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Economic Risks Management in the Digital Economic Era

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Abstract: In the new global framework economic risk can be managed by means of modern science and technology age. Current paper work dedicated to analyze new relationships on economic risks and ICT sector prospectives. To reflect, reconstruct and reset the world ICT security prosperous future economic envireonment we tested few models. In this context, digital transformation has the potential to further modernize society and integrate the national economy into global processes. As part of the ongoing reforms, as well as the Development Strategy of New Uzbekistan for 2022-2026, special attention is paid to the digitalization of the main areas of activity and building a true investment attractiveness in the country.

Keywords: Digitalization, risk management, economic risks, economic stability, safety work conditions.

1. Introduction

The Development Strategy of New Uzbekistan for 2022-2026 plans to make the digital economy one of the main “drivers” of economic development and increase its volume by at least 2.5 times. The volume of software production should be increased by 5 times their exports by 10 times to 500 million dollars.
Digitalization is an integral feature of modern reality, symbolizing the fourth industrial revolution. Adapting to new conditions, organizations are forced to "digitize" - to introduce digital, end-to-end technologies, the use of which is becoming an urgent need and the most effective means of creating competitive advantages. In the vast majority of studies, this phenomenon is considered as a source of increasing value added, strengthening the competitiveness of enterprises and, consequently, the world economy as a whole. An emerging digital mindset, investment in digital technology, equipment and infrastructure, and a skilled, digitally savvy workforce are driving successful transformation by identifying the company’s ability to win in the marketplace. With the ever-increasing influence of digital technologies and information systems, organizations face many challenges in integrating new tools into their activities. There is a contradiction between the economic side of the transformation, which leads to an increase in overall efficiency, and the social side, associated with threats to social stability, increased uncertainty and risks.

2. Literature review

There is an ongoing debate about the relationship between growth of the Internet and social media and the apparent spread of misinformation with the polarization of society into alter- native camps which share an unbridgeable difference of opinion with the other. We can extrapolate these trends into the future as communications technology advance continues[1].
Primary producers tend to be willing to implement prevention and control measures once well informed about the potential risk and/or consequence of not applying these measures[2].
This process may activate a self-supporting dynamic (Arthur, 1989; Evans and Schmalensee, 2010) whereby scaled platforms drive marginal costs close to zero and generate a monopoly that is hard to contest by smaller existing platforms or new entrants, eventually leading to a “winner takes all (or most)” outcome (Cusumano et al., 2020). This self-sustaining mechanism is not just related to the number of platform users but also to the content of the sharing: while the sharing of physical assets is typically confined at the local level, thus limiting network effects to geographically proximate parties, when the shared asset and/or product are digital in nature, network effects can easily extend at the regional and global levels[3].

Macro-longevity risk has a significant impact on pension pro visioning, depending on the configuration. A defined benefit pension scheme protects its beneficiaries against macro-longevity risk. The risk increases the uncertainty in the funding ratio, or the ratio of assets over liabilities. These changes in the funding ratio are however borne by the employer and workers that contribute to the pension scheme and not by the retirees[4].
Taking stock of these results, we close the paper by proposing an extended framework for the economic analysis of energy efficiency that includes more markets[5].
Moreover, for the farm with sensors, novel sensor-based management strategies were designed. Within these sensor based-management strategies multiple scenarios with different sensor performance in terms of sensitivity, specificity, and mobility score detection was simulated. A new alert prioritization method was also introduced[6].

3. Results

The relevance of this study is due to the fact that specific risks and threats are formed in the process of digitalization. A request is being made to identify them and develop ways to adapt depending on the characteristics and influencing factors. Despite the variety of scientific papers and empirical studies based on the risk approach, some aspects of risk identification, taking into account the processes accompanying digital transformation, appeal to clarification, which predetermines the purpose and objectives of the study.
The goal is to theoretically substantiate and develop directions for minimizing risks specific to organizations in the context of digitalization.
Research objectives:
· substantiate the determination of systemic risks by the factor of digital transformation;
- identify the main risks and threats associated with digitalization;
· identify areas of management and directions for minimizing risks.
Scientific novelty is determined by the development of the theoretical foundations for studying the risks of an organization in the context of digitalization: substantiation of digital risk as a backbone in the digital economy, generalization of risk factors, identification of their varieties, areas of management taking into account digital transformation, presentation of risks in conjunction with possible threats and key areas of management.

