of several research already demonstrates a system discrepancy between what conforms to regulations and what must really be required of the driver in long-distance transportation. For instance, recording the surveys carried out by J. Malkin and the colleagues [1], the truckers themselves rate the existing training-related practices as inadequate for the real road circumstances, and the main demand from professionals is the standardized fundamental training with an essential part of practice and subsequent mentoring, which overcomes the absence of "situational" skills and goes along with the safe augmentation of a green driver's independence. The crucial part herein is that the deductions change the focus from the formal "presence of a course" towards the essence of the training program and the order of its stages, that is, the institutional construction of training that precisely the errors in non-standard circumstances.

Deeper into the applied dimension, M. F. Smidt et al. [2] concluded that the training of drivers of freight transport is a response not only to the individual dangers of injury, but also of external dangers of accidents and the company to the society, that is, training has an economic and safety essence: it aims to mitigate the possibilities of events that cause costs to the company and third parties [2]. In this, the authors present the training as a tool of risk management, but there is no detail on the training format that provides a wider effect in fact, where the behavioral and ethical conduct of the driver is generally more relevant than normal reproduction of the rules.

A separate layer of gaps has also been identified at the level of training subjects by A. Galal et al. [3], who from interviews with participants to the transport process and specialists registered a 'reality gap': existing courses do not cover sufficiently well hazard anticipation and interaction with vulnerable road users that largely determine the severity of the consequences of road crashes in the urban environment. It is also noteworthy that simulation

training got a positive reception by most respondents precisely because it provides the opportunity of safe practice of complex maneuvers and scenarios that are hard or unsafe to replicate systematically 'in the field' which indicates that the effectiveness of training increases with its ability to reproduce risk situations and foster anticipatory assessment skills, and not only norms' knowledge.

At the level of security management within organizations K. Grinerud and R. Elvik [4] concluded that safety of heavy haulage is not a reduction to "driver error" and has to be handled in a systematic way at several levels - from government regulations via company and other institutional standards to daily driver's routine. These generalizations are relevant because they show that training is just one component, yet it only works if it is resituated into the management system, i.e. scheduling, time pressure, fatigue control, behavioral risk management, meaning that the economic effect of training depends on company's ability to turn knowledge into manageable practice. Yet, this line of reasoning does not theoretically provide the answer to the question of relative efficiencies of various training formats for fleets of different resources and small to medium sized carriers in particular.

It is exactly this warning about the "presence of effectiveness" that A. Mahmoudabadi and F. P. Ghazimahalleh [5] makes: in their results the training courses did not make any significant difference in the success rate of the qualification selection in relation to the group without training, and what the authors cites is responsible either for the low effectiveness of the courses themselves or for the fact that the exams do not measure any real competencies! And here it is precisely that mentoring, as mechanism for the transmission of practices and norms of behavior, needs separate economic validation and not only being described as a practice defined as "useful".

The question of retention of personnel also has an EBP, and in this sense, the results of A. Arnett [6] show that choices by drivers to remain in the profession are due not only to pay or the labor market, but to regulatory and organization factors that maintain a balance among safety, efficiency and quality of life, including among the generalizations, the conflict between the requirements for productivity and the constraints on recovery and family life, which is directly associated with staff turnover. Consequently, nomisleading training that does not tackle the psychophysiological dimension of the work on the road and that does not reinforce the adaptation of the newcomer will have effects not only on the absence of reduction in the number of accidents, but also on the lack of stabilization of the composition of personnel in the fleet [6].

The "Ukrainian environment" is expressed in sources mainly as an assessment of the industry state and of systemic restrictions to its development. O. Skladanivska [7], based on empirical data, proves the structural role of small-and-medium-sized enterprises in the truck and at the same time reveals the sector vulnerability to crises echoes in which objectively enhances the significance of the managerial solutions that give return not "someday" but by reducing risks and losses for a short-range horizon. But V. P. Sydorenko [8] accentuates the institutional problem of the distance between the production needs, educational training and scientific support and in the framework of this logic, human resourcing competence appears a key factor in the road transport sector competitiveness without clarifying what kind of corporate training has the best "suture" the real transportation tasks with safety and efficiency requirements.

