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# FINANCIAL RISK MANAGEMENT AT CREATIVE ECONOMY ENTERPRISES IN THE CONTEXT OF THE DEVELOPMENT OF NEW DIGITAL TECHNOLOGIES

## ABSTRACT

Creative economy enterprises in Ukraine form a significant part of modern digital content, services, and innovations, while they are vulnerable to financial risks due to high dependence on demand, fluctuations in cash flows, the cost of financing, and rapid technological changes. Thus, in the period 2020–2024, these risks increased due to martial law, uneven market recovery, and the need for an accelerated transition to new technology that requires investments and creates an additional burden on liquidity and financial stability. The object of the study is the processes of financial risk management at creative economy enterprises in the context of digital transformation. The subject of the study is methods of quantitative assessment and forecasting of financial risk, taking into account the intensity of digital investments. The purpose of the work is to develop a model that allows explaining and forecasting the financial risk index of creative economy enterprises based on reporting indicators and calculated indicators of digitalization. The methodology includes descriptive statistics, correlation analysis, comparison of functional regression forms, and evaluation of an extended model with a period indicator to separate the regimes of 2020–2021 and 2022–2024. Additionally, a scenario forecast for 2026 was performed for three digital investment trajectories, which allows obtaining a ranking of enterprises by the forecast risk level and assessing the sensitivity of risk to the acceleration of digitalization. The proposed model and a set of tables and graphs can be used by the management of creative enterprises to plan digital investments, assess their risk consequences, form scenario budgets, and prepare analytical materials for creditors and investors. The proposed approach is reproducible, since it uses indicators that can actually be obtained from reporting, and demonstration values can be replaced with actual data of enterprises without changing the calculation logic and modeling structure.

**Keywords:** financial risk management, integrated enterprise risk management, creative economy, cultural and creative industries, digital technologies, digital platforms, financial sustainability, cash flows

**JEL Classification:** G32, G31, D81, O83

## INTRODUCTION

By creative economy, we mean a set of activities in which the main added value is generated by creative competencies, intellectual property, and intangible assets, including content, design, brands, licenses, software products, and cultural services, covering media, publishing, audiovisual production, gaming, advertising, and other segments of cultural and creative industries. In the era of digitalization, this economy is shifting from local offline channels to platform distribution and global monetization, changing business models, speed of scaling and cost structure, and the role of data, algorithmic visibility and digital infrastructure is increasing, which simultaneously opens up new sources of income and creates new financial risks related to cyber resilience, platform dependence, demand volatility and more expensive financing of digital investments.

The relevance and importance of the topic of financial risk management in creative economy enterprises, particularly in the context of emerging digital technologies, is

due to the fact that these enterprises operate in an environment of increased uncertainty, Income is often project-based, demand changes rapidly under the influence of trends, and a significant part of the value is created by intangible assets, such as copyrights, licenses, brands, design, content and reputation. Unlike many traditional areas, it is more difficult to predict cash flows here because sales can be uneven, dependent on seasonality, information waves, algorithmic ranking on platforms, and audience reaction. At the same time, the share of international transactions, cooperation with freelancers, and the use of marketplaces and payment services is increasing. This growth raises currency risks, liquidity risks, payment delay risks, counterparty risks, and legal risks, particularly in terms of contracts and protection of intellectual property rights.

The development of new digital technologies simultaneously opens up opportunities and creates new sources of financial losses, as sales channels, monetization models, cost structures change, and cyber risks, data leakage risks, service outage risks, cloud infrastructure dependency risks, and audience loss risks due to platform rule changes emerge. For creative businesses, even a short disruption in digital channels can mean direct revenue losses and indirect losses due to a drop in trust, so the issue of timely risk identification, financial assessment, provisioning, insurance protection, and management policy development becomes a critical condition for business sustainability.

Modern solutions for analytics, accounting automation, budget planning, project management, and sales management can reduce operating costs and increase transparency. But at the same time, it creates risks of data errors, incorrect settings, unsuccessful investments in software products, as well as risks associated with the use of artificial intelligence-based systems, when management decisions rely excessively on algorithmic recommendations.

The importance of the study is enhanced by the fact that the creative economy is increasingly integrated into global value chains, and therefore, enterprises need tools for stress analysis, scenario planning, currency position management, diversification of income sources, control of receivables, and building flexible financial models that take into account different trajectories of demand and technological changes.

## LITERATURE REVIEW

In the scientific literature, integrated enterprise risk management is considered an approach that combines financial and non-financial risks in a single system of management decisions, and this is what makes it relevant for enterprises in the creative economy, where uncertainty is formed not only by the market but also by technological and behavioral factors. Theoretical foundations and practical arguments supporting this approach are systematically presented by Nocco and Stulz (2006), emphasizing that the integration of risks into corporate governance can improve the quality of resource allocation and decision-making discipline.

At the same time, Fraser and Simkins (2007) show that common misconceptions about integrated enterprise risk management reduce the effectiveness of implementation, since companies often replace risk management with formal compliance procedures or one-time risk matrices without a real connection to the financial strategy.

Hoyt and Liebenberg (2011) argue that the presence of a mature enterprise risk management system can be correlated with the growth of the company's value, while McShane et al. (2011) demonstrate that this effect is not automatic and depends on the quality of implementation and context.

The logic of contextual dependence is reinforced by the contingent approach of Gordon et al. (2009), where the effectiveness of enterprise risk management is associated with the compliance of the management system with the specifics of the company, its risk profile, and management practices.

In addition, Li (2018) summarizes the arguments about the connection of enterprise risk management with business performance, which creates a basis for further transferring these approaches to creative economy enterprises, but taking into account their industry-specificities.

For enterprises of cultural and creative industries, studies that characterize them as an environment where innovation, network effects, and rapid changes in demand form a special set of financial risks are particularly important. Gerlitz and Prause (2021) highlight the role of cultural and creative industries in supporting innovation and sustainable transition, which at the same time implies increased dependence on technological trajectories, support policies, and ecosystems of partners and platforms. Prokhorova et al. (2023) argue that digital transformation in creative industries requires an explicit strategy of financial capacity, meaning a balanced alignment between financial needs and available resources, a rational structure of funding sources, and effective allocation mechanisms that can sustain both short-term continuity and long-term development. The authors highlight that financial stability and financial sufficiency are prerequisites for efficiency,

which is directly relevant for our risk framing, since digital investments may increase vulnerability when liquidity buffers and debt servicing capacity are weak.