Table 1. Descriptive Statistics of variables

Variable	Obs	Mean	Std. Dev.	Min	Max
years	21	2010	6.205	2000	2020
export	21	10252.471	4689.42	2988.4	17458.68
import	21	10240.836	6309.868	2712	24292.32
investment	21	41452.535	61513.688	744.5	210195.1
unemployment	21	4.165	3.189	.243	10.549
gdp percapita	21	3487.366	3790.837	96.444	12279.069
gdp	21	152006.7	180400.18	3255.6	602551.39
burden tax	21	14409.716	15707.45	407.6	45575.797
yhat	21	10240.836	6267.084	2684.263	23895.973
ehat	21	0	733.544	-1844.825	1208.846
ICT production	13	226.338	180.289	85	642
ICT trade	13	190.992	95.452	85	380.3
ICT services	13	7	3.894	1	13

Digital transformation in the literature is defined as changes in business and organizational activities, processes, competencies through the use of the advantages of digital technologies. For organizations, digital transformation means developing new business models and business rules, both external and internal.
The characteristic features of the modern era - the era of digitalization - are the exponential growth in the use of smart devices, the speed of the Internet and the extent of its penetration into the economic and social life of society. Statistical data reflect the accelerated penetration of digital, network technologies, the development of the Internet space: organizations are gradually abandoning local area networks in favor of global ones, switching to mobile means of receiving and processing information (the percentage of organizations using personal computers and local area networks is decreasing). The tendency to reduce the number of telephone sets of the local telephone network against the backdrop of an increase in the number of cellular communication devices also testifies in favor of accelerating the digitalization of society.

Table 2. Pairwise correlations test results

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) export	1.000							
(2) import	0.906	1.000						
	(0.000)							
(3) investment	0.636	0.882	1.000					
	(0.002)	(0.000)						
(4) unemployment	0.902	0.941	0.818	1.000				
	(0.000)	(0.000)	(0.000)					
(5) gdp_percapita	0.757	0.941	0.947	0.873	1.000			
	(0.000)	(0.000)	(0.000)	(0.000)				
(6) gdp	0.715	0.926	0.974	0.863	0.994	1.000		
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)			
(7) burden_tax	0.743	0.934	0.927	0.867	0.985	0.980	1.000	
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)		
(8) ICT_production	0.643	0.887	0.974	0.891	0.929	0.953	0.872	1.000
	(0.018)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	
(9) ICT_trade	0.353	0.754	0.847	0.800	0.932	0.924	0.895	0.839
	(0.237)	(0.003)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
(10) ICT_services	-0.284	0.010	-0.037	-0.048	-0.102	-0.062	0.006	-0.078

Digital technologies are generative, easily modified and integrated with others, giving rise to new variations of possibilities. The "generativity" resulting from openness and recombination allows the value proposition of products, services and business models to be quickly restructured to adapt to both global and local needs. Digitalization leads to a transformation of consumer demand: a request is created for quick online purchases, availability and the ability to use devices to search, order, receive and pay for goods.

Table 4. OLS regression analysis results

ICT_production	**Coef.**	**St.Err.**	**t-value**	**p-value**	**[95% Conf**	**Interval]**	**Sig**
burden_tax	.001	.004	0.27	.799	-.009	.011	
gdp_percapita	-.003	.02	-0.13	.898	-.052	.046	
unemployment	-40.247	20.196	-1.99	.093	-89.665	9.171	*
investment	.005	.001	4.44	.004	.002	.008	***
import	-.021	.011	-1.88	.109	-.047	.006	
export	.005	.012	0.39	.709	-.025	.035	
Constant	373.275	167.257	2.23	.067	-35.988	782.538	*

Mean dependent var	226.338	SD dependent var	180.289
R-squared	0.981	Number of obs	13
F-test	52.995	Prob > F	0.000
Akaike crit. (AIC)	133.055	Bayesian crit. (BIC)	137.010

*** $p<.01$, ** $p<.05$, * $p<.1$

Digital connectivity, as well as the distancing of workplaces and the spread of platform employment, makes organizations dependent on each other, which adds to their own risks threats from independent contractors or other participants in the economic chain. In the context of digitalization of interactions, their interdependence and sensitivity to external influences increase, and wave effects spread faster.