This article aims to establish scientifically the economic advantage from investing in training truck drivers in truck fleets by comparing the success of standard training and mentoring.

Main research. Transport sector traditionally was one of the main fields for the economy and national security. However, under the impact of pandemic, war, and economic crisis, its share in Ukraine's GDP went down from 6.36% in 2014 to 4.05% in 2025. On the

other hand, despite crisis and hostilities, the number of services sold by freight transportation companies in 2025 was 4.4 times higher than in 2014, which demonstrates industry adaptability and internal potential. Market of the road freight transportation consists primarily of small businesses (96% of total number), producing 52% of services volume. Of 4% medium-sized businesses, they generate 42% of transportation volume. This implies that good human capital management skills, especially in small- and medium-sized businesses, directly influence performance of the whole transportation sector. Based on results of 2023 survey of the transportation and logistics companies: 79% did not cease the work, 13% temporarily suspended but regained the work, 6% fully regained the work, and 2% still are suspended. 47% of companies have registered direct losses (43% - critical amount, 2% - critical amount). 22% has regained working capacities, 11% will do this in the short term, 34% - after war, 14% do not plan to do that [7, p.198]. Therefore, investing into corporate training for truckers is as important as investing into infrastructure - it also is a factor of sustainability. It is possible that mentoring would contribute to reduction of accidents and working staff turnover, what is especially important for small-sized business.

In the realities of contemporary long-distance transportation, the quality of truckers' training is defined not only by the flow of technical knowledge, but also by the ability to behave responsibly, safely and ethically in a complex and unpredictable road environment. Consequently, the final determinant of the efficacy of corporate training is its conformity to the actual needs of the trucking industry-transport flow, cargo and human lives high responsibility, culture of safety and teamwork. Collective practices indicate a combination of education and production gives the highest results. In various countries, a model of "client-specific" education has been applied long ago-by means of dual education, corporate offices and joint ventures of businesses and learning establishments. Yet the emphasis in the scope of vehicle fleets is not only on formal training, but also on the transfer of professional experience on the job-from instructor to apprentice [8, p. 154]. That is why, when exploring the investments into corporate training of truckers, a transition takes place from conventional training to the systematic mentorship. Short basic briefings provide a theoretical understanding of road regulations and systems, but mentoring ensures the transfer of more profound, "secret" knowledge-on the roads in critical situations, on planning a safe route, in maintaining professional ethic in an international environment, in coming off the equipment as well as the driver in keeping her/his psycho-emotional state-and on the road for a long time. The human dimension of the above-mentioned model (Fig. 1) is that the drivers are not seen as interchangeable units of production, but as vehicles of safety culture, corporate ideals and professional experience [9].

Knowledge transfer becomes a form of professional continuity, and investments in training become investments in fleet stability.

The situation in the Ukrainian road freight transportation market is characterized by a structural change, which in situation of European integration acquisition becomes evidenced. In the structure of the branch there are systemic problems: weak development of integrated multimodal transport system, which can be 40% of transport expenses of production; uneven level of quality of transportation services (in international transportation for example); complicated and bureaucratic system of entry to the market. In addition the developing of full-fledged logistics outsourcing system is hampered: predominates 1PL- (insourcing) and partially 2PL-models, share of companies able to render all 3PL-4PL services is less than 1%, and 5PL-operators are absent [9, p. 28]. Under such conditions the most important attribute of competitiveness becomes human capital quality. As shown from the logistics system passes only institutional appearance, the trucker directly provides the company's reputation in the international market and ensures the reliability and safety for the client [10]. Consequently, corporate training investment should be assessed not as an important tool of logistics modernization, but as a strategic tool.