Empirical results on innovation, productivity, and externalities in cultural and creative industries are presented by Ericsson et al. (2024), showing that innovative activity and outcomes can have wider economic consequences through spillover effects to other sectors, but these same processes reinforce the need for financial sustainability, as the benefits of innovation often come with a lag, while financial risks materialize more quickly. In this context, comprehensive enterprise risk management does not present itself as a universal scheme, but as a framework that needs to be adapted to high-income volatility, the importance of intangible assets, and the dependence on digital infrastructure. This perspective aligns with the approach of Gordon et al. (2009), who argue that the management system needs to be adapted to the company context.

At the same time, Knott et al. (2022) analyze the barriers to using initial token offerings as a way to finance artistic projects. This is relevant to our topic, as such mechanisms pose specific risks related to regulatory uncertainty, investor trust, information asymmetry, and reputational implications.

Loots et al. (2024)'s study of crowdfunding at the intersection of finance, policy, and technology shows that digital platforms can expand access to resources. However, they generate new financial risks, including the risk of not reaching the target collection, the risk of fees and changes to platform rules, the risk of fraud, and the risk of demand volatility, which is amplified by algorithmic visibility mechanisms.

Thus, for creative economy enterprises that monetize products in foreign markets, the conclusions of Allayannis and Weston (2001) on the use of currency derivatives and the relationship of hedging to market value are relevant, since currency fluctuations can significantly change the actual margin of digital sales and licensing fees.

## AIMS AND OBJECTIVES

The purpose of the study is to develop an applied model of financial risk management at enterprises in the creative economy sector in the context of the development of new digital technologies. To achieve the goal, the following tasks were completed:

1. To substantiate the relevance of financial risk management for creative enterprises in 2020–2024 in the context of changing external environments and accelerating digitalization.
2. To form a sample of six real enterprises in the creative economy and build a database in the enterprise-year format for 2020–2024.
3. To build a correlation matrix and identify key relationships between risk, digital investment intensity, liquidity, leverage, and interest coverage.
4. To generate a scenario forecast for 2026 for three digital investment trajectories, rank enterprises by the predicted risk level, and determine management directions for reducing risk during digital transformation.

## METHODS

Our study uses quantitative modeling, the purpose of which is to build a predictive relationship between the intensity of investments in digital technologies and the level of financial risk of enterprises in the creative economy. The very logic of the approach is that the development of new digital technologies can simultaneously reduce operational risks through automation, scalability, and increased efficiency, but can also increase financial risk due to increased capital expenditures, the need for financing, changes in the cost structure, and possible delays in payback. Therefore, the key methodological task is to formalize this relationship in the form of a functional model suitable for forecasting and comparing enterprises. The model factor is the indicator of investment intensity of digitalization, which specifies the share of investments in digital technologies in the total capital investments of the enterprise for the period  $t$ . But a more effective variable is the integral index of the financial risk of the enterprise ( $Y_t$ ), which is formed on the basis of a group of financial indicators that reflect different aspects of risk. The basic form of the index is given as a weighted sum of normalized indicators (1):

$$Y_t = \sum_{k=1}^m w_k Z_{k,t} \quad (1)$$

where  $z_{k,t}$  is the normalized value of the  $k$ -th risk indicator for period  $t$ , and  $w_k$  is the indicator weight, which can be set equal for all components or determined by expert agreement.

Formula (1) defines the dependent variable  $Y_t$ , the financial risk index of a creative economy enterprise in year  $t$ . In this methodology,  $Y_t$  is built as a weighted sum of normalized risk indicators.

Normalization is required so that indicators with different units of measurement are comparable.

Regression modeling is used to quantitatively describe the relationship between the investment intensity of digitalization and the financial risk index. The work compares linear and several nonlinear functional forms. This is necessary because the impact of digital investments on risk in the real economy can be asymmetric, with a saturation effect, increasing risk after a certain threshold, or with a decrease in risk when reaching a critical digital maturity (2):

$$Y = a + bX. \quad (2)$$

Here,  $X$  is the **digital investment intensity**, meaning the share of investments in digital technologies within total capital investments, and  $Y$  is the integrated risk index from (1). The coefficient  $b$  shows the direction and strength of the marginal association, so  $b > 0$  implies that higher digital investment intensity is associated with higher short-term financial risk in the sample, while  $b < 0$  would imply risk-reducing digitalization through resilience and efficiency.

To select the best model, a set of adequacy and statistical significance indicators is used. Such as the correlation coefficient, the coefficient of determination, and the verification of the significance of the model is carried out using the Fisher criterion. Since the risk profile of enterprises changes under the influence of environmental shocks, a period indicator is introduced into the model, which reflects the differences between periods (3):

$$D_t = \begin{cases} 0, & \text{before 2022} \\ 1, & \text{after 2022} \end{cases} \quad (3)$$

Formula (3) introduces the period indicator  $D_t$ , a dummy variable that separates the two regimes in your dataset. In your paper,  $D_t = 0$  for 2020–2021 and  $D_t = 1$  for 2022–2024, so it is a compact way to represent a structural shift in the external environment, including the post-2022 shock regime. Its role is not to “explain” risk by itself, but to label the period in which the same investment behavior may generate different risk consequences.

The extended model has the form (4):

$$Y = a + bX + cD + d(X \cdot D) \quad (4)$$

where  $c$  shows the changes in the basic level of risk after the structural break, and  $d$  reflects the change in the strength of the impact of digital investments on risk during the martial law period.

It allows the level and the slope to change after the structural break. The parameter  $c$  captures the baseline shift in risk when moving from 2020–2021 to 2022–2024, holding  $X$  constant, while  $d$  captures how the impact of digital investment intensity on risk changes in the second period. In other words, in 2020–2021, the slope is  $b$ , and in 2022–2024, the slope becomes  $b + d$ , so you can test whether digitalization becomes more risky or less risky under crisis conditions.

This formulation allows us to build a more realistic forecast, as well as interpret whether digital investments in a crisis environment reduce risk by increasing resilience, or vice versa, increase it due to the financial burden.

