MANAGING OPERATIONAL RISK IN BANKS DURING TIMES OF INSTABILITY

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Abstract

Operational risk management for banks is becoming more important every year and getting more crucial during times of instability. According to the research, most of the banks were not prepared for COVID-19-pandemic and had to review operational risk procedures immediately to secure their businesses in working from home environment. The War in Ukraine nowadays also influenced operational risk management in banks significantly. The aim of the paper is to understand the operational risk management challenges in banks during times of uncertainty, to highlight the operational risk management weaknesses when working remotely during pandemic or other unpredictable circumstances and to find out potential operational risk management solutions for banks. By gathering and analysing survey data from the finance sector's workforce and empirical evidence, the research is aimed to identify the gaps in managing operational risk in banks during times of instability, making the subject current and relevant. Factors influencing operational risk management form the basis of the qualitative method used in this study. The key findings and results are that banks must re-evaluate their business continuity planning strategies and reinforce their remote working policies, to adjust the controls that exist and enhance the processes that don't have any controls at all with the focus on transaction processing.

Keywords: bank operational risk, operational risk management

1. INTRODUCTION

Operational risk is "the risk of direct or indirect loss, coming from inadequate or failing internal processes, people, and systems, or from external events," the definition of the Basel Committee on Banking Supervision (BCBS). Operational risk is often referred to as a direct or indirect incident that has the potential to negatively

impact the financial performance of the financial institutions. Competition, globalization, cross-industry acquisitions, and technological innovations are some of the complex external and internal factors that contribute to it (Cummins et al., 2006). Any loss resulting from inadequate or failed internal processes, people, and systems can be considered as direct event. Natural disasters, political regime or government changes, floods, terrorist attacks, and a high rate of armed robberies are examples of indirect events (Delija, 2015). Regularly, the largest banks keep billions of dollars in reserve as a buffer against disastrous operational losses (De Fontnouvelle et al., 2006). Moreover, the operational risk can be linked to a lack of labour within an organization, unskilled employees, theft, robbery, internal and external fraudulent practices, and poor internal policies, controls, manuals, and instructions. Every year, operational risk management becomes more crucial for banks. The fraud case of the "pioneers" of rogue trading Iguchi hid $1.1 billion in losses from Daiwa Bank in 1983 (Japan), the collapse of Barings Bank in 1995 (UK), the financial crisis of 2007/09, COVID-19-pandemic, and the War in Ukraine nowadays these are significant events that influence operational risk management in banks during uncertain times. Based on statistics from ORX portal that gather data from 82 international members, impact from COVID-19 cost a total of €3.4bn with an average gross loss of €136k in 2021. There were 300,000 external fraud events reported to ORX, costing a total of €41.8bn. Therefore, research questions of this paper are: *What are the operational risk management challenges in banks during times of instability? What are the riskiest processes working remotely? Do banks have internal control systems for remote work? What are unexpected gaps in operational risk management during unforeseen circumstances?*