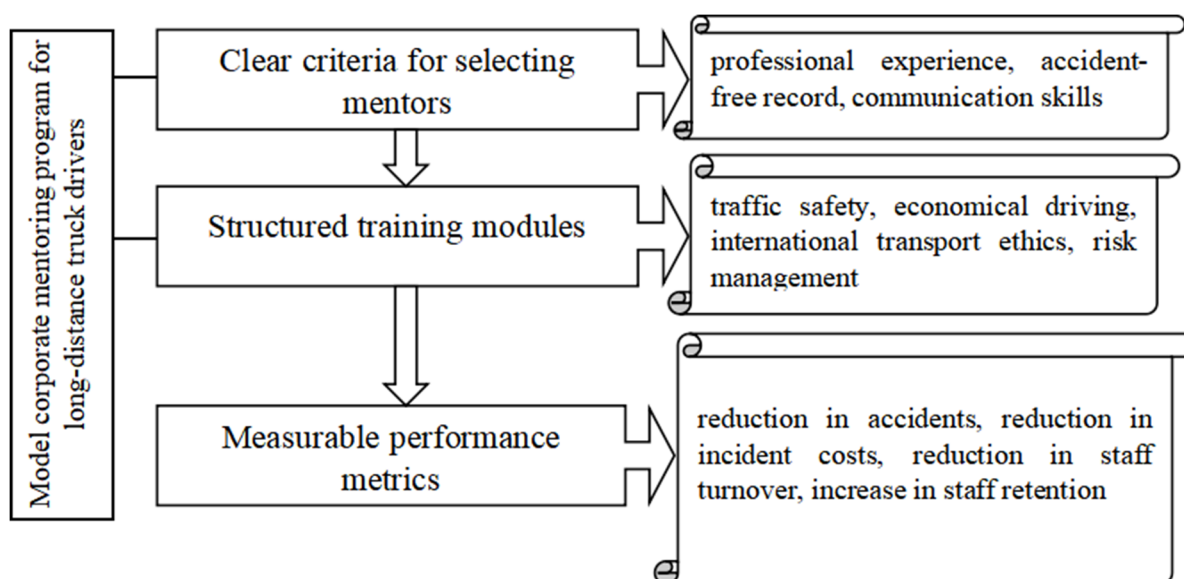


Fig. 1. Model of a corporate mentoring program for long-distance truck drivers

Source: own development

In current conditions of the Ukrainian road freight transportation market transformation, growing competition under the European integration framework and increasing demands for mainline transportation safety, human capital of fleets turns into a key factor of the carrier's economic sustainability [11]. Considering the big share of transportation element in the total logistics process costs, rising insurance premiums, penalties, and reputational risks, quality of trucker training might potentially have substantial influence on the company's economic performance. Thus, investments into corporate training might be perceived not as the costs, but as a strategic tool of risk management, personnel productivity enhancement, and personnel retention [12]. In this respect, especially relevant is a comparative economic evaluation of two approaches to professional training of commercial truck drivers, i.e. Formalized classical training programs and mentoring schemes, when seasoned drivers transfer to subordinates not only technical skills of truck operation, but also know-hows of using safety culture, driving ethics, and communication with clients and authorities [10].

The former allows a system to behave according to regulation, but the latter describes a behavioral model of professional responsibility.

The empirical part was based on the evaluation of the level of training in theory of 21 drivers from the group aged 26 to 57, with a distorted ratio of age and professional experience. By means of a four-level test with 59 questions (max. 100 points) for the objective test of knowledge development was created, to be able to discriminate competences at the different (from basic to complex) levels of cognition: reproduction of norm, analysis and application in professional situations.

The testing structure included:

1. General provisions of the SDA;
2. Real road conditions;
3. Psychophysiological parameters of driving safely;
4. Specific questions of category "C"

The highest mean result was achieved at level 4 - 63.9% (median 67%, variance 71.3), which indicates quite good technical training of drivers. On the other hand, the most

problematic one was level 2 - 41.5% (median 40%, variance 36.6): 15 subjects out of 21 have not even sat for the examination exceeding the passing grade of 50%. It is in the real-time traffic, e.g. the traffic controller signals, vehicle positioning, traffic with special signals where there is a higher propensity for errors. Analysis of the behavior of the professional experience versus test results led to the appearance of an exponential curve. For a professional-traffic experience / time in working life ratio of 0.25-0.30 the average of the test results was 65-75 points, and for the ratio of 0.45-0.50 the mean of the scores decreased to 45-50 (minus 20-25 points). Coefficient of determination $R^2 = 0.6364$ shows that more than 63% of the variation of the results is explained by the intensity of professional experience. For the most difficult part of the examination the connection was even stronger - $R^2=0.83$ [10, p. 632]. The results prove that "experience" is not an automatic guarantee of the pertinence of knowledge. Systematic renewal of the legal framework, and the controlled transfer of practical experience, is a gradual retreat in quality of the decision-making that could result in. This is the point where the economic feasibility of mentoring appears: common practice turns out to be the connector between the theoretical and real-life situations in mainline freight traffic. Investments in such a mannequin would yield long-term benefit not only due to diminished operational risks, but also its positive effects on safety culture as well as stabilization of the railway's personnel structure in long-haul traffic [11].