## RESULTS

In 2020, the creative industry experienced a sharp decline in offline activity due to pandemic restrictions, but at the same time, it accelerated the digital transition; the share of remote work, online services, export-oriented creative products and services increased. In 2021, there was a partial recovery, and competition shifted towards the speed of launching digital solutions, the quality of the customer experience, data protection, project management, and financing flexibility. At the same time, in 2022–2024, under martial law, the industry operated in a mode of increased uncertainty, with risks of supply chain disruptions, relocations, loss of part of local demand, increased cyber risks, as well as the instability of cash flows and an increase in the cost of capital. At the same time, subsectors built around digital creation and distribution, namely digital media platforms and online content distribution, software and digital product development, and game and digital

service development, more often demonstrated the ability to maintain operational continuity, rapidly adjust sales markets, and reorient toward external contracts.

As part of our modeling, we should highlight real-life enterprises that together form a balanced sample, because they represent different creative subsectors, have comparable annual financial indicators for 2020–2024, and give us a panel of 30 observations, i.e., 6 enterprises multiplied by 5 years, which is a sufficient basis for correlation and regression modeling.

1. LLC "MEGOGO", media platform, digital content distribution.
2. LLC "MAKPAU", software and digital product development.
3. LLC "GAYMLOFT", game and digital service development.
4. LLC "BANDA", advertising agencies, design, and creative communications.
5. PJSC "ODESA FILM STUDIO", audiovisual production and creative services.
6. LLC "A-BA-BA-GA-LA-MA-GA PUBLISHING HOUSE", publishing activities and creative content.

Within our study, the selected enterprises are used as real-world cases to demonstrate the proposed methodological approach, rather than as a basis for direct benchmarking between heterogeneous creative subsectors. Because media platforms, software producers, game developers, advertising and design agencies, audiovisual studios, and publishing houses operate under different business models and generate non-equivalent outputs, cross-company comparisons are not interpreted as evidence of superiority or inferiority of any subsector. Instead, the analytical focus is placed on the reproducibility of the approach, namely, how the same sequence of steps can be applied to publicly available reporting data to construct the digital investment intensity indicator, calculate the integrated financial risk index, and estimate correlation and regression relationships, including the structural break after 2022.

For each enterprise, the basic initial data will be indicators that are primarily available in open financial and annual reports, in particular, revenue, net profit, assets, liabilities, number of employees, as well as certain coefficients that we will calculate ourselves, such as profitability, financial leverage, liquidity ratios, financial stability, and risk indicators. Then we will link them to proxy variables of digitalization, such as the intensity of capital investments in intangible assets, the share of administrative and technological expenses, or other indicators that can actually be extracted from the reports, and build linear and nonlinear models.

The generated set of initial data is specially constructed in such a way that, on the one hand, it is based on indicators that can actually be obtained from the financial statements of enterprises for 2020–2024, and on the other hand, it ensures a full connection between digitalization and financial risk. The primary input data include revenue, operating profit, operating cash flow, assets, liabilities, equity, interest expenses, and total capital investments, because they allow us to calculate key risk ratios and separate financial pressure from the scale of the business. The central variable for the model is the digital investment intensity variable  $X_t$ , which shows what part of capital investments the enterprise directs specifically to digital technologies. At the same time, in reporting practice, this value can be presented through detailed notes, and if the detail is limited, then its role is played by a proxy, for example, the increase in intangible assets and investments in information technologies. The resulting variable  $Y_t$  is formed as an integral index of financial risk based on liquidity, leverage, interest coverage, and operating cash flow volatility, with the indicators normalized to a single scale of 0–1. Therefore, this type of construction ensures the comparability of enterprises in different subsectors of the creative economy and allows further construction of linear and nonlinear dependencies, as well as taking into account the break in the external environment through the period indicator  $D_t$  and the interaction of  $X_t$  with  $D_t$  (Table 1).

**Table 1. Financial indicators.** (Source: LLC "A-BA-BA-GA-LA-MA-GA PUBLISHING HOUSE" (2025); LLC "BANDA" (2025); LLC "GAYMLOFT" (2025); LLC "MAKPAU" (2025); LLC "MEGOGO" (2025); PJSC "ODESA FILM STUDIO" (2025))