Table 5. OLS regression analysis results

ICT_services	**Coef.**	**St.Err.**	**t-value**	**p-value**	**[95% Conf**	**Interval]**	**Sig**
burden_tax	.001	0	2.28	.063	0	.001	*
gdp_percapita	-.005	.001	-3.55	.012	-.008	-.002	**
unemployment	-3.36	1.406	-2.39	.054	-6.799	.08	*
investment	0	0	2.24	.066	0	0	*

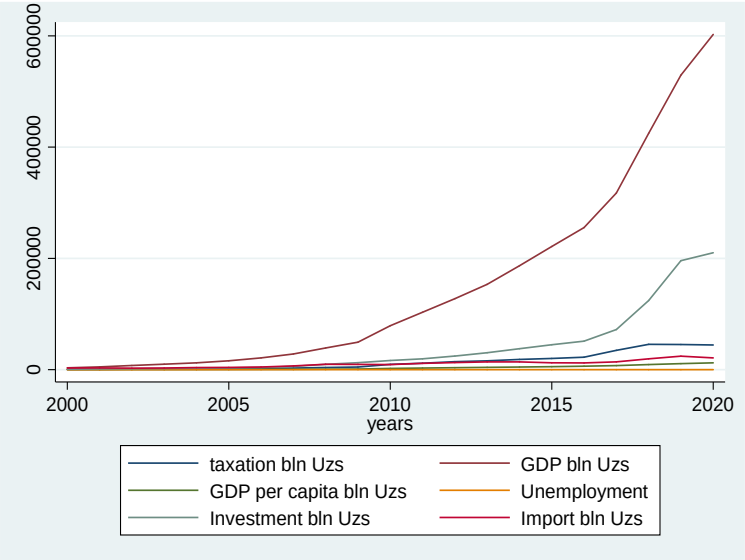
import	.001	.001	1.77	.127	-.001	.003	
export	-.003	.001	-3.26	.017	-.005	-.001	**
Constant	48.071	11.641	4.13	.006	19.585	76.556	***
Mean dependent var	7.000		SD dependent var	3.894			
R-squared	0.808		Number of obs	13			
F-test	4.201		Prob > F	0.052			
Akaike crit. (AIC)	63.766		Bayesian crit. (BIC)	67.720			
*** p<.01, ** p<.05, * p<.1							

A risk area is being formed, which can be called a system of digital risks, based on their main determinants. Digital risk is a term that covers all digital opportunities driven by ICT, data automation, decision automation. The use of digital technologies leads to digital risks. The risks of digitalization are the consequences of their implementation.

Table 6. Shapiro-Wilk W test for normal data

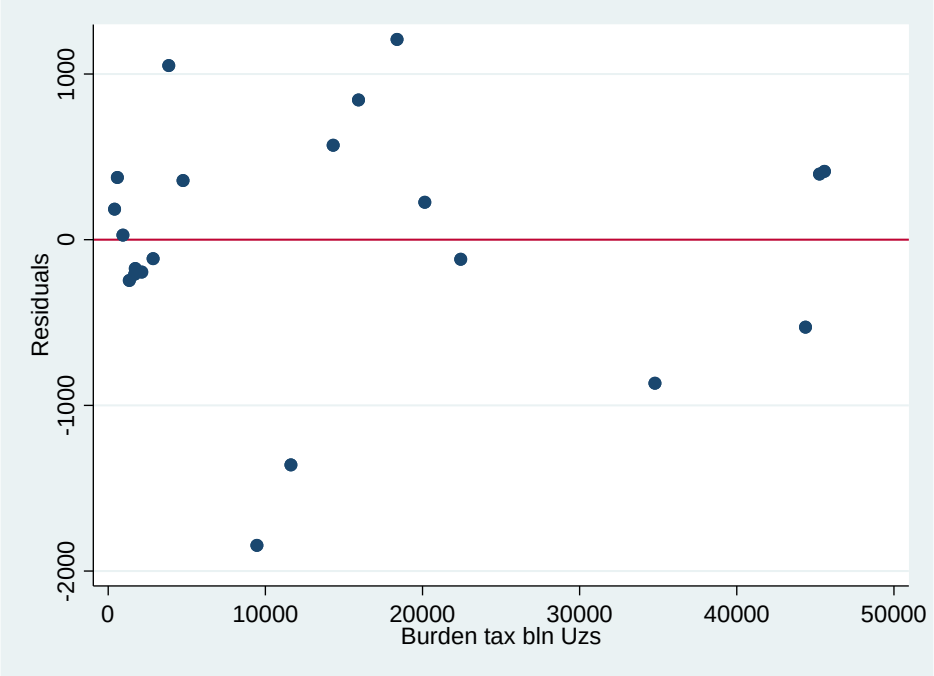
Variable	Obs	W	V	z	Prob>z
export	21	0.882	2.894	2.148	0.016
import	21	0.919	1.994	1.395	0.081
investment	21	0.680	7.853	4.166	0.000
unemployment	21	0.846	3.767	2.681	0.004
gdp_percap~a	21	0.840	3.917	2.760	0.003
gdp	21	0.803	4.819	3.179	0.001
burden_tax	21	0.809	4.692	3.125	0.001
ICT_produc~n	13	0.752	4.376	2.892	0.002
ICT_trade	13	0.891	1.920	1.278	0.101
ICT_services	13	0.966	0.605	-0.983	0.837
yhat	21	0.783	5.309	3.375	0.000
ehat	13	0.957	0.755	-0.550	0.709