In general, the analysis indicates that the most effective, in terms of the efficiency, mixture of several ways is best for developing an effective trucker mentoring system (Table 1). Practical experience has shown that an integrated approach is the most successful: the mentor shares his experience and real examples, while formal ways such as action learning and distance learning systematize knowledge and form competences. Such an approach not only improves professional trucker training, but allows influencing on the main fleet parameters: safety, economical efficiencies and staff stability [11, p. 244]. Formal training is a required component of the fleet safety system, however formal mentoring program brings the strategic economic benefits. The formation of such program allows turning the truckers individual experience to the manageable system assets that results in reduction of vehicle accident figures, stable staff structure and long-term competitiveness of the fleet [12]. In case of long-distance transportation the efficiency of corporate training for truckers is evaluated not only in terms of the direct training expenditures, but also in terms of safety in traffic, fuel economy and reduction of vehicle accidents and staff stability.

Table 1. Comparative economic assessment of corporate training methods for long-distance truck drivers in truck fleets in long-distance transportation

Professional training method	Economic and safety benefits for the fleet	Risks and limitations in the context of long-distance transportation
Action learning (solving real transport cases)	Develops decision-making skills in complex road situations (accidents, border delays, technical failures); reduces indirect costs of incidents; increases driver responsibility for fuel economy and compliance with working hours	False behavior patterns may become entrenched if cases are analyzed without the participation of a certified instructor; difficulty in standardizing results
Rotation (change of routes, types of cargo, crews)	Increases driver versatility; reduces operational risks in the event of staff shortages; promotes fleet flexibility; expands international transport experience	Increased stress; temporary decrease in productivity due to adaptation; risk of an increase in minor incidents during the transition period
Shadowing (mentoring)	Accelerates the adaptation of newcomers;	Possible replication of informal

through "accompaniment on the road")	conveys the "unwritten rules" of safety culture, economical driving style, and communication with customers; reduces the likelihood of accidents in the first months of work; has a positive effect on staff retention	but undesirable practices (violations of regulations, informal agreements); dependence on the personality of the mentor
Secondment (temporary assignment to other departments: logistics, service station, dispatch service)	Forms a systematic view of the transport chain; improves interaction with dispatchers; reduces the number of conflicts and downtime; increases staff engagement	Complexity of organization; additional coordination costs; temporary removal of the driver from route work
Coaching (individual development of professional and behavioral competencies)	Improves discipline, fatigue management, communication; helps reduce staff turnover; creates a culture of safe driving	High dependence on the coach's qualifications; difficulty in measuring the direct economic effect
Buddying (partner support for newcomers without a formal hierarchy)	Creates a supportive atmosphere; reduces adaptation stress; improves drivers' psychological stability in the first 3–6 months	May be insufficient for developing in-depth technical skills; requires clear criteria for selecting a buddy
Standard training (regulated training in traffic rules, occupational safety, traffic safety)	Ensures regulatory compliance; minimizes legal risks; allows control of the level of theoretical knowledge; relatively low cost per employee	Limited impact on behavioral competencies; low effectiveness without practical reinforcement; weak impact on staff retention
Distance learning (online modules, simulators, telemetric analysis of driving style)	Flexible schedule; opportunity to quickly update knowledge; integration with telematics to assess economic driving style; scalability	Difficulty in forming value and behavioral attitudes; limited control over actual engagement

Source: compiled based on [11, p. 244]