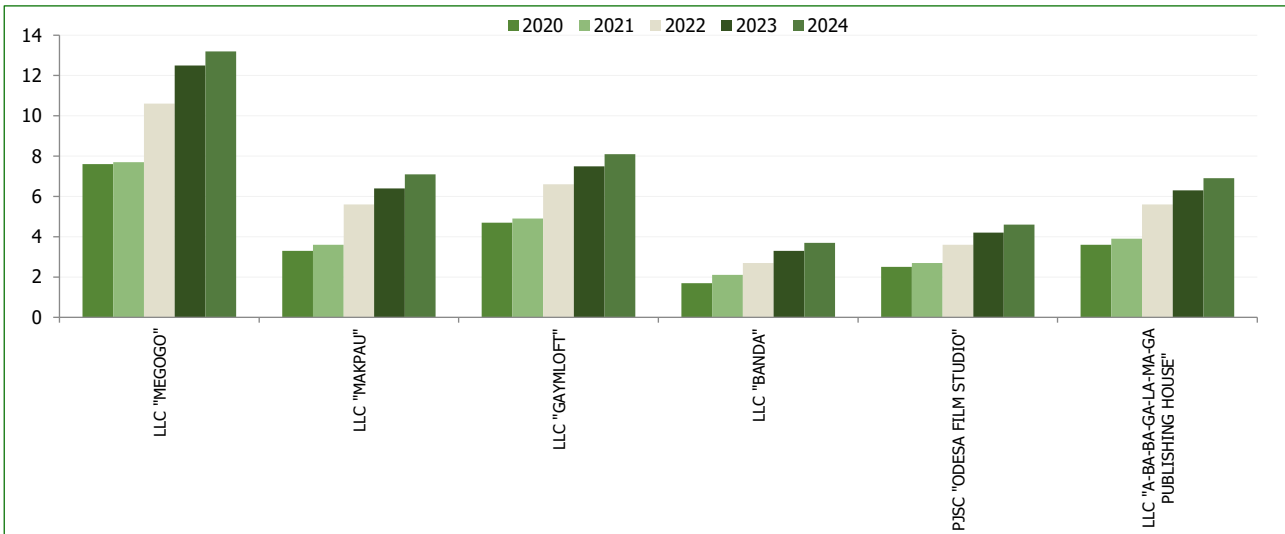
Company	Year	Period indicator D	Revenue, UAH million	Operating cash flow, UAH million	Assets, UAH million	Liabilities, UAH million	Equity, UAH million	Interest expense, UAH million
LLC "MEGOGO"	2020	0	256.9	23.9	436.8	239.3	197.5	2.8
	2021	0	273.3	25.3	447.2	246.8	200.4	3.4
	2022	1	208.4	16.8	464.1	268.2	196.1	4.3
	2023	1	234.9	16.1	527.8	297.4	230.4	4.4
	2024	1	264.3	23.1	545.5	310.1	235.5	4.8
LLC "MAKPAU"	2020	0	132.6	14.8	282.6	169.6	113.1	1.6
	2021	0	138.1	15.7	291.1	173.9	117.1	1.8
	2022	1	114.5	12.1	307.7	188.8	118.9	2.5
	2023	1	121.8	11.7	329.4	196.1	133.3	2.8
	2024	1	132.2	15.4	343.1	205.1	137.9	2.9
LLC "GAYMLOFT"	2020	0	162.1	17.1	323.7	181.4	142.3	1.8
	2021	0	168.5	18.2	334.3	186.6	147.7	2
	2022	1	140.7	12.9	349.7	203.2	146.5	2.8
	2023	1	148.9	12.3	369.3	210.9	158.4	3.2
	2024	1	160.0	16.9	385.4	221.1	164.4	3.3
LLC "BANDA"	2020	0	80.8	9	146.3	86.6	59.6	0.9
	2021	0	86.3	10.1	153.2	90.8	62.4	1.1
	2022	1	89.9	9.4	166.5	101.5	65.1	1.3
	2023	1	95.5	9.3	177.1	107.2	69.9	1.4
	2024	1	104.3	11.9	190.6	112.5	78.1	1.5
PJSC "ODESA FILM STUDIO"	2020	0	98.6	10.6	184.8	112.1	72.7	1.1
	2021	0	100.9	11.3	191.9	114.7	77.2	1.3
	2022	1	96.2	9.9	201.1	122.5	78.5	1.9
	2023	1	103.7	9.5	214.1	128.5	85.6	2
	2024	1	112.1	12.8	225.2	134.7	90.5	2.1
LLC "A-BA-BA-GA-LA-MA-GA PUBLISHING HOUSE"	2020	0	120.1	14.2	235.9	129.2	106.9	1.4
	2021	0	125.1	14.8	244.2	131.5	112.7	1.6
	2022	1	117.8	12.5	256.9	146.1	110.9	2.1
	2023	1	126.1	12.2	280.8	161.2	119.8	2.5
	2024	1	141.9	16.1	302.7	176.6	126.1	2.7

In essence, we form the initial database in the "enterprise-year" format and immediately divide the indicators into two groups. So, the first group is data that can actually be extracted from the reporting and notes (Table 1). And now, the second group is the indicators that we calculate on the basis of, namely, current liquidity, leverage, interest coverage, operating cash flow variation coefficient, and the final financial risk index (Table 2). Separately, we record the indicator of the period D, where the value 0 corresponds to 2020 and 2021, and the value 1 corresponds to 2022, 2023, and 2024. This is necessary for further analysis of structural shifts and changes.

**Table 2. Financial ratios derived from reporting data and the integrated financial risk index, 2020–2024.** (Source: LLC "A-BA-BA-GA-LA-MA-GA PUBLISHING HOUSE" (2025); LLC "BANDA" (2025); LLC "GAYMLOFT" (2025); LLC "MAKPAU" (2025); LLC "MEGOGO" (2025); PJSC "ODESA FILM STUDIO" (2025))

Company	Year	Current liquidity ratio	Leverage ratio	Interest coverage ratio	Operating cash flow variation ratio	Financial risk index
LLC "MEGOGO"	2020	1.26	1.21	7.33	0.2	0.47
	2021	1.19	1.23	6.65	0.2	0.54
	2022	1.02	1.37	1.06	0.2	0.839
	2023	1.14	1.29	1.44	0.2	0.709
	2024	1.01	1.32	2.76	0.2	0.791
LLC "MAKPAU"	2020	1.21	1.26	9.25	0.15	0.264
	2021	1.17	1.26	8.72	0.15	0.307
	2022	1.04	1.39	2.65	0.15	0.661
	2023	1.1	1.31	2.09	0.15	0.497
	2024	1.09	1.33	3.16	0.15	0.559
LLC "GAYMLOFT"	2020	1.25	1.28	9.55	0.17	0.233
	2021	1.24	1.26	9.05	0.17	0.272
	2022	1.12	1.39	2.52	0.17	0.612
	2023	1.15	1.33	1.97	0.17	0.559
	2024	1.14	1.34	2.56	0.17	0.567
LLC "BANDA"	2020	1.31	1.45	9.98	0.1	0.119
	2021	1.28	1.46	9.18	0.1	0.214
	2022	1.14	1.56	3.01	0.1	0.515
	2023	1.13	1.53	2.66	0.1	0.424
	2024	1.12	1.44	2.98	0.1	0.437
PJSC "ODESA FILM STUDIO"	2020	1.19	1.54	9.64	0.12	0.168
	2021	1.2	1.49	8.6	0.12	0.219
	2022	1.08	1.56	2.82	0.12	0.520
	2023	1.09	1.50	2.38	0.12	0.424
	2024	1.08	1.49	2.85	0.12	0.462
LLC "A-BA-BA-GA-LA-MA-GA PUBLISHING HOUSE"	2020	1.33	1.21	10	0.22	0.116
	2021	1.35	1.17	9.25	0.22	0.168
	2022	1.21	1.32	3.08	0.22	0.514
	2023	1.13	1.45	2.01	0.22	0.616
	2024	1.13	1.63	2.04	0.22	0.681

Separately, we also need an indicator of the volume of capital investments in digital technologies (CI<sub>dig</sub>) for the selected enterprises, which is further used to construct the digital investment intensity variable X. (Figure 1).



