

Chapter 4

Impact of Occupational Risks on Financial Security: Insights from Ukrainian Enterprises

*Viacheslav Berezutskyi¹, Viktoriya Khali², Natalia Berezutska³,
Tetiana Stytsenko⁴*

1. Introduction

The unstable economic situation in Ukraine is characterised by the unpredictability of the ongoing economic processes, the frequent change of economic ups and downs, the negative dynamics of functioning which as a result poses a threat to the financial security of the state and business entities. The transition to market relations determines the increasing role of finance. Market instruments are mainly elements of the financial mechanism are part of the financial system and stand out in an independent segment of the economy. On the basis of their dominant position, the modern economy can be characterised as an economy that is managed through financial mechanisms using leverage, and financial incentives for financial purposes. Therefore, the issue of ensuring the appropriate level of financial security of the enterprise requires special attention, the study of all its components (Luppol and Ermolenko 2016).

Currently, financial security as a whole is considered by scientists from various fields of science and is considered an interdisciplinary category at the junction

¹ National Technical University «Kharkiv Polytechnic Institute», Kharkiv (Ukraine), ORCID: 0000-0002-7318-1039, e-mail: viaberezuc@gmail.com

² O. M. Beketov National University of Urban Economy in Kharkiv, Kharkiv (Ukraine), ORCID: 0000-0003-0222-7519, e-mail: viktorykh610@gmail.com

³ National Technical University «Kharkiv Polytechnic Institute», Kharkiv (Ukraine), ORCID: 0000-0003-2573-9031, e-mail: natalia.berezutskaya@nure.ua

⁴ National Technical University «Kharkiv Polytechnic Institute», Kharkiv (Ukraine), ORCID: 0000-0003-4530-0253, e-mail: tatiana.stytsenko@nure.ua

of economics, management, sociology, political science, jurisprudence which allows it to be widely interpreted. Among experts, there is no consensus on the nature of the financial security of the enterprise. From all the above, we would like to single out resistance to external and internal threats in the conditions of necessity and the ability to independently develop and implement a financial strategy. It should be noted that in Ukraine, many universities train specialists in the field of enterprise economics, but the state of the economy is very poor. Scientists in the field of economics distinguish the following tasks of the financial security of the enterprise (Gukova and Anikina 2016):

- Ensuring the continuous development of enterprises
- Ensuring sustainable cash flows
- Elimination of the negative impact of financial, economic crises and deliberate actions of competitors on the development of enterprises
- Neutralisation of conflicts in the distribution of financial resources of enterprises
- Ensuring the possibility of using various sources of financing.

All these tasks are solved in order to ensure the effective functioning of all elements of the financial system of the enterprise.

In the current economic conditions, it is not enough to use traditional methods of assessing financial security. It is necessary to use an international system for assessing all kinds of business risks. The statistics that are given in the book *Injury Prevention and Environmental Health* indicate a financial threat to business on a global scale. Despite great strides in improving OSH during the past century, an estimated 317 million non-fatal occupational injuries and 321,000 occupational fatalities occur globally each year, i.e. 151 workers sustain a work-related accident every 15 seconds. The authors point out that the main reason for this are poor working conditions. Poor workplace safety and health place a substantial economic burden on individuals, employers, and society. Estimates from the International Social Security Association (ISSA) suggest that costs associated with non-fatal workplace accidents alone amount to approximately 4% of world gross domestic product (GDP) each year (Abdalla et al. 2017). On its website, BeSafe argues that implementing health and safety in the workplace helps to assess potential risks and identify significant hazards. It also allows one to take action to protect people and the environment in every organisation. By implementing health and safety as much as possible and working with regulatory officials, time and company's money can be saved in the long run (Besafe 2020).

Compensation insurance reimburses part of the income lost by an employee due to his or her disability. However, there are hidden costs to the organisation associated with each injury, such as reduced efficiency, replacement costs and increased overtime. This effect is especially noticeable in small businesses. Employees must be trained to recognise risks and report them to the appropriate person so that the hazard can be eliminated as soon as possible. Job requirements related

to safety should take precedence over any others (Insurance Information Institute 2020). The study presented by Seokho et al. (2015) looked at 9,358 accidents in the US construction industry between 2002 and 2011. The results of the analysis explained that the roles of safety managers are critical to mitigate risks to people, particularly the inappropriate assessment of hazardous situations, through safety training and education, proper use of safety devices, and proper safety controls.