In the evaluation of the efficiency of the driver training system for truck fleets, each professional development method has its own advantages and pitfalls that must be considered during the designing of a mentoring program [8]. The "action learning" method enables freight drivers to resolve real production tasks and nurtures responsibility for decisions, but where the mentor experience is poorly or negatively skewed, the trainee can acquire inefficient skills. Expansion of social contacts and incentives for motivation can be achieved via rotation of drivers, but high frequency of team changes can adversely affect the assimilation of new duties [9]. Shadowing is an inexpensive and rapid way of habitation in realism: a novice watches an accomplished driver action and feels his or her own authority and duty; however this method can entail the transfer of unsuccessful practices and methods applicable only to this particular mentor. Secondment method encourages personal growth and the grasping of various experiences in challenging situations, but adjustment to a foreign environment and re-integration to the previous position can prove problematic [10]. Coaching structure the development of interpersonal skills, team work and personal growth, but its efficiency is highly dependent on the mentor's competency and the trainee's acceptance of the recommended training procedure. Buddy method presents two-way communication and objective evaluation that accelerate adaptation and did not reveal any major disadvantages in practice [11]. Distance learning offers agility of deployment and new knowledge application right away, but a formation of behavior structures and monitoring of task realization in this format are restricted [12].

Based on world statistics, the sum of freight transport in 2023 would have been 150.4 billion tons, of which 48.7% would have been by road, 35.1% by sea, 12.2% by rail, and only 4% by air. The European main carriers, in absolute terms, are China (51.2 billion tons), the United States (16.3 billion tons), India (11.4 billion tons), Japan (4.5 billion tons), and Germany (3.8 billion tons). Within volumes as huge as these, the key is optimizing logistics processes bringing together traditional practices (choosing the most suitable mode of transport, designing the logistical route, etc..) with new practices: artificial intelligence algorithms for traffic forecast, blockchain systems for transparent freight accounting, autonomous vehicles. Projected usage of digital maps resources (Google maps, Waze, HERE WeGo) would allow maximization of short-term predictions of journey parameters (duration, costs, fuel consumption, accidents,..) ensuring higher safety and more optimized results for mainline cargoes transportation via mentoring and regular driver education and authentication [12, p. 232].

It has been proven that the lack of driver skills and the ineffective route planning can result in more than 40% of exceeding costs with the European standards. At the same time, the automation of logistic processes influences directly the company's competitive position in the market. Rational management of transport and storage costs contributes to bringing down production costs and to shaping a more competitive price policy for final consumers, gaining in this way a strategic flexibility in competition for the customer [13]. Mentoring programs are also able to transfer experienced drivers not only technology skills but also "the unwritten rules" of a safety culture, of professional ethics, of road time management, which are directly influenced on the transport economic efficiency.

And in the case of investments in corporate training in the field of truck drivers in the context of truck fleets, mentoring is not only education [12]. It is not only the transfer of technical skills (driving a category C car) or knowledge of the regulatory framework. It is the creation of a culture of safety, professional responsibility and driver maturity and leadership in the context of long-distance transportation [13]. This is the mentoring which gives opportunity of more profound personal and professional development especially at the background of market transformation, digitalization of logistics and shortage of well-qualified staff. Unlike the instruction, which is usually represented by the formalized transfer of your regulations and control of checkups, such mentoring presumes the driver's integration in the professional environment by live experience [14]. The key aim of this interaction is to keep the new staff to adaptation to real on-the-road conditions as quickly and effectively as possible: the respect of work and rest schedule, of unordinary situations on the road, of ethical deal with clients and authorities, of economic management taking into consideration the performance of a fuel consumption and car depreciation. Administrative result monitoring is supplemented by the mentoring support which presumes not only control but the development of the staff.

In the area of long-distance transportation, mentoring is moving away from the traditional vertical of seniority-juniority on the classic model toward a development tool in several formats. Classical mentoring (pioneering) adapts and transfers professional experience, it cooperates to the adaptation to the institution. Reciprocal (mutual) mentoring (diffusing) brings together practice and practices between drivers of comparable experience to avoid professional isolation on a flight. Reverse mentoring becomes relevant with the digitalisation: younger drivers teach to elder drivers how to use telematics, electronic logistics platforms or fuel monitoring systems. Group mentoring is adapted to the development of communities of practice within the fleet, in particular when we analyze cases of accidents, overtinks of fuel or difficult routes [15, p. 40].