**Figure 1. The volume of capital investments in digital technologies.**

We can even compare key financial indicators by the average total value for all creative industry enterprises. Thus, in Table 3, we see three effects simultaneously: the share of digital investments in total investments increases, the financial risk index increases, and financial stability deteriorates due to a decrease in interest coverage and a certain weakening of liquidity. That is why in further models we are not limited to one factor of digital investments, but take into account the structural difference of periods through D, since the same investment behavior in different environments can give different risk consequences.

**Table 3. Comparison of average values before 2022 and after 2022.**

Indicator	2020–2021	2022–2024	Δ
Share of digital investments in total, % (X)	26.901	36.111	9.211
Financial risk index (Y)	0.395	0.631	0.236
Current liquidity ratio (CR)	1.263	1.142	-0.121
Leverage ratio (Lev)	1.257	1.366	0.109
Interest coverage ratio (IC)	7.768	2.732	-5.037

Next, we construct the correlation matrix itself. In this case, the definitions in the matrix mean the following (Figure 2):

- Y - financial risk index;
- X - share of digital investments in total investments;
- CR - current liquidity;
- Lev – leverage;
- IC - interest coverage;
- CV\_CFO - coefficient of variation of operating cash flow;
- CFO - operating cash flow;
- IntExp - interest expense;
- CI\_dig - capital investment in digital technologies.



**Figure 2. Correlation matrix.**

In the correlation heatmap, warm colors indicate positive correlations and cold colors indicate negative correlations, while color intensity reflects the absolute magnitude of the correlation coefficient; values close to zero are shown by neutral tones. Therefore, darker cells represent stronger linear co-movements between variables, whereas lighter cells indicate weak association.

It should be noted that correlations provide a quick idea of the direction and strength of relationships before constructing regressions. There are three key patterns here. Thus, risk has a strong negative relationship with liquidity CR and interest coverage IC, i.e., financial stability directly reduces risk. Risk has a positive relationship with X, which in our sample means a typical situation of short-term pressure, when the increase in digital investments occurs in parallel with the growth of financial constraints. Thus, X has a high relationship with IntExp and CI\_dig, so digital investments go hand in hand with more expensive financing and increasing interest costs, and this creates a basis for testing more complex functional forms and models with a period indicator.

Next, we test several functional forms, because the risk response to the intensity of digital investment can be nonlinear. The logarithmic model performed best in terms of the adjusted coefficient of determination and forecast errors. This means that an additional increase in the share of digital investment has a decreasing marginal effect, i.e., at the beginning, changes in X have a stronger effect, and at high values of X, the effect becomes less sharp. It is this form that is logical to take as the base for further deepening, where we already introduce the period indicator D and the interaction of X with D to capture the structural shift after 2022 (Table 4).

**Table 4. Comparison of functional forms of risk dependence on digital investments.**

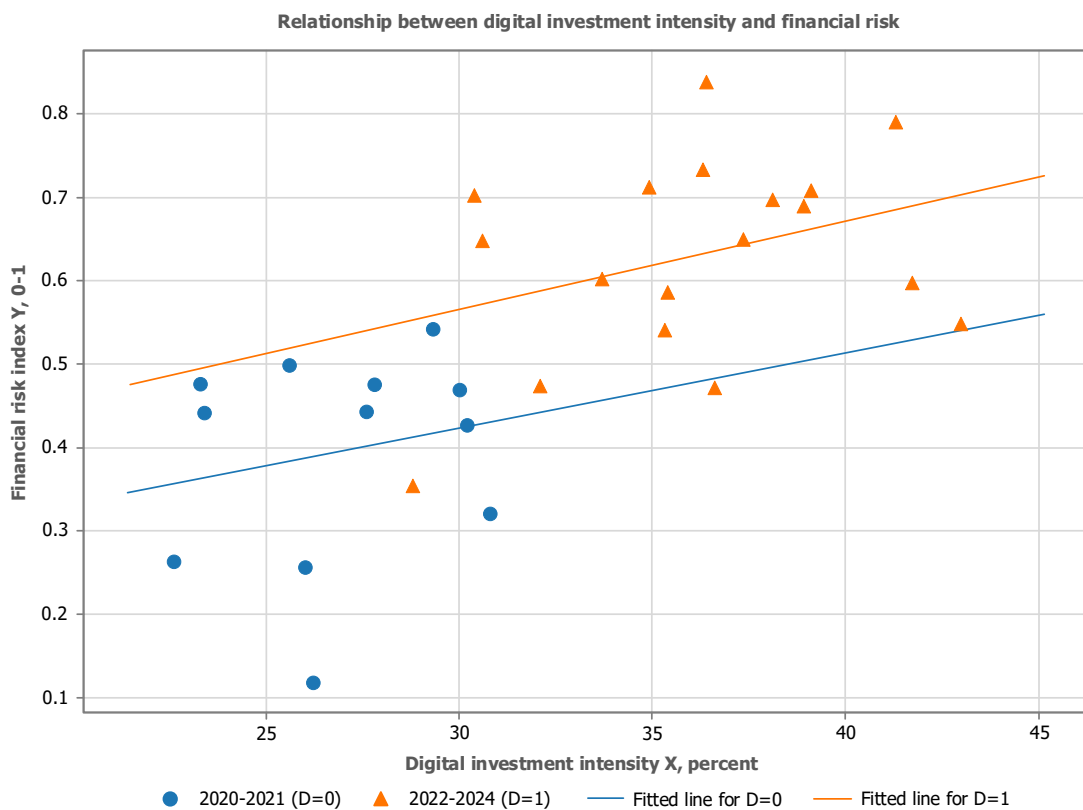
Model	Functional form	r	R2	Adj_R2	F	p(F)	RMSE	MAE
Logarithmic	$Y = a + b \ln(X)$	0.6881	0.4735	0.4547	25.1836	0	0.1205	0.0988
Hyperbolic	$Y = a + b / X$	0.6867	0.4716	0.4527	24.9917	0	0.1207	0.0994
Linear	$Y = a + bX$	0.6814	0.4643	0.4451	24.2644	0	0.1216	0.0989
Power	$Y = a * X^b$	0.6764	0.4386	0.4185	18.6722	0.0002	0.1245	0.1021
Exponential	$Y = a * \exp(bX)$	0.6571	0.4055	0.3842	17.9000	0.0002	0.1281	0.1039

Next, we present Table 5, which in turn shows how to interpret the impact of  $X$ , taking into account the change in the period. In 2022–2024, the slope is equal to  $b + d$ , and in our example,  $d$  is almost zero, so the strength of the connection between  $X$  and risk remains similar, and the key shift is through the parameter  $c$ , i.e., the very fact of the transition to a new period increases the basic level of risk. In practice, this means that digital investments in conditions of high instability are not a cause of risk in themselves; they often coincide in time with an increase in risk, because enterprises invest in digital solutions as a way of adaptation, and not in comfortable conditions.