The financial security of the enterprise should ensure its development and sustainability which guarantees the protection of the financial interests of the enterprise. According to the risk management methods, it is necessary to perform the following (Berezutskyi and Adamenko 2016): (1) identify possible threats (risks) to the enterprise; (2) determine the criteria for financial security of the enterprise; (3) develop a system for monitoring financial security and measures to ensure the financial security of the enterprise; (4) analyse the implementation of measures and make adjustments. One of the prerequisites for successful financial risk research is the application of methods and methodologies for risk research, which are presented in the international standards OHSAS 18000 and ISO 31000.

The aim of this study is to analyse the dependence between the financial security of small and medium-sized enterprises and the state of occupational security of employees. To achieve the goal, the following tasks were set:

- Analysing the historical development of dangers in Ukraine and the consequences of their impact on economic development
- Analysing the impact of accidents and disasters on their financial security of production; considering the state audit of labour protection and the identification of risks (internal threats)
- Establishing the impact of professional risks on the economic development of Ukraine
- Performing a theoretical analysis and make practical proposals for improving financial security, taking risks into account.

The main research method used is the analysis of statistical public information presented in the open press and its processing using the standard Microsoft Excel software package. Moreover, the research methodology includes the use of risk management methods, which are presented in the international standards OHSAS 18000 and ISO 31000. One of the main steps in these methods is risk identification.

2. Socio-Economic Effects of External Threats and Accidents in Ukraine

The importance of external threats to the Ukrainian economy is demonstrated by the statistics of accidents and disasters which resulted in huge financial losses. Such accidents include (Information Resource Today 2015):

- Fire at the tank farm BRSM-Nafta (Kiev region)
- Kurenevsky flood (Kiev)
- Accident at the Chernobyl nuclear power plant
- Accident at the coal mine Zasyadko (Donetsk region)
- Phosphoric accident (Lviv region).

On March 13, 1961, in the area of Kurenyovka (Kiev), a dam broke through that blocked Babi Yar, where 10-year production waste (pulp) from nearby plants was dumped. According to the official report, 68 residential and 13 administrative buildings were destroyed as a result of the accident. 298 apartments and 163 private houses, in which 353 families of 1,228 people lived, turned out to be unsuitable for housing. The death toll was approximately 1.5 thousand people.

On the night of 26 April 1986, an explosion occurred at the fourth unit of the Chernobyl nuclear power plant, which completely destroyed the reactor. The building of the power unit partially collapsed. A fire started in various rooms and on the roof. The accident resulted in the release of radioactive substances into the environment, including isotopes of uranium, plutonium, iodine-131 (half-life – 8 days), caesium-134 (half-life – 2 years), caesium-137 (half-life – 30 years), strontium-90 (half-life – 28 years). As a result of the accident, about 5 million hectares of land was taken out of agricultural circulation, a 30-kilometre exclusion zone was created around the nuclear power plant, hundreds of houses in small towns were destroyed and buried (buried with heavy equipment). The Chernobyl accident is regarded as the largest of its kind in the entire history of nuclear energy, both in terms of the estimated number of people killed and affected by its consequences, and in terms of economic damage.

Since 1999, at the coal mine Zasyadko (Donetsk region), there was a number of major accidents which claimed the lives of hundreds of miners. The total number of victims was 106 people. It was decided that the mining operations would be closed and the mine would be flooded (3 December 2007). On 16 July 2007, a railway accident occurred near the village of Ozhidov in the Busky district of the Lviv region. On the 12-kilometre stretch of Ozhidov-Krasnoe, the train that went from Kazakhstan to Poland went off the rails, 15 cars with yellow phosphorus turned over, and six of them caught fire. As a result, 50 metres of the railway track, 100 metres of the contact network and three supports were damaged. During the extinguishing of the fire, a toxic cloud of combustion products formed with an affected area of 90 square kilometres. The evacuation of the population began. 16 people were poisoned with varying degrees of severity. There were no fatalities. On the evening of 8 June 2015 near Kiev, a fire broke out at the BRSM-Nafta oil depot, and containers with oil products caught fire. On 9–11 June, several explosions occurred. Firefighters managed to localise the fire. According to the latest data, 5 people died. According to the adviser to the head of the Ministry of Internal Affairs, Anton Gerashchenko, 14 thousand tons of fuel burned at a tank farm worth about USD 14 million.

In addition, it is necessary to note the financial risks (threats) associated with the occupation of Crimea, Donetsk and Lugansk regions of Ukraine. These are billions of losses in money and more than 15 thousand fatalities and millions of immigrants. The financial losses of Ukraine as a result of the aggression of the Russian Federation were calculated by Anders Oslund, senior researcher at the Eurasia Center of the Atlantic Council. He noted that as a result of the Russian occupation of Crimea and Donbass, Ukraine and its territories temporarily lost enterprises, energy resources, infrastructure, etc. The total GDP of Ukraine before the attack of the Russian Federation in 2013 amounted to USD 179.6 billion. In this regard, the loss from the occupation, according to Oslund, is about USD 98.8 billion (Independent Edition DonPress 2018).