An analysis of practice and literary sources will make it possible to identify the riskiest areas for the emergence of risks for organizations in modern conditions, to present them in relation to threats and key areas of management. The following types of risks and threats in the activities of the organization require the greatest attention in the context of digitalization: strategic, technological, operational, third-party, regulatory, cyber, sustainability risks, taxation and investment in Uzbekistan.



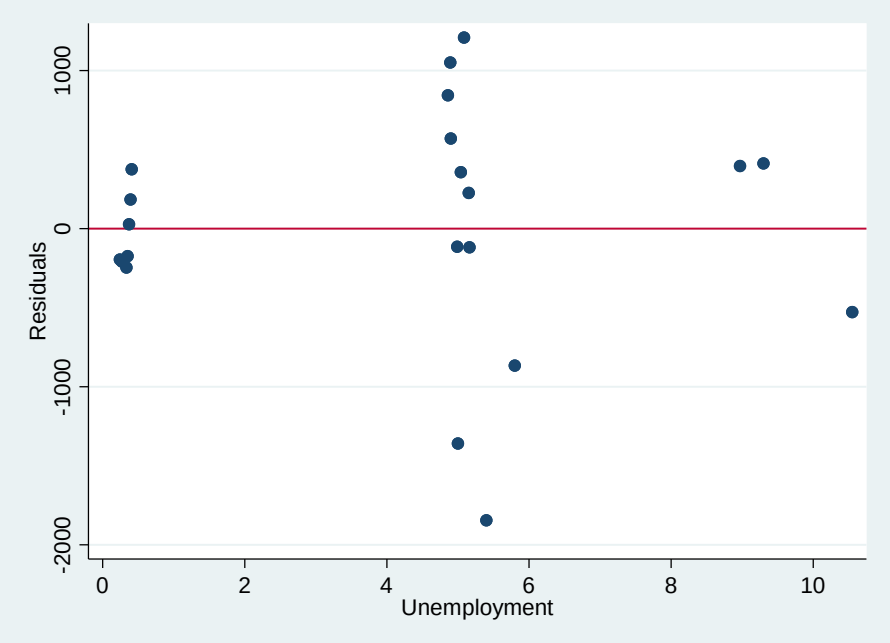
Picture 1. Linegraph of variables

Combating digital risk requires collective action by organizations with a common interest in combating threats such as digital regulation risk or cybersecurity risk. The basic approaches to risk management are set out by the International Organization for Standardization in standards dedicated to risk management, as well as information and cyber security.



Picture 2. Burden tax residual sctatter plot

However, improving the physical and institutional digital infrastructure is the responsibility of both the government and the private sector, as well as other actors in the relationship, such as international economic organizations or industry associations.