**Table 5. Comparison of functional forms of risk dependence on digital investments.**

Parameter	Coefficient estimate	Standard error	t statistic	p value
Constant a	0.0884	0.1766	0.5007	0.6209
X	0.0104	0.0056	1.8681	0.0735
D	0.2702	0.1461	1.8496	0.0761
X·D	0.0004	0.0041	0.0944	0.9256

Next, we present the impact of digital investment intensity on financial risk in two periods,  $D = 0$  and  $D = 1$ . Therefore, this figure (Figure 3) is needed to visually confirm what we see in the coefficients. The two lines show that in the period 2022–2024, the risk level shifts upwards compared to 2020–2021, even with similar values of  $X$ , i.e., for the same share of digital investment, the underlying risk is higher.



**Figure 3. The impact of digital investment intensity on financial risk in two periods,  $D = 0$  and  $D = 1$ .**

Next, let's move directly to the scenario forecast for 2026. It should be noted that the logic of the scenarios themselves assumes the following:

1. Conservative scenario,  $X$  below the trend level.
2. Baseline scenario,  $X$  at the trend level.
3. Accelerated scenario,  $X$  above the trend.

Here, the trend level of digital investment intensity is defined as the projected value from a linear time trend fitted on 2020–2024 data,  $X_t = \alpha + \beta_t$ , and extrapolated to 2026 to obtain  $X_{2026}$ . The conservative, baseline, and accelerated scenarios are constructed as deviations around  $X_{2026}$ , representing slower, neutral, and faster digitalization trajectories.

Therefore, for 2026, we assume  $D = 1$ , that is, the external environment corresponds to the second period (Table 6).

Table 6 itself provides the most practical result. We have not simply described the relationship between  $X$  and risk, but have transformed it into a predictive tool. If a company has consistently lower risk across all scenarios, this means that its underlying financial resilience is better aligned with the scale of its digital investments, and it has the headroom to expand its digital programs without a critical increase in risk. Scenario values of digital investment intensity for 2026 are constructed as  $X_{2026}^{base} = X_{2026}^{cons} + \Delta$ , where  $X_{2026}^{cons}$  is the trend projection, and  $\Delta$  is a fixed deviation reflecting slower or faster digitalization. For each scenario, the forecast financial risk index is computed by substituting the scenario  $X$  and  $D=1$  into the estimated interaction model (4),  $Y_{2026} = a + bX + cD + d(X \cdot D)$ , using coefficient estimates reported in Table 5.

**Table 6. Scenario forecast for 2026.**

Company	X in 2024, %	Y in 2024	X 2026 conservative	Y 2026 conservative	X 2026 basic	Y 2026 basic	X 2026 accelerated	Y 2026 accelerated
LLC "MEGOGO"	41.3	0.791	38.6	0.760	40.6	0.780	43.1	0.806
LLC "MAKPAU"	35.5	0.559	33.5	0.707	35.5	0.728	38.0	0.754
LLC "GAYMLOFT"	37.0	0.567	34.5	0.718	36.5	0.739	39.0	0.765
LLC "BANDA"	35.6	0.437	32.9	0.701	34.9	0.721	37.4	0.747
PJSC "ODESA FILM STUDIO"	37.1	0.462	34.7	0.720	36.7	0.740	39.2	0.767
LLC "A-BA-BA-GA-LA-MA-GA PUBLISHING HOUSE"	35.4	0.680	33.7	0.710	35.7	0.731	38.2	0.757

The results of the study showed that the financial risk index has a stable negative relationship with liquidity and interest coverage, which confirms the role of financial stability as a key risk buffer in turbulent conditions. At the same time, the relationship between the intensity of digital investments and risk in the studied period is positive, which is interpreted as the effect of forced digitalization and more expensive financing, when investments are made against the background of increased restrictions, and not under conditions of excess resources. The use of a period indicator in the model made it possible to record a structural shift after 2022, when the basic level of risk increases even with similar values of the intensity of digital investments.

## DISCUSSION

The obtained modeling results show that financial risk management at enterprises of the creative economy sector in Ukraine in 2020–2024 cannot be reduced to a simplified control of individual financial ratios. Correlation regression indicates that the financial risk index is most sensitive to the current liquidity and interest coverage indicators; therefore, financial stability and the ability to service financing act as the primary "shock absorbers" of risk. This conclusion aligns with established approaches to risk management, where it is the integration of risk management with corporate governance and financial discipline that determines performance in crisis conditions (Aebi et al., 2012), and it is also consistent with the logic of the development of the enterprise risk management system as a management framework that covers risks comprehensively, rather than fragmentarily (Bromiley et al., 2015).

Unlike some studies that examine enterprise risk management mainly through the connection with financial results and company value, our study focuses on the mechanics of risk formation in small and medium-sized structures of the creative economy, where the role of cash flows, short investment cycles, and dependence on market fluctuations is particularly high. The approach to enterprise risk management in such an environment should be "light" and at the same time disciplined, with clear triggers of liquidity, debt burden and interest pressure, which is consistent with the conclusions about the value of enterprise risk management as a system when it is supported by management drivers and practical integration into decision-making (Bohnert et al., 2019).

It is particularly important that in conditions of uncertainty, intellectual capital and management competencies can moderate the effect of enterprise risk management on performance; therefore, for creative enterprises, the human factor and

the quality of process management are of key importance (Saeidi et al., 2021). This is well aligned with the notion of creative enterprises as structures where innovation and managerial autonomy are critical factors for adaptation, particularly in the segment of cultural SMEs (Sycheva & Verdu-Jover, 2025).