Looking at today's trends in the area one can note that mentoring and coaching are multidimensional development tools of human capital that have strategic importance. In the

case of truck fleet they can even become an economically justified investment - the decrease of number of accidents, repair and insurance costs, the improvement of staff loyalty, the decrease of re-hiring costs overcome the cost of implementing mentoring programs [16]. Formalized instruction combined with flexible mentoring precisely provides a balance between the formally ruled regulatory discipline and the development of professional culture as a paramount condition for sustainable fleets in hypercompetitive longdistance transportation market. The use of elements of coaching in addition to mentoring in developing professional qualities of drivers makes it possible to influence not only the professional competencies but also the motivation of drivers, the values and the horizon of their future career. This is especially relevant for this industry where emotional burnout and generalized stress are prevalent [17]. Formal single training of mentors, formalization of requirements to them (experience of accident-free operation, communication skills, reputation within a team), as well as the formal mechanism of the results evaluation (dynamics of number of accidents, fuel consumption, fines, loyalty level of a new driver) convert mentoring into a tool that is regulated by the institutionalized HR strategy of the fleet [15, p. 40].

Conclusions. The research permitted to compose a comprehensive picture of the economic efficiency of corporate training truckers in truck fleets in the system of long-distance transportation and to define the strategic value of the mentoring as a means of boosting the sustainability of the transport business. The fact has been proved that despite reduction of the contribution of transport industry to the Gross Domestic Product of Ukraine from 6,36% in 2014 down to 4,05% in 2025, this area owns a significant adaptive capacity: sales of trucking services doubled in 4.4 times. Such an extent of growth shows that the use of human capital of transport industry, and not only infrastructural elements, makes a crucial impact on the efficiency of the business, especially in the conditions of predominance of small firms (96%) in the business sector which operational risks are directly transformed into financial losses.

It is shown that the level of professional training of drivers may serve as an important criterion for substantiating the economic safety of fleet. The results of empirical testing revealed an unevenness in the formation of competencies: with a fairly good level of technical knowledge (63.9%) there was a serious lag in the ability to act in real road situations (41.5%) with 15 qualified drivers excluding the threshold level out of 21. The revealed nonlinear dependence of the quality of knowledge on professional experience ($R^2=0,6364$, at the most difficult level in the model - 0,83) confirms that experience without systematic systematization does not guarantee professional validity, but can be accompanied by the reduction of decision-making quality. This suggests the importance of models aimed at continuous learning in practical activities.

References

1. Malkin, J., Crizzle, A. M., & Bigelow, P. (2021). Long-haul truck driver training does not meet driver needs in Canada. *Journal of Traffic and Transportation Engineering*, 8(2). <https://www.sciencedirect.com/science/article/pii/S2093791120303292>
2. Smidt, M. F., Mitchell, D., & Logan, K. K. (2021). The potential for effective training of logging truck drivers. *Journal of Agricultural Safety and Health*, 27(1), 29–41. <https://doi.org/10.13031/jash.14084>
3. Galal, A., et al. (2023). Improving truck driver and vulnerable road user safety: Perceptions of truck driver training gaps. *Transportation Research Record*, 2677(8). <https://journals.sagepub.com/doi/10.1177/03611981231168123>