1.1. Internal Processes

Internal processes are defined as business processes that are performed within an organization without the involvement of any external partners. In banks internal processes are the routine actions that an organization must take to produce its products or provide its services to clients. For instance, in transaction department, operation management processes are those processes that involve sending and receiving transactions and fulfilling customer orders. Adegoke (2020) examined internal process risk management and used it to proxy operational risk management and concluded significant on the financial performance of banks. Therefore, internal process risk management has positive influence on financial performance of the banks. Hale (2011), Trusova et al. (2021), Chapelle (2019) based on the findings in their studies recommends that, there should be strong internal control system that can cater for any failure of internal control process. Internal losses typically affect back offices, with financial market activities first, retail next, and then the IT department (Chapelle, 2019). Uncertain times like pandemic, crisis increase operational risk, banks are not prepared for the circumstances that never happened before. Figure 1. illustrates coronavirus and non-coronavirus total gross loss across business lines in 2021. Events related to coronavirus cost a total of €3.4bn with an average gross loss of €136k. The largest losses are in corporate items, that constitute €1,248 million and in trading
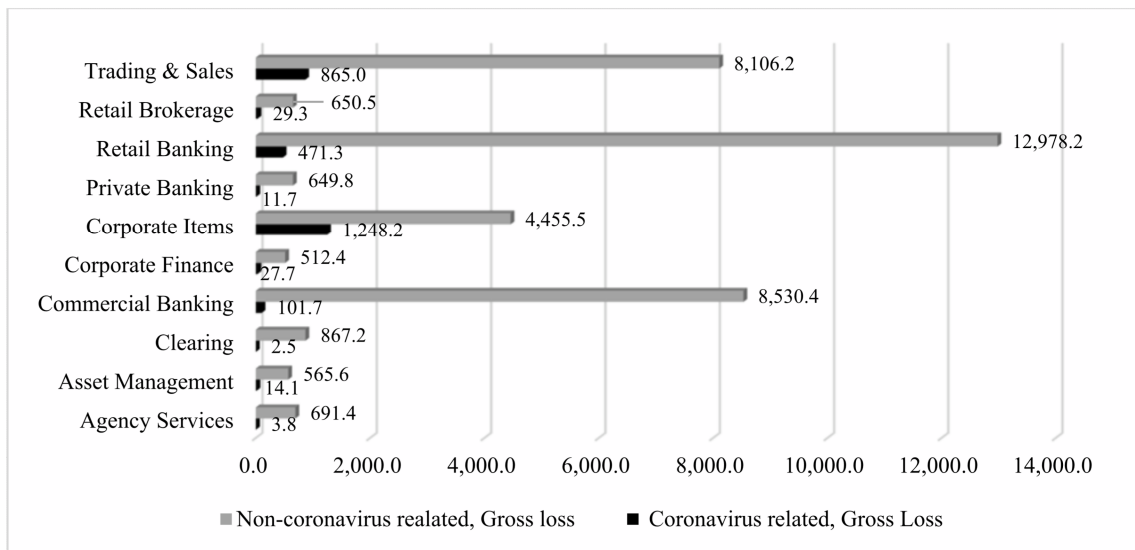
Source Author's reconstruction: ORX Annual Banking Operational Risk Loss Data report, 2021 (82 international banking members of ORX)

Figure 1. Coronavirus and non-coronavirus total gross loss across business lines (millions EUR, 2021)

&sales business line that constitute €865 million. We also can consider less impact is in cash clearing business line. Would the impact have been experienced so high without the pandemic?

Another finding reported by ORX, events that include pandemic-related losses from failed transaction processing or process management, from relations with trade counterparties and vendors such as miscommunication, data entry and missed deadlines or responsibilities cost €105.2 million with average loss €557k in 2021. Moreover, events that include losses due to failures in customer onboarding and documentation, for examples missing client permissions or disclaimers, or legal documents that are either missing, incomplete, not fit for purpose or inadequately executed cost €66.2 million in 2021. Therefore, to be prepared for any unpredictable situations during uncertain times banks should focus even more on

process management and improve internal controls.

1.2. People Risk Management

According to the contingency and crisis management theories, for management to be effective their leadership style must fit the situation, meaning that only leaders with situational control can predict the qualities of the ideal circumstances for success. The relationship and connection between organizational performance and the environmental factors that impact it are explained by contingency theory (Sigey, 2018). Moreover, in line with the theory situational favourability is influenced by three situational variables: relationships between leader and subordinates, task structure, how well-defined and structured group activities are and leader position power. According to the basic conclusions of the contingency model, task-motivated

leaders generally perform best in extremely "favourable" circumstances, i.e., when they have a lot of power, control, and influence or when the circumstances are unfavourable, and they have little power, control, or influence. Care management practices have come under intense scrutiny during crises like COVID-19, forcing change managers to create, update and execute new, challenging policies to keep staff and clients safe (Northington et al., 2021; Paige, 2021). People are also more likely to comply with regulations when they feel personally incapacitated, considering that during the COVID-19 pandemic, people were usually more willing to follow guidelines and policies (Grima et al., 2020; Bok et al., 2021). According to crisis management theory, the most effective leaders during unpredictable moments are those who are task-oriented and get things done (Jaques, 2014). The leader may lose so much time in the crisis if they are relationship-oriented, which could result in chaos and the loss of lives. According to system theory, effective management of factors, such as technology risk, employee risk, internal process risk, legal risk, and compliance risk, would increase financial performance and lower operational risk (Mele et al., 2010). Another finding about regulatory policies and its implementation is that no single theory includes all components of successful policymaking, from policy creation to execution (Mischen, 2007). Instead, there are numerous hypotheses that explain a different component of regulatory policy. Without providing an overall theory that explains what is necessary to establish or adopt policies, the theoretical landscape is available to