The issue of financing digital transformation also remains a debatable aspect. The development of new forms of financing in cultural and creative industries, including grants, hybrid and platform instruments, should, in theory, reduce risk by diversifying sources of capital. However, in practice, access to such instruments depends on the institutional environment, reputational criteria, and the ability of businesses to provide transparent reporting to investors. In this sense, our scenario assessments for 2026 can be interpreted as an illustration that the effectiveness of digital investments from a risk perspective is determined not only by the scale of investments, but primarily by their financial “coverage”, i.e., consistency with liquidity, ability to service financing, and capital structure. This logic does not contradict approaches where enterprise risk management improves financial performance and company value, provided that it is maturely integrated, including consideration of non-financial parameters, such as environmental, social, and governance practices (Chairani & Siregar, 2021), but emphasizes that without financial sustainability, digital programs can lead to short-term increased risk.

The novelty of our approach lies in the combination of a panel database “enterprise–year”, an indicator of structural shift, a comparison of functional forms, and scenario forecasting for the managerial interpretation of risk in the creative economy. We did not limit ourselves to stating that risks have increased, but showed the mechanism through which they “rise” in a period of structural instability, and how digital investments can act as both a necessary adaptation and a source of short-term financial burden. This complements strategic approaches to the investment and innovation strategy of enterprises, which emphasize the need for methodological consistency of innovations with financial capabilities and risks (Zoria & Serhienko, 2020).

In the broader context of creative industries, which often have an “archipelagic” structure with different revenue and risk models across subsectors, it is precisely the presence of an adaptive risk model that enables more rational comparison and management of digital programs than relying on intuition or single indicators (Barandiaran-Irastorza et al., 2020).

## CONCLUSIONS

In general, we can say that the financial risk management system at creative economy enterprises in Ukraine, especially in the context of the development of new digital technologies, does not require intuitive solutions, but a reproducible quantitative model that is based on reporting indicators and allows us to predict risk for different trajectories of digital investments. Our study, conducted specifically for 2020–2024 for 6 creative economy enterprises, showed that key financial constraints shape the risk profile more strongly than the fact of digitalization itself. The financial risk index has the most stable relationship with liquidity and interest coverage. Therefore, this implies that the ability to maintain adequate working capital and to service financing constitutes the primary protective mechanism during periods of rapid changes in the external environment. The results of comparing the average values for 2020–2021 and 2022–2024 confirmed the presence of a structural change, when after 2022 the basic level of risk increases, interest coverage decreases, financial pressure increases, and the share of digital investments in total capital investments increases in parallel. That is why the inclusion of the period D indicator in the model was methodologically necessary, since without it, digital investments could be mistakenly interpreted as the main cause of risk. In fact, our estimates indicate that digital investments during the studied period primarily respond to changing business conditions and the need to maintain operational sustainability, and not just a growth tool. Because of this, the relationship between the intensity of digital investments and risk in the short term may be positive, since investments are implemented against the background of more expensive financing and liquidity constraints.

The research can serve as a basis for practical management decisions in creative economy enterprises, as well as for the formation of analytical materials for creditors, investors, and donor programs supporting digital transformation. The proposed model is reproducible, since it is based on indicators that can actually be obtained from reporting, and it is also suitable for further expansion by adding variables that reflect the structure of financing, the dynamics of demand for creative services, and the characteristics of subsectors of the creative economy.

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## ADDITIONAL INFORMATION

### AUTHOR CONTRIBUTIONS

*All authors have contributed equally.*

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## CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest.

## REFERENCES

1. Aebi, V., Sabato, G., & Schmid, M. (2012). Risk management, corporate governance, and bank performance in the financial crisis. *Journal of Banking & Finance*, 36(12), 3213–3226. <https://doi.org/10.1016/j.jbankfin.2011.10.020>
2. Allayannis, G., & Weston, J. P. (2001). The use of foreign currency derivatives and firm market value. *Review of Financial Studies*, 14(1), 243–276. <https://doi.org/10.1093/rfs/14.1.243>
3. Barandiaran-Irastorza, X., Peña-Fernández, S., & Unceta-Satrústegui, A. (2020). The archipelago of cultural and creative industries, a case study of the Basque Country. *Economies*, 8(1), 21. <https://doi.org/10.3390/economies8010021>
4. Bohnert, A., Gatzert, N., Hoyt, R. E., & Lechner, P. (2019). The drivers and value of enterprise risk management: Evidence from ERM ratings. *The European Journal of Finance*, 25(3), 234–255. <https://doi.org/10.1080/1351847X.2018.1514314>
5. Bromiley, P., McShane, M., Nair, A., & Rustambekov, E. (2015). Enterprise risk management, review, critique, and research directions. *Long Range Planning*, 48(4), 265–276. <https://doi.org/10.1016/j.lrp.2014.07.005>
6. Chairani, C., & Siregar, S. V. (2021). The effect of enterprise risk management on financial performance and firm value, the role of environmental, social and governance performance. *Meditari Accountancy Research*, 29(3), 647–670. <https://doi.org/10.1108/MEDAR-09-2019-0549>
7. Ericsson, B., Hauge, A., & Alnes, P. K. (2024). Cultural and creative industries, innovation, performance and spillovers. *Norsk Geografisk Tidsskrift – Norwegian Journal of Geography*, 78(4), 222–233. <https://doi.org/10.1080/00291951.2024.2423651>
8. Fraser, J., & Simkins, B. J. (2007). Ten common misconceptions about enterprise risk management. *Journal of Applied Corporate Finance*, 19(4), 75–81. <https://doi.org/10.1111/j.1745-6622.2007.00161.x>
9. Gerlitz, L., & Prause, G. K. (2021). Cultural and creative industries as innovation and sustainable transition brokers in the Baltic Sea Region, a strong tribute to sustainable macro-regional development. *Sustainability*, 13(17), 9742. <https://doi.org/10.3390/su13179742>
10. Gordon, L. A., Loeb, M. P., & Tseng, C. Y. (2009). Enterprise risk management and firm performance, a contingency perspective. *Journal of Accounting and Public Policy*, 28(4), 301–327. <https://doi.org/10.1016/j.jaccpubpol.2009.06.006>
11. Hoyt, R. E., & Liebenberg, A. P. (2011). The value of enterprise risk management. *Journal of Risk and Insurance*, 78(4), 795–822. <https://doi.org/10.1111/j.1539-6975.2011.01413.x>
12. Knott, M., Strich, F., Strunk, K., & Mayer, A. S. (2022). Uncovering potential barriers of using initial coin offerings to finance artistic projects. *Journal of Cultural Economics*, 46(2), 317–344. <https://doi.org/10.1007/s10824-022-09446-7>
13. Li, L. (2018). A study on enterprise risk management and business performance. *Journal of Financial Risk Management*, 7, 123–138. <https://doi.org/10.4236/jfrm.2018.71008>
14. LLC "A-BA-BA-GA-LA-MA-GA PUBLISHING HOUSE" (2025). URL: <https://clarity-project.info/edr/16474964>
15. LLC "BANDA" (2025). URL: <https://clarity-project.info/edr/42794811>
16. LLC "GAYMLOFT" (2025). URL: <https://clarity-project.info/edr/34951934>
17. LLC "MAKPAU" (2025). URL: <https://clarity-project.info/edr/36797385>
18. LLC "MEGOGO" (2025). URL: <https://clarity-project.info/edr/38347009>
19. Loots, E., Betzler, D., Bille, T., Borowiecki, K. J., & Lee, B. (2022). New forms of finance and funding in the cultural and creative industries. Introduction to the special issue. *Journal of Cultural Economics*, 46(2), 205–230. <https://doi.org/10.1007/s10824-022-09450-x>
20. Loots, E., Piecyk, K., & Wijngaarden, Y. (2024). At the juncture of funding, policy, and technology, how promising is match-funding of arts and culture through crowdfunding platforms? *International Journal of Cultural Policy*, 30(1), 118–134. <https://doi.org/10.1080/10286632.2023.2173746>
21. McShane, M. K., Nair, A., & Rustambekov, E. (2011). Does enterprise risk management increase firm value? *Journal of Accounting, Auditing and Finance*, 26(4), 641–658. <https://doi.org/10.1177/0148558X11409160>
22. Nocco, B. W., & Stulz, R. M. (2006). Enterprise risk management, theory and practice. *Journal of Applied Corporate Finance*, 18(4), 8–20. <https://doi.org/10.1111/j.1745-6622.2006.00106.x>
23. PJSC "ODESA FILM STUDIO" (2025). URL: <https://clarity-project.info/tenderer/33932816>