Financial risks also depend on the condition of the transport 'arteries', namely the roads along which lorries and cars move. Their condition in Ukraine is unsatisfactory and provokes road traffic accidents, personal injuries, loss of goods and others. The annual financial losses of Ukraine associated with the deaths and injuries of people on the roads amount to about USD 5 billion (League Business 2010), (Business portal Uaprm.info 2016). This was stated today by a leading health specialist at the World Bank's Human Resources Development Department (ECSHD), Patricio V. Marquez, commenting on the World Bank's road safety report. According to the World Bank, globally, the costs associated with deaths and injuries on roads are estimated at about 1% of GDP in low-income countries, 1.5% of GDP in middle-income countries and 2% of GDP in high-income countries.

In Ukraine, in 2019, 160 thousand accidents occurred, in which about 4 thousand people died, another 36 thousand were injured. In addition, the accident caused damage to the Ukrainian economy by UAH 70 billion. This was announced by the Minister of Infrastructure Vladislav Krikli during his speech at the presentation of Ukravtodor 'UA 2020 Road'. According to him, road accidents are not only casualties among the population, but also significant losses for the Ukrainian economy (Pristanskaia 2020).

Large financial losses and risks are represented by fires in Ukraine. For 12 months of 2019, 95,915 fires were registered in Ukraine. Compared to 2018, there is a significant increase in the number of fires by 22.0%. The number of people killed in fires decreased by 3.3%, the number of those injured in fires increased by 0.2%. Direct losses from fires increased by 1.3%, collateral losses – by 39.9%; there were 2.0% more destroyed and damaged buildings and structures, 4.7% more destroyed and damaged equipment, and 2.1 times more domestic animals died, 21.2% more tons of feed were destroyed, 44.5% more hectares of standing grain were destroyed; poultry died 17.2% less. Material losses from fires amounted to UAH 10 billion 622 million 337 thousand (of which direct losses amount to UAH 2 billion 223 million 326 thousand, and incidental losses – UAH 8 billion 399 million 11 thousand) (Ukrainian Civil Protection Research Institute 2020).

3. Analysis of Financial Security and Occupational Risks in Ukraine

The main stage of the analysis of financial security is the stage of the identification of threats (risks). For its implementation, all specialists of the enterprise should be involved and this analysis should be comprehensive, taking not only external, but also internal threats into account. The internal threats include, for instance, intentional or incidental errors of managers in the field of financial management of an enterprise. These threats are related to payments to employees during equipment downtime and the absence of output as a result of an accident, fire or other emergencies, injury or illness of the employee, etc. The external threats include the purchase of shares, debts of the enterprise by unwanted partners; significant financial obligations of the enterprise; imperfection of the mechanisms of forming the state economic policy, an unstable economic situation. However, this is also the state of the environment, and military or terrorist campaigns, the criminal situation, etc.

Thus, if one omits the above positions in the identification and assessment of threats, monitoring the level of the financial security of the enterprise will be incomplete. Consequently, the most important components of the mechanism for ensuring its financial security will be missed, and, as a result of such errors, the conditions for achieving the stability, success and long-term functioning of the enterprise will not be created even in a stable economic situation. In line with this, the state of the economic development of Ukraine in terms of gross domestic product (GDP) growth in Ukraine is to be analysed (Ministry of Finance 2019). Figure 1a presents changes in GDP from 2002 to 2019.

Figure 1b shows the indicators given on the official website of the Department of State Labour in the Chernihiv region of Ukraine, characterising the change in occupational injuries over this period of time in terms of C_f , which, as mentioned above, represents an internal financial threat. C_f is the coefficient of the frequency of general injuries per 1,000 workers. It is determined as the ratio of the number of victims to the average number of employees multiplied by 1,000 (State Labour Office in Chernihiv region 2018). A similar dependence of the reduction in C_f is in other regions of Ukraine. The obtained curves are described by trends with the following polynomial equations for equal periods of time:

- GDP, billion (in UAH): $R^2 = 0.9957$

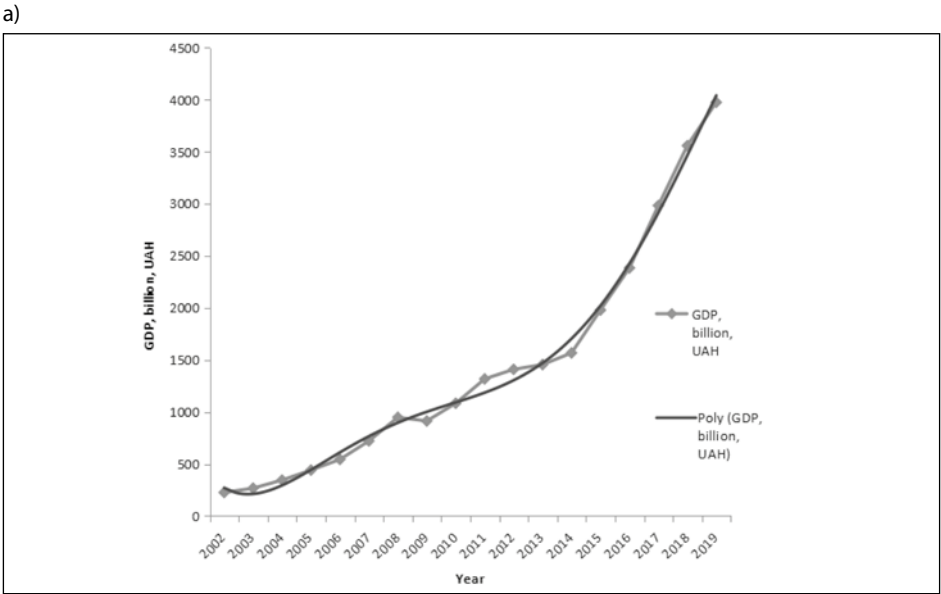
$$y = -0.0263x^5 + 1.3482x^4 - 23.855x^3 + 181.72x^2 - 455.46x + 566.49 \quad (1)$$

- C_f : $R^2 = 0.6685$

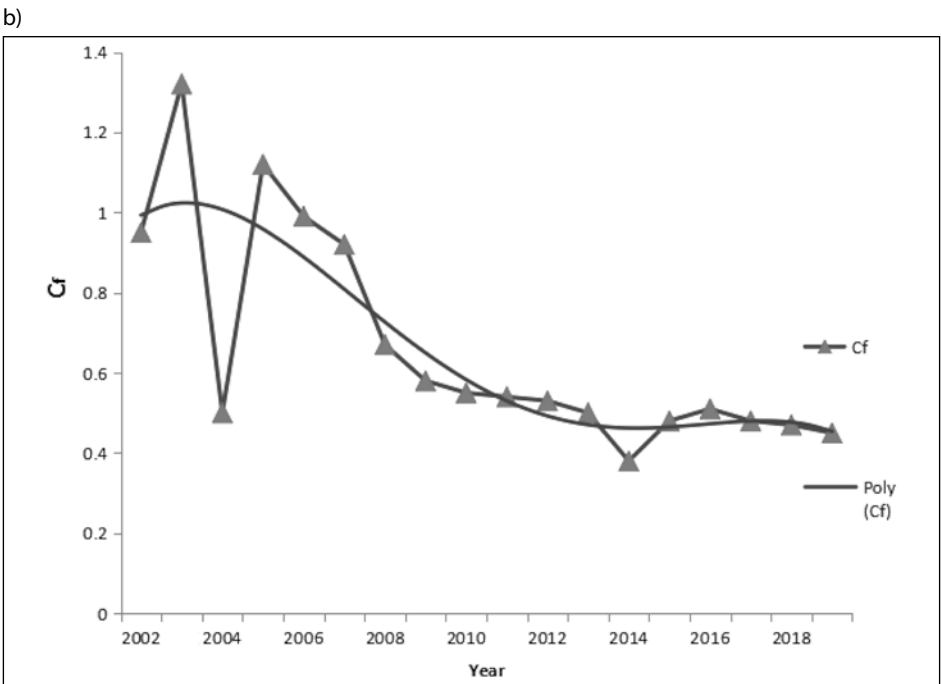
$$y = -7E-05x^4 + 0.003x^3 - 0.0394x^2 + 0.1285x + 0.901 \quad (2)$$

The intersection point of these two curves is of particular interest. Accidentally or not, however, it fell at the start of a hybrid war with Russia. During this period, financial assistance from the countries of Europe and the United States began to

Figure 1. Indicators of the growth of gross domestic product (GDP) in Ukraine (a) and a decrease in C_f (Injury frequency coefficient) in the Chernihiv region (b)



Source: Ministry of Finance (2019).



