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4.1 Monitoring of financial interaction of the aerospace industry enterprise: stock market service

Today, there is no comprehensive assessment of the state of the system in Ukraine monitoring of financial interaction of economic entities in the conditions of global challenges and social and behavioral restrictions. The conducted studies show that the actual monitoring procedure for business entities is completely voluntary and its mandatory implementation is not recorded and not controlled at the state level.

The problems of financial interaction arise before every enterprise both under conditions of sustainable development and in periods of crisis, but they are especially relevant today, when hostilities are taking place in Ukraine and a large number of enterprises are destroyed and need financial support from banks and the state.

Monitoring is a constant, systematic observation of the main quantitative and qualitative parameters of business entities with elements of analysis, evaluation and forecasting taking into account the factors of the surrounding, external and internal environments [126].

Monitoring of the financial interaction of economic entities in the conditions of global environmental challenges is proposed by domestic scientists to be carried out by using the 4P elements (table 1).

The Exchange is a professional participant in the securities market, whose main function is to create and provide conditions for concluding transactions. As a rule, the following tasks are assigned to the exchanges: 1. Provision of a place - an exchange platform or an electronic system for trading. 2. Organization of mutual settlements and deliveries under concluded deals. The exchange acts as a guarantor for the transactions. 3. Dissemination of information about the results of the auction.

According to the instruments traded, the exchanges are divided into currency exchanges, securities exchanges, financial derivatives exchanges, as well as commodity and raw materials exchanges.

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Traditionally, exchanges are organized in the form of a closed joint-stock company, partnership or partnership of the bidders themselves. But they can also be created as a private enterprise providing relevant services to brokers. In our country, stock exchanges operate in the form of a non-commercial partnership. Acquisition of a place on the stock exchange is often the entry into its community.

Only professional participants take part in exchange trading: brokers - companies executing commission transactions at the expense and on behalf of clients, and dealers - organizations that put up their offers for the purchase and sale of traded assets (quotes) at their own expense. In order for a particular security or other investment asset to be admitted to trading on the exchange, they must go through the listing procedure.

In addition, not only already issued securities can be traded on the stock exchange: quite often, primary placement is carried out through stock exchanges. Traditionally, trading on the stock exchange was carried out on the so-called exchange circle, when offers to buy and sell were shouted out by participants, and the deals made were recorded and transferred to the exchange for mutual settlements - clearing. Nowadays, the vast majority of stock exchanges are computer systems into which applications are entered in electronic form. The main income of the exchange is received from commission fees and the sale of exchange information, including in real time.

Taking into account the fact that the activities of the aerospace industry have some differences from the activities of other business entities, it is proposed to modify the existing monitoring system taking into account the peculiarities of the work of aviation enterprises. Table 1 presents key issues of interest to interaction subjects and interaction tools.

**Table 1 – Elements of interaction of an enterprise in the aerospace industry in
the context of global challenges**

Element of interaction	Characteristic
Planet	protection of natural resources by the business entity, concern for the state of the environment and minimization of the negative impact on climate change
People	development of society, satisfaction of customer needs;
Prosperity	the increase in environmental awareness of society is directly reflected in the behavior of consumers who demand environmentally safe products and services from manufacturers
Partnership	ensuring the economic efficiency of the business entity, achieving commercial success and making a profit

Source: compiled from data [126]

The rapid development of air transport and its growthrole in human life could not fail to affect the environment. It is obvious that air transport is developing rapidly pace World rates of increase in the number of flights of civil aviation aircraft in the periods not occupied by the economic crisis are different estimated at 5–10% per year. This is a much higher rate of development than others types of transport, energy, as well as many other sectors of the economy. Accordingly, the share of aviation in environmental pollution is growing every year.

In air transport processes, including flights and maintenance of aircraft, the operation of airports and the work of aircraft repair enterprises, various types of environmental pollution occur, which determines the need for environmental risk insurance. Thus, chemical pollution by various substances occurs as a result of emissions of aircraft exhaust gases during the operation of aircraft repair enterprises and airports. Mechanical pollution of the atmosphere is caused by winds blowing on large desert spaces of airfields.

During the take-off, flight and landing of aircraft, there is a strong acoustic (noise) pollution of the environment. The operation of radar and radio engineering equipment of civil aviation leads to electromagnetic pollution.

Although relatively insignificant, air transport processes also contribute to thermal pollution of the environment.