24. Prokhorova, V., Chechetova, N., Korzh, R., Orel, O., Fedotova, I., & Lytvynenko, K. (2023). The Digital Transformation of Creative Industries as a Management Imperative of Information Security of Society on a Parity-Legal Basis. *Journal of Information Technology Management*, 15(4), 47–63. <https://doi.org/10.22059/jitm.2023.94707>
25. Saeidi, P., Saeidi, S. P., Gutierrez, L., Streimikiene, D., Alrasheedi, M., Saeidi, S. P., & Mardani, A. (2021). The influence of enterprise risk management on firm performance, the role of intellectual capital dimensions. *Economic Research – Ekonomska Istraživanja*, 34(1), 1966–1988. <https://doi.org/10.1080/1331677X.2020.1776140>
26. Sycheva, L., & Verdu-Jover, A. J. (2025). Unlocking cultural SME innovation, a configurational approach to manager empowerment. *Small Business International Review*, 9(2), e760. <https://doi.org/10.26784/sbir.v9i2.760>
27. Zoria, O., & Serhienko, V. (2020). Theoretical and methodological principles of formation of investment and innovation strategy at the enterprise. *Three Seas Economic Journal*, 1(3), 35-39. <https://doi.org/10.30525/2661-5150/2020-3-6>

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## УПРАВЛІННЯ ФІНАНСОВИМИ РИЗИКАМИ НА ПІДПРИЄМСТВАХ ГАЛУЗІ КРЕАТИВНОЇ ЕКОНОМІКИ В УМОВАХ ОСВОЄННЯ НОВИХ ЦИФРОВИХ ТЕХНОЛОГІЙ

Підприємства креативної економіки в Україні формують значну частину сучасного цифрового контенту, послуг та інновацій, водночас вони є вразливими до фінансових ризиків через високу залежність від попиту, коливань грошових потоків, вартості фінансування та швидких технологічних змін. Протягом 2020–2024 рр. ці ризики посилюються через воєнний стан, нерівномірність відновлення ринків і необхідність прискореного переходу на нові технології, які потребують інвестицій і створюють додаткове навантаження на ліквідність і фінансову стійкість. Об'єктом дослідження є процеси управління фінансовими ризиками на підприємствах креативної економіки в умовах цифрової трансформації. Предметом дослідження є методи кількісного оцінювання та прогнозування фінансового ризику з урахуванням інтенсивності цифрових інвестицій і ключових фінансових обмежень. Метою роботи є розробка моделі, що дозволяє пояснювати та прогнозувати індекс фінансового ризику підприємств креативної економіки на основі показників зі звітності й розрахованих індикаторів цифровізації. Методологія включає описову статистику, кореляційний аналіз, порівняння функціональних форм регресії, оцінювання розширеної моделі з індикатором періоду для відокремлення режимів 2020–2021 років і 2022–2024 років, а також візуальну й статистичну перевірку якості моделі через графіки фактичних і прогнозних значень і діагностику залишків. Додатково виконано сценарний прогноз на 2026 рік для трьох траєкторій цифрових інвестицій. Запропонована модель і набір таблиць і графіків можуть бути використані менеджментом креативних підприємств для планування цифрових інвестицій, оцінки їх ризикових наслідків, формування сценарних бюджетів і підготовки аналітичних матеріалів для кредиторів та інвесторів. Запропонований підхід є відтворюваним, оскільки використовує показники, які реально отримати зі звітності, а демонстраційні значення можуть бути замінені на фактичні дані підприємств без зміни логіки розрахунків і структури моделювання.

**Ключові слова:** управління фінансовими ризиками, комплексне управління ризиками підприємства, креативна економіка, культурні та креативні індустрії, цифрові технології, цифрові платформи, фінансова стійкість, грошові потоки

**JEL Класифікація:** G32, G31, D81, O83