Source: State Labor Office in Chernihiv region (2018).

come to Ukraine, which gave a positive impetus to GDP growth and, at the same time, new international standards began to be introduced at enterprises, including labour safety.

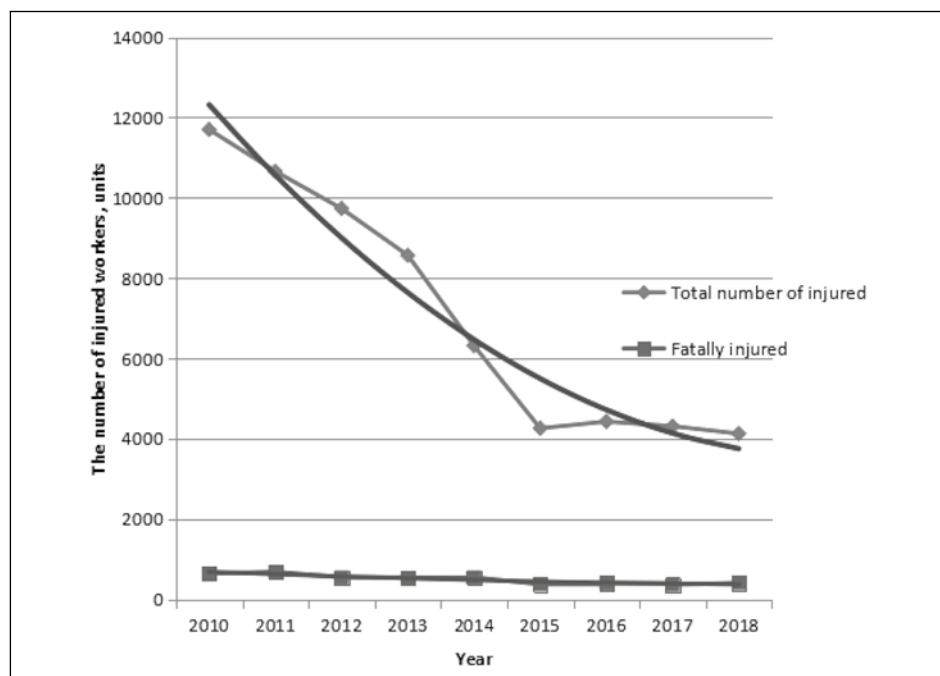
Ukraine began co-operating with the IMF back in 1994 when it received a very 'modest' amount by current standards – USD 763 million which went to maintain the country's balance of payments (Gaevaia 2018). From 1995 to 1998, Ukraine had a three-year standby (SBA) programme with almost USD 2 billion to support the hryvnia exchange rate, payments on external obligations and financing the payment deficit. Kiev received almost USD 1.6 billion between 1998 and 2002 as part of the EFF extended financing programme. These funds were used to replenish the NBU's foreign exchange reserves. In 2002–2005, Ukraine and the IMF cooperated on a loan-free basis under the 'proactive standby' programme, under which the IMF reserved loans in the amount of USD 550 million in case the situation worsened with the balance of payments or with reserving foreign exchange. But since March 2005, Ukraine has ceased to comply with the terms of the economic reform programme, and the IMF has stopped the co-operation. The largest loans in the history of our co-operation with the IMF took place in 2008–2013: in 2008–2009, under the new standby programme, Ukraine received USD 10.6 billion. The first tranche – USD 4.5 billion was urgently credited to the gold and currency reserves of the National Bank. The remaining two tranches went directly to the budget. In 2010–2013, as part of the next programme of co-operation, the IMF transferred almost USD 3.4 billion to the Ukrainian budget. It is these loans that make up the lion's share of the state debt of Ukraine, which will have to be paid in 2019–2025. Kiev was expected to receive another USD 17 billion from the IMF in 2014–2015. This is the amount that was reserved under the new standby loan. However, the treasury received only USD 4.3 billion, and on 11 March 2015, the IMF replaced the standby programme with a new four-year EFF programme for USD 17.5 billion. The first tranche of USD 5 billion arrived immediately after the signing of the Memorandum, and it was already in early August that Ukraine received another USD 1.7 billion. This money went to replenish the reserves of the National Bank. Then the IMF transferred USD 1 billion each in September 2016 and April 2017.

Since 2015, Ukraine has received about EUR 18 billion of assistance from the European Union and also from EU member states, which is many times higher than the amount of financial assistance provided to Kiev by the United States in the form of guarantees on loans in the amount of USD 1 billion, as stated by a special adviser to the president of the European Commission for Relations with Ukraine, former European Parliament deputy from Germany, Elmar Brock (Interfax Ukraine 2019).