Picture 3. Unemployment residual sctatter plot

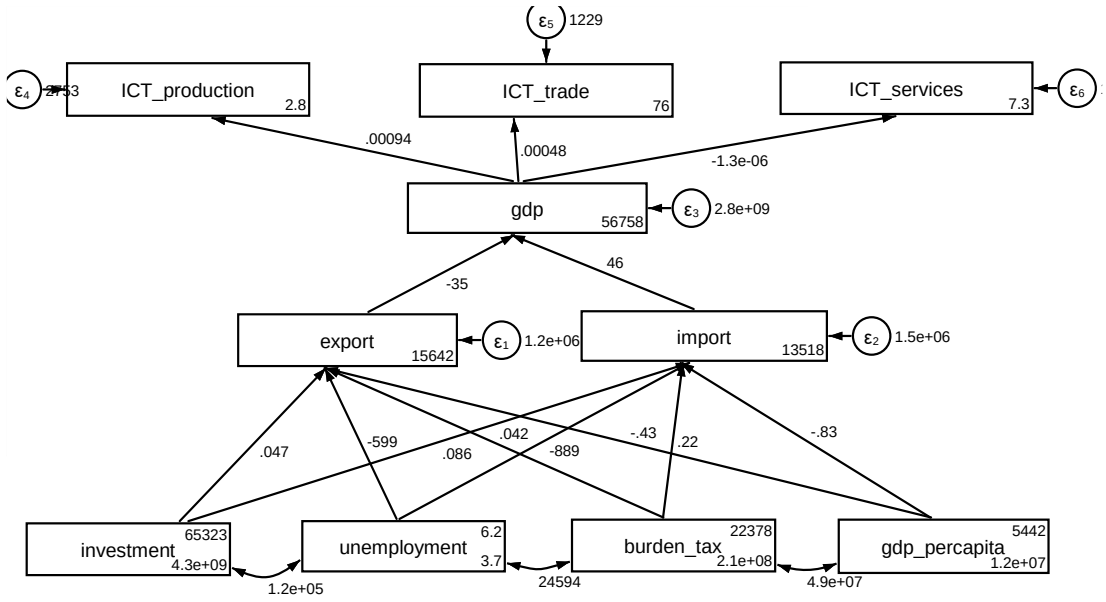
Exploring new forms of data management, harmonization of rights and principles related to digital technologies and data and developing norms related will be keep in secury economic stability in Uzbekistan. But expanding international cooperation in platform management issues, including with regard to competition policy and taxation in the digital economy can be a target for related economic risks.

While we applied Breusch-Pagan / Cook-Weisberg test for heteroskedasticity Ho: Constant variance for variables: fitted values of ICT_services it can be denoted that chi2(1) = 0.00 and it's Prob > chi2 = 0.9804. Regarding marginal effect on relationships it canbe concluded as followings:

Conditional marginal effects Number of obs = 13
Model VCE: OLS
Expression: Linear prediction, predict ()
dy/dx w.r.t.: burden_tax gdp_percapita unemployment investment import export
at: burden_tax = 22378.19 (mean)
gdp_percap~a = 5442.129 (mean)
unemployment = 6.162512 (mean)
investment = 65322.65 (mean)
import = 14144.62 (mean)
export = 13577.72 (mean)

Delta-method						
	dy/dx	Std.Err.	t	P>t	[95%Conf.	Interval]
burden_tax	0.001	0.000	2.280	0.063	-0.000	0.001
gdp_percapita	-0.005	0.001	-3.550	0.012	-0.008	-0.002
unemployment	-3.360	1.406	-2.390	0.054	-6.799	0.080
investment	0.000	0.000	2.240	0.066	-0.000	0.000
import	0.001	0.001	1.770	0.127	-0.001	0.003
export	-0.003	0.001	-3.260	0.017	-0.005	-0.001

At the organization level, the risk management system is determined by the strategy and depends on the market situation, its internal and external environment. Digital transformation determines the placement of accents on critical areas of risk occurrence. There are three approaches to building a digital risk protection system: tactical, operational, and strategic. As part of a tactical approach, experts recommend identifying vulnerable systems and removing them. In addition, actions to block the network will lead to minimization of digital risks.



Picture 4. SEM model of the common relationship

(9 observations with missing values excluded)
Endogenous variables
Observed: export gdp import ICT_production ICT_trade ICT_services
Exogenous variables
Observed: investment unemployment burden_tax gdp_percapita
Fitting target model:
Iteration 0: log likelihood = -955.28548
Iteration 1: log likelihood = -955.28548
Structural equation model Number of obs = 13
Estimation method = ml
Log likelihood = -955.28548

	OIM					
	Coef.	Std.Err.	z	P>z	[95%Conf.	Interval]
Structural						
export						
investment	0.047	0.027	1.740	0.083	-0.006	0.099
unemployment	-599.499	593.049	-1.010	0.312	-1761.853	562.856
burden_tax	0.042	0.105	0.400	0.689	-0.163	0.247
gdp_percapita	-0.432	0.592	-0.730	0.465	-1.592	0.728
_cons	15641.860	2900.266	5.390	0.000	9957.449	21326.280
gdp						
export	-34.736	15.231	-2.280	0.023	-64.588	-4.884
import	46.131	5.355	8.620	0.000	35.636	56.626
_cons	56757.940	1.54e+05	0.370	0.713	-2.46e+05	359134
import						
investment	0.086	0.030	2.860	0.004	0.027	0.145
unemployment	-888.837	664.701	-1.340	0.181	-2191.626	413.953
burden_tax	0.224	0.117	1.910	0.056	-0.006	0.455
gdp_percapita	-0.833	0.663	-1.260	0.209	-2.133	0.467
_cons	13518.060	3250.675	4.160	0.000	7146.848	19889.260
ICT_production						
gdp	0.001	0.000	11.340	0.000	0.001	0.001
_cons	2.765	24.498	0.110	0.910	-45.251	50.782
ICT_trade						
gdp	0.000	0.000	8.720	0.000	0.000	0.001
_cons	76.221	16.367	4.660	0.000	44.142	108.300
ICT_services						
gdp	-0.000	0.000	-0.220	0.824	-0.000	0.000
_cons	7.312	1.744	4.190	0.000	3.895	10.730
mean(investment)	65322.650	18238.230	3.580	0.000	29576.380	1.01e+05
mean(unemployment)	6.163	0.535	11.520	0.000	5.114	7.211
mean(burden_tax)	22378.190	4043.371	5.530	0.000	14453.330	30303.060
mean(gdp_percapita)	5442.129	963.198	5.650	0.000	3554.296	7329.962

var(e.export)	1182154	4.64e+05	5.48e+05	2550015
var(e.gdp)	2.78e+09	1.09e+09	1.29e+09	5.99e+09
var(e.import)	1485066	5.82e+05	6.88e+05	3203423
var(e.ICT_production)	2752.856	1079.759	1276.188	5938.164
var(e.ICT_trade)	1228.707	481.939	569.613	2650.435
var(e.ICT_services)	13.947	5.470	6.466	30.085
var(investment)	4.32e+09	1.70e+09	2.00e+09	9.33e+09
var(unemployment)	3.721	1.460	1.725	8.027

var(burden_tax)	2.13e+08		8.34e+07		9.85e+07	4.58e+08
var(gdp_percapita)	1.21e+07		4730616		5591208	2.60e+07
cov(investment,unemployment)	1.21e+05	48527.390	2.480	0.013	25399.800	2.16e+05
cov(investment,burden_tax)	8.79e+08	3.61e+08	2.440	0.015	1.72e+08	1.59e+09
cov(investment,gdp_percapita)	2.17e+08	8.74e+07	2.480	0.013	4.59e+07	3.89e+08
cov(unemployment,burden_tax)	24593.720	10361.570	2.370	0.018	4285.421	44902.020
cov(unemployment,gdp_percapita)	5874.853	2471.261	2.380	0.017	1031.270	10718.440
cov(burden_tax,gdp_percapita)	4.93e+07	1.96e+07	2.520	0.012	1.09e+07	8.77e+07

Note: The LR test of model vs. saturated is not reported because the fitted

model is not full rank.

The strategic approach is related to the need to update risk and threat models. Security teams are required to continually update threat models to reflect critical digital assets, including those associated with third parties and supply chains. It is recommended that digital risk management be integrated into overall incident management processes.

Based on the study of areas of risk for digital initiatives, it is necessary to develop various control measures in accordance with the basic standards and industry practice. A critical aspect in defining controls is to consider the nature and level of digitization of transactions, since most of these areas are in their infancy and are closely related to manual processes, which impose restrictions on the implementation of controls.

4. Discussoin

General directions for minimizing digital risks at the organization level, in our opinion, are closely related to the further progress of digital technologies - artificial intelligence, the Internet of things and smart networks, blockchain, integrated system centers for processing big data, with the development of data desensitization technologies, assessment and certification of security compliance.

No organization can completely get rid of risks, as the progress of digitalization constantly generates new areas of fluctuations and new threats. Companies are forced to resort to strategies that best anticipate and mitigate risks, identify critical assets and areas at risk of loss. Digitalization risk management as an integral system is just beginning to take shape in modern organizations. It is necessary to come to an understanding of what constitutes a digital risk and what type is most typical for the organization in question.

5. Conclusion

For final conclusion we can demonstrate risk management team can provide advice on digital transformation without slowing down the pace of the business. On in fact, in some cases the function risk management not only does not slow down large-scale digital initiatives, but and becomes an important partner who helps the company achieve or even exceed the set goals. Functions risk management in some organizations is already in the process of moving to this level. As for others, the time has come act. For econometric analysis we used Pearson's pairwise correlations test amd normality test. For achiving a new result, we used OLS regression model. By using Stata 16.0 we tested marginal effect and new outcomes in SEM model. Results are statistically significance at $p<0.05$ level using Ceteris Paribus. So, there is a positive relationship on ICT sector and economic risks in Uzbekistan.

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