4. Mahmoudabadi, A., & Ghazimahalleh, F. P. (2023). Investigating the effect of drivers' training courses on commercial drivers' success rate for qualification. *International Journal of Management Science and Business Administration*, 9(4), 35–41. <https://doi.org/10.18775/ijmsba.1849-5664-5419.2014.94.1003>
5. Grinerud, K., & Elvik, R. (2022). Work-related driving of heavy goods vehicles: Factors influencing road safety management. *Safety*, 8(2). <https://www.mdpi.com/2313-576X/8/2/43>
6. Arnett, A. (2022). Commercial truck drivers' perceptions about the influences of training and development on retention. *Walden Dissertations and Doctoral Studies*. <https://scholarworks.waldenu.edu/cgi/viewcontent.cgi?article=18220&context=dissertations>
7. Skladanivska, O. (2024). Analiz suchasnoho stanu vantazhnykh avtotransportnykh pidpriemstv Ukrainy [Analysis of the current state of freight motor transport enterprises of Ukraine]. *Acta Academiae Beregsasiensis. Economics*, 6, 192–206. <https://doi.org/10.58423/2786-6742/2024-6-192-206>
8. Sydorenko, V. P. (2024). Problemy navchannia i profesiinoi pidhotovky fakhivtsiv avtotransportnoi haluzi Ukrainy [Problems of training and professional preparation of motor transport specialists in Ukraine]. *Avtotransport: Problemy orhanizatsii ta pidhotovky kadriv*, 1–14. <https://ap.uu.edu.ua/upload/publicationpdf/fccc3a114e69decd66daca400c7babe6.pdf>
9. Duna, N. H., & Matviienko, A. M. (2022). Perspektyvy rozvytku rynku vantazhnykh avtoperevezen Ukrainy: Yevrointehratsiinyi aspekt [Prospects for the development of the freight road transport market of Ukraine: European integration aspect]. *Visnyk ekonomichnoi nauky Ukrainy*, 44, 6–12. <https://doi.org/10.32782/2413-9971/2022-44-4>
10. Tiurdio, N., & Maksymiuk, O. (2025). Doslidzhennia vzaiemozviazkiv mizh profesiinymy navychkamy vodiiv i rivnem yikh teoretychnoi pidhotovky [Study of the relationship between drivers' professional skills and their theoretical training level]. *Municipal Economy of Cities*, 191, 630–635. <https://doi.org/10.33042/2522-1809-2025-3-191-630-635>
11. Babych, D. V., Sviderskyi, V. P., & Chetverikova, A. V. (2018). Suchasni tendentsii korporativnykh osvitnikh protsesiv ta profesiinoho navchannia personalu na pidpriemstvi [Modern trends in corporate educational processes and personnel professional training at enterprises]. *Ekonomika ta suspilstvo*, 16, 241–246. https://economyandsociety.in.ua/journals/16_ukr/37.pdf
12. Sobkovych, O. A., & Mokhonko, H. A. (2024). Optyimizatsiia transportnoi lohistyky vantazhnykh perevezen [Optimization of transport logistics of freight transportation]. In *Biznes, innovatsii, menedzhment: problemy ta perspektyvy: Proceedings of the International Scientific and Practical Conference*. Kyiv: KPI im. Ihoria Sikorskoho. <https://confmanagement-proc.kpi.ua/article/view/303957>
13. Savytskyi, E. E. (2023). Vplyv optyimizatsii lohistychnykh protsesiv na efektyvnist komertsiiinoi diialnosti pidpriemstva [Impact of logistics process optimization on the efficiency of enterprise commercial activity]. *Ekonomika ta suspilstvo*, 52. <https://doi.org/10.32782/2524-0072/2023-52-47>
14. Azarova, A. O., Ostapchuk, Ya. Yu., & Puhach, V. S. (2022). Upravlinnia liudskym kapitalom pidpriemstva v umovakh innovatsiinoi ekonomiky [Human capital management of the enterprise in an innovative economy]. *Ekonomika ta suspilstvo*, 37, 181–187. <https://doi.org/10.32782/2524-0072/2022-37-24>

15. Ilich, L. M., & Akilina, O. V. (2025). Nastavnytstvo, mentorstvo y ko uchynh yak stratehichni instrumenty rozvytku liudskoho kapitalu: Typolohiia, efekty ta praktyky [Mentoring, mentorship and coaching as strategic tools for human capital development: Typology, effects and practices]. *Ekonomika i orhanizatsiia upravlinnia*, 36–45. <https://doi.org/10.31558/2307-2318.2025.3.4>
16. Khaietska, O. P., & Koval, O. V. (2024). Investytsiino-innovatsiina diialnist pidpriemstv transportno-lohistychnoi sfery [Investment and innovation activity of transport and logistics enterprises]. *Ekonomika ta suspilstvo*, 59. <https://doi.org/10.32782/2524-0072/2024-59-111>
17. Radkevych, V. O. (Ed.). (2024). Innovatsiina profesiina osvita. Vypusk 1(14): Naukovo-metodychne zabezpechennia profesiinoi osvity i navchannia: Materialy XVIII Vseukrainskoi naukovo-praktychnoi konferentsii [*Innovative vocational education. Issue 1(14): Scientific and methodological support of vocational education and training*]. Kyiv: IPO NAPN Ukrainy. <https://doi.org/10.32835/2786-619X/2024/1.14>