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**Table 2 – Monitoring of risks that arise as a result of financial interaction
of airlines during stock exchange service**

Environment	Subject	Problematic aspects
Surroundings	State ecological inspection	Minimization of the negative impact on the air pool, energy, water, resources, reduction of the level of acoustic and biological pollution, development of comprehensive plans for saving resources
Environment	State/owners of the enterprise	Minimization of risks, obtaining economic effect and operating profit, compliance with economic standards, international norms and business rules
	Leadership	Profit maximization, participation in profit distribution, risk minimization, conflicts in the enterprise
	Personnel	Lack of career growth, qualification level, stability, compliance with labor legislation, availability of a social package, a decent salary level
Internal environment	Buyers (debtors)	Quality and variety of goods and services, affordable prices for products and tariffs for services, ethical and transparent business conduct, social impact on society, timely payments, plateau ability of buyers.
	Suppliers	timely fulfillment of obligations, ethical and transparent business conduct
	Investors, financial and credit	Minimization of risks, obtaining economic effect and operating profit, compliance with economic, social, environmental, etc. standards, international norms and business rules
	Institutions	Implementation of economic regulations, compliance economic, social and legislative norms, job creation, tax payment
	Government agencies	The level of competitiveness of the competitor company, products and services, the market share of competitors
	Competitors	Joint scientific projects between universities and research institutions and business entities
	Scientific and research	Availability of plans for interaction with communities, socio-economic partnership, timeliness of tax and fee payments, minimization of the effects on the environment, ensuring occupational safety and health protection, employment of personnel, threats of reduction, etc., anti-corruption policy
	institutions	Providing objective, comprehensive, reliable data about the company's activities

Source: compiled from data [126]

Air transportation of passengers, operation of airports can lead to biological pollution of the environment, the spread of infectious diseases and epidemics. The problem of aesthetic pollution of the environment must be taken into account during

the construction of airports, especially in the case of their construction in places with little human activity.

The peculiarity of emissions of harmful substances during the operation of air transport is altitude (as is known, modern airplanes fly at an altitude of 8–13 km). This results in various changes in the composition of the atmosphere both directly and indirectly. The direct impact is the emission of carbon dioxide, nitrogen oxides (NO_x), water vapor, unburned hydrocarbons (benzene, propane, ethane, acetylene, methane, etc.), sulfate particles, and soot. An indirect effect is the formation of ozone (O₃) as a result of a chain of chemical reactions similar to the formation of smog. In the lower atmosphere, ozone is a harmful substance that contributes to global warming. One plane during a flight of 1000 km consumes as much oxygen as one person during a year, releasing the corresponding amount of hydrogen oxides. A jet liner during a flight from America to Europe consumes 35 tons of oxygen in 8 hours. This amount is produced in the same time by approximately 25,000 hectares of forest. Airplanes flying at high altitude drop nitrogen oxides directly into the lower atmosphere, where they enter into reactions that lead to the destruction of the planet's ozone shield, which protects it from ultraviolet radiation. Exhaust gases from aircraft engines contribute to the formation of ozone holes. A huge amount of water vapor is dumped into the upper and lower stratosphere. From 10 to 30 tons of water vapor are dumped into these layers of the atmosphere every day. Nitrogen oxides react with stratospheric ozone, which leads to the destruction of this layer, which protects the biosphere from harsh ultraviolet solar radiation [127].

The increase in the carrying capacity of aircraft and the intensity of flights also led to an increase in the noise level in the areas where airports (airfields) are located.

Therefore, aviation risk insurance (environmental risks, property insurance, liability insurance) plays an important role in the enterprise's relations with business entities.

Aviation insurance has its own characteristics compared to other types of insurance. They are associated with specific risks, different from other types of property, which can cause catastrophic consequences for the company with significant

losses of a cumulative nature. Therefore, aviation insurance is closely related to the world market of insurance and reinsurance and is regulated by both national and international law [128].

According to the Law of Ukraine "On Insurance" [129], aviation insurance belongs to the 1st, 5th, 11th and/or 13th class of insurance.

In connection with the adoption in November 2021 of the new Law of Ukraine "On Insurance", changes were made to Art. 117 of the Aviation Code of Ukraine, which states that aviation entities are required to conclude civil aviation risk insurance contracts under insurance classes 1, 5, 11 and/or 13, defined by Article 4 of the Law of Ukraine "On Insurance" [130]. The procedure and conditions for the implementation of civil aviation risk insurance are determined by the authorized civil aviation authority in agreement with the National Bank of Ukraine.

Property insurance applies to the following objects of insurance: aircraft (total loss (death) of the aircraft or damage to its individual parts, systems and structural elements during taxiing, in the air or on the ground). Liability insurance arising from the use of an aircraft (including the carrier's liability) to third parties. An important type of aviation insurance is personal insurance in terms of accident insurance. In domestic practice, accident insurance refers to risky types of insurance, the purpose of which is insurance protection of citizens in case of loss of health or death due to an accident. In the case of aviation insurance, this is the insurance of crew members, aviation personnel, employees of the customer during the performance of aviation works, persons who have the right to be on board on legal grounds without purchasing a ticket.