At that time, OHSAS 18000, ISO 31000, ISO 12100 and others were ratified and adopted as Ukrainian standards. Since 2011, for the first time, they actively begin training engineers in the field of labour protection in Ukraine. Later, it becomes a specialisation, and now there is an educational program in the field of

civil security. The complex of these measures showed a positive result relatively quickly, in the form of a decrease in C_f and other indicators. Figure 2 shows the characteristics of the dynamics of a decrease in occupational injuries by 2019 (Mitina and Babenko 2018).

Figure 2. Dynamics of reduction of occupational injuries and deaths in Ukraine from 2010–2018



Source: Mitina and Babenko (2018).

The obtained curves are described by trends with the following polynomial equations for equal periods of time:

- total number of injured: $R^2 = 0.9522$

$$y = 97.561x^2 - 2046.2x + 14264 \quad (3)$$

- deadly injured: $R^2 = 0.8444$

$$y = 3.0043x^2 - 69.31x + 752.86 \quad (4)$$

On the basis of the analysis of Figures 1 and 2, it can be stated that an improvement in GDP positively affects the state of occupational injuries, reducing it because of OHSAS 18000, ISO 31000, ISO 12100 which were adopted. This can be explained by the fact that with an increase in GDP, enterprises are able to increase deductions for solving security problems, improving the quality of acquired means of the individual and collective protection of workers, and others. The reduction in injuries as a result of an increase in GDP corresponds to the generally recog-

nised dependence of risks on the economic (financial) condition of the enterprise (Berezutskyi 1999). However, a general ‘picture’ of the financial security situation can be imagined if one assesses the impact of accidents, disasters and other emergencies on the economic condition of not only the enterprise, but also Ukraine. Then it becomes clear that financial security is a component of the enterprise management system, and its subsystem is the risk management subsystem, where the financial security system should be included. Figure 3 shows the structural diagram of the enterprise management system with subsystems. The subsystems are the enterprise management system as well as the Occupational Safety and Health Management Subsystem which quantitatively determine financial risks. Displaying the overlapping areas embraces general issues about risks in different services.

Figure 3. Components of enterprise management system



Source: own study.

4. Occupational Safety Audit and Risk Identification

The identification of risks at the enterprise is possible thanks to the audit of labour safety (NSAI Standards 2018). This allows one to answer the question whether the labour protection system at the enterprise complies with current legislation. During the audit, the following areas are checked:

- Availability of the necessary documentation for labour protection, the completeness of its volume and the correctness of maintenance
- Personnel's compliance with safety and labour protection rules
- Planning of medical examinations, training of labour protection workers, conducting briefings on electrical safety, fire safety, etc., and the frequency of their conduct

- Whether the employees are provided with all necessary personal protective equipment (PPE)
- How well the employees are informed, theoretically and practically, when it comes to matters of labour safety and labour protection (how familiar they are with the norms of the current legislation, requirements, rights and obligations of employees).

The current legislation of Ukraine determines the conditions under which an audit of labour protection is mandatory (State Statistics Service of Ukraine 2018):

- Preparation for inspection by state regulatory authorities
- Absence of a full-time employee responsible for OSH at the enterprise
- Accident or accidents at the enterprise
- Assessment of the state of the labour protection system at the enterprise in order to prevent accidents.

An audit of labour protection is carried out by an independent third party in order to identify, assess and minimise the risks of the enterprise in compliance with legislation in the field of labour protection and industrial safety. Such an independent labour protection audit has the following advantages:

- Prevention of injuries and industrial accidents
- Identification of risks (inconsistencies) before the arrival of regulatory authorities
- Prevention of financial liability for non-compliance with the labour protection legislation
- Building an effective work system for the labour protection service
- Additional control and verification of the effectiveness of the labour protection service
- Taking the first step towards the development of methods and programmes to achieve industrial safety standards
- Increasing social trust, image, investors, public authorities to the enterprise.

The audit procedure at the enterprise (State Statistics Service of Ukraine 2018):

I STAGE. Preparing:

- Determination of the objectives and timing of the audit
- Definition of an audit programme
- Co-operation arrangements.

II STAGE. Analysis:

- Analysis of documentation on labour protection and assessment of the effectiveness of the labour protection management system
- Analysis of compliance with the requirements of legislative and other regulatory legal acts on labour protection
- Verification of permits for the operation of high-risk equipment
- Effectiveness of risk management (personnel safety when performing hazardous work, equipment operation)

- Availability of resources for the effective functioning of the labour protection system (training, the level of qualification of the personnel in the field of labour protection)
- Analysis of accident data, the results of their studies, corrective actions for previously identified inconsistencies
- Participation in labour protection.

III STAGE. Preparation of an expert report:

On the basis of the results of the audit, a report is compiled that contains: an analysis of the working conditions of the workers, a list of violations in the area of labour protection identified at the enterprise, and tips for eliminating deficiencies, as well as a description of managerial risks and recommended measures to improve labour safety. The expert report includes:

- Research, an analysis of the state of labour protection and industrial safety at the enterprise
- Results of the verification of compliance with the requirements of existing documentation
- Analysis of compliance with labour protection requirements by employers and employees
- Presentation of specific legislation that has been violated
- Recommendations on the elimination of discrepancies, comprehensive solutions for industrial and labour safety.

Thus, the implementation of the coherent work of the labour safety audits in enterprises reveals the dangerous (risky) job sites and prevents crashes or injuries suffered by workers in a timely manner. The auditor must consider the human factor in an audit of occupational safety. It is evident especially in Ukrainian enterprises. Therefore, when solving the issues of labour safety, it is necessary to simultaneously solve the issues of the production and workers culture. Enterprises that have a high level of culture fulfil all the requirements for ensuring financial and industrial safety, as a rule.

5. The Impact of Occupational Risks on the Economic Development of Ukraine

The financial security of enterprises is largely determined by internal financial security, which, in turn, is determined by the technical state of production and the human factor. Not all business leaders give the human factor the necessary attention, which is why they pay later, losing both their finances and their work. Annually, Ukraine suffers impressive losses of labour and financial resources due to the low level of labour safety and non-compliance with sanitary standards at most enterprises, as stated by the Deputy Chairman of the Federation of Trade Unions of Ukraine, Sergey Ukrainets (*The First Krivoy Rog* 2013). According to him, despite

the fact that in Ukraine, there is still no perfect methodology for calculating such losses, there is a generalised model assessment of the International Labour Organization. According to it, every developed country in the world annually loses more than 4% of its GDP as a result of industrial accidents and occupational diseases. The Ukrainian GDP is about UAH 1.5 trillion. Thus, the annual economic losses of Ukraine in the area of labour protection result in at least UAH 60 billion, as noted by Sergey Ukrainets. He specified that these losses consist of the fact that a significant number of people annually stops working. For instance, more than 1,200 people die at work, and about 12.5 thousand workers become disabled, though, if not for injuries or illnesses, they could still work fully and increase the national welfare in the coming years. On the basis of the above financial losses as a result of the lack of a nationwide system of effective risk management in Ukraine and, as part of it, risk management in enterprises, taking all internal and external threats into account, the country suffers huge financial losses, people die and get injured in their workplace, and the infrastructure collapses.

Currently, steps are being taken to address these issues and increase GDP, while reducing injuries and deaths in the workplace is evidence of this positive process. In Ukraine, the international standards ISO 12100, OHSAS 18001, ISO 31001 and others were ratified and adopted for implementation, which, when implemented at the enterprise, should help solve security issues and eliminate problems in managing production risks, improving their identification, assessment, accounting and planning measures to reduce them to acceptable values. However, the process of implementing these standards is not very simple and has many barriers. The fragmentation of government departments and the lack of professionalism of some employees nullify the effectiveness of this work. It will take at least another 10–20 years before the risk management system in the workplace begins to work at the proper level. Both the state and most enterprises are not ready to implement a risk management system because it applies to the entire enterprise and all structures and managers. An external impact is needed, maybe even a threat, including a financial one, of government inspectors who will push the management to implement an enterprise management system according to the scheme shown in Figure 3.

Table 1 shows the costs of enterprises in Ukraine, determined by accidents (related and unrelated to production) which were paid during the reporting year (State Statistics Service of Ukraine, 2018). It is shown that the amount of payments exceeds UAH 15 million in a year. Under the article ‘for other payments to victims, family members, funerals carried out at the expense of enterprises’, the costs equaled more than 11 million in 2017. It should be noted that the amount of fines to officials (administrative employees) for such payments is much less and decreases every year. Therefore, enterprises must consider the financial threats posed by such costs.

Education and training of bachelors and masters in specialisation 263 – Civil Security, in the educational programme – Labour Protection – helps to accelerate

the implementation of risk management and reduce financial losses. In Ukraine, such training began officially in 2011 and currently more than 15 higher education institutions are preparing bachelors and masters in this field. These are those specialists who should replace the 'old' personnel, armed with new knowledge and approaches to solving modern problems, based on the experience of previous generations of labour protection engineers.

Table 1. Costs of enterprises caused by accidents from 2014–2017

Indicators	Years			
	2014	2015	2016	2017
The costs of enterprises caused by accidents in total (in UAH)	18,836,342	18,778,507	15,007,204	19,496,946
Including the payment of the first 5 days of incapacity for work, in accordance with the certificate of incapacity for work (in UAH)	9,367,670	10,469,396	6,996,105	7,871,345
Including other payments to victims, family members, funerals performed at the expense of enterprises (in UAH)	9,468,672	8,309,111	8,011,099	11,625,601
The amount of fines paid by administrative employees of enterprises for violation of laws and labour protection standards related to accidents, including for their concealment (in UAH)	145,346	102,868	115,742	92,740

Source: State Statistics Service of Ukraine (2018).

Specialists of the new formation should be managers and co-ordinators of the introduction of risk-oriented approaches to enterprise management, which involves an integrated approach to identifying and managing risks. Learning is necessary not only for students, but also for teachers. Currently, there is an opportunity to undergo advanced training on the introduction of a risk-based approach, not only to introduce it in one's own country, but also to exchange experiences with partners abroad.

6. Discussion

The studies presented in the paper show that there is a certain relationship between the state of labour protection at the enterprise and its financial security. Historical information provided in this article about accidents and disasters demonstrates that any emergency events in Ukraine lead to global economic losses of enterprises.

Injuries and accidents at work, as well as possible financial losses and the risks associated with them, are a category that must be considered at any enterprise (Figure 3 and Table 1). Insufficient attention paid to this issue by the company management leads to significant financial losses. For instance, the death of an employee or a group of employees stops the production process, and what results in financial losses can exceed the established criteria for financial security which may lead to the financial collapse and closure of this enterprise.

In most cases, economists in Ukraine do not take the impact of such emergencies on financial stability into account, as there is no established system for accounting for production risks. For the last 10 years efforts have been made to introduce a risk-oriented approach to the analysis of the occupational safety and health of workers at the enterprises, and one can already observe a positive impact where this approach has been implemented. The time has come when production risks should be taken into account by financiers in enterprises when analysing the financial security of these enterprises. The history of emergencies in Ukraine and its regions should be carefully studied and financial risks and security must be determined taking all risks, and above all, production risks which at many enterprises exceed acceptable levels, into account.

The dependencies in Figures 1 and 2 show that industrial injuries and the gross income of the state are linked by certain dependencies. These dependencies can have different indicators which are determined by the volume of production and the financial well-being. The analysis of the world's information sources shows that a similar problem exists in almost all enterprises. The only way out of this situation is to train labour safety managers and teach safe working practices for workers. Thus, the implementation of international standards for security and risk management is an urgent task which also has a financial aspect of security.

A research implication is that the reduction in injuries as a result of an increase in GDP corresponds to the generally recognised dependence of risks on the economic (financial) condition of the enterprise. However, the overall 'picture' of the financial security situation can be imagined if one assesses the impact of accidents, disasters and other emergencies on the economic condition of not only the enterprise, but also Ukraine. Then it becomes evident that financial security is a component of the enterprise management system and of the risk management subsystem where the financial security system should be included.

7. Conclusions

The analysis of the financial security of enterprises in Ukraine showed a high degree of risk which is determined by the presence of potential internal and external threats, specified by the absence of a single effective system of comprehensive analysis and assessment which leads to huge financial losses. On the basis of the

research results obtained, it is necessary to regularly conduct labour safety audits at enterprises. At the same time, it is necessary that auditors are not only state-owned, but also independent.

A decrease in the effective control of the state bodies of the DPSN and GOS-TRUDA since 2013 over the state of safety of production facilities has led to a decrease in financial security and an increase in financial and professional risk. The international standards introduced by enterprises can help solve these problems, and subject them to an integrated approach that takes into account the education and training of specialists with a degree. It is necessary to improve the training of occupational safety specialists with a focus on world standards and regulations. It is crucial to integrate world standards into the existing legal documents of Ukraine.

The analysis and assessment of financial security should be carried out comprehensively with the involvement of managers and specialists of all departments and services. For each workplace, risk maps must be developed that need to be constantly monitored and changes should be made to their indicators. It is necessary to actively introduce a risk-oriented approach in Ukrainian enterprises, which should be integrated into all areas of production.

The improvement of the state of financial security can also be helped by the work of sanitary doctors who have ceased to train in Ukrainian higher educational institutions. There is an urgent need to address this issue because only they have the opportunity to inspect any enterprise without hindrance.

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