Monitoring of the effectiveness of interaction with insurance companies is proposed to be evaluated using the following indicators:

- insurance of environmental risks (level of sound pressure and noise of aircraft; use of energy-saving technologies in the production of aircraft; level of intensity of the active electromagnetic field at workplaces (no more than 25 V/m); compliance with the GDV standard (maximum permissible emissions into the atmosphere) is a restrictive volume of a polluting substance per unit of time, the excess of which leads to adverse consequences in the environment or is dangerous for human health;

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compliance with the GDS standard (maximum permissible discharges into water bodies) is the mass of the substance in wastewater, the maximum permissible for removal in the established mode at this point per unit of time in order to ensure quality standards at the control point (If the company uses the services of insurance organizations, then we give 1 point, if not, then 0 points);

- property insurance (If the company uses the services of insurance organizations, we give 1 point, if not, then 0 points);

- accident insurance (If the company uses the services of insurance organizations, we give 1 point, if not, then 0 points);

- liability insurance (If the company uses the services of insurance organizations, we give 1 point, if not, then 0 points).

The maximum number of points that an enterprise can receive is 4. The following scale for evaluating the effectiveness of the enterprise's interaction with the environment is offered:

- 0 points – low level of interaction between the enterprise and insurance companies;

- from 1 to 2 - the average level of interaction of the enterprise with insurance companies;

- from 3 to 4 - a high level of interaction between the enterprise and insurance companies

It is proposed to monitor the effectiveness of financial interaction with external entities using the example of buyers/debtors of the enterprise by evaluating the following criteria:

- increase/decrease in the number of product consumers (number of points from -1 to 1);

- increase/decrease in the share of customers who have long-term relations with the enterprise (number of points from -1 to 1);

- increase/decrease in receivables (number of points from -1 to 1);

- presence of overdue receivables (does not have – 1 point, more than 25% of the total amount of receivables (– 1) point, less than 25% – 0 points);

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- the level of consumer loyalty (a factor of social and behavioral restrictions) (deterioration or improvement of the attitude of consumers to the company's products or services) (number of points from -1 to 1);
- increase or decrease in the turnover period of receivables (number of points from -1 to 1);
- deterioration/improvement of the economic situation in the country (number of points from -1 to 1).

If there is a positive trend and an increase in the indicator is observed, then 1 point is given, if the trend is negative, then (-1 point), if there is no trend, then - 0 points.

The range of points that the company can receive is from -7 to 7. It is advisable to interpret them as follows:

- less than 0 – a very low level of interaction of the enterprise with buyers/debtors;
- from 0 to 2 - low level of interaction of the enterprise with buyers / debtors;
- from 3 to 5 - the average level of interaction of the enterprise with buyers / debtors;
- from 6 to 7 - a high level of interaction of the enterprise with buyers / debtors.

As a result of effective assessment of the level of financial interaction with customers/debtors, management will be able to make informed decisions regarding further relations with customers.

In turn, it is proposed to consider the monitoring of the company's financial interaction with creditors through the quality of the company's management and evaluate it using creditworthiness indicators. Since creditworthiness involves effective management of finances, production, sales, technologies and personnel of the enterprise under the influence of various external factors, the coefficients for calculating the integral indicator were selected from each group of indicators.

The indicators used to assess the level of creditworthiness have different dimensions, which creates a number of problems that indicate the impossibility of determining the general level of economic security of the enterprise [131]. For the

purposes of the calculation, indicators are considered, which will be reduced to a dimensionless form due to their normalization.

The stage of normalization of indicators is carried out using the method of linear scaling and determination of the minimum and maximum values of the general set of data for the period, using dispersion analysis. At the same time, each indicator was considered from the point of view of its impact on the sphere under analysis. So, if the statistical indicator I is related to the integral indicator of increasing dependence, then the value of the corresponding unified indicator I is calculated according to the formula (1):

$$I = \frac{I_i - I_{\min}}{I_{\max} - I_{\min}}, \quad (1)$$

where $I_{\min}$ – the minimum value of the j_{th} indicator;

$I_{\max}$ – the maximum value of the j_{th} indicator.

One of the methods of factor analysis was used to combine the various indicators of the enterprise, namely, the method of main components, with the help of which it is expedient to determine the weighting coefficients of the indicators characterizing the components of the anti-crisis potential. Since the method of principal components is based on the relationship of the initial characteristics, before constructing the principal components, it is necessary to check the presence of correlation between $X_1...X_p$ for each group of indicators. To move to the main components, the eigenvalues of the correlation matrix are determined [131].

The integral indicator of the financial component of the economic potential of enterprises is determined by the formula:

$$I_{\phi c} = 0,92 \times X_1 + 0,285 \times X_2 + 0,288 \times X_3 + 0,295 \times X_4 \quad (2)$$

where X_1 – return on sales, %; X_2 – coefficient of current liquidity; X_3 – coefficient of autonomy; X_4 – the asset turnover ratio;

The combined effect of globalization, technological advancement and deregulation has changed the business strategies of stock exchanges around the world. This article analyzes the transformation of the stock exchanges from the market model to the firm model. The role of the main functions of the exchange was also revised and an analysis of the costs and income of the exchange as a company was made, the value

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chain in the market was established securities to better evaluate her choice of organizational strategies. Thus, the proposed approach will make it possible to assess the level of interaction of the enterprise with the environment, debtors and creditors of the enterprise, taking into account global challenges and socio-behavioral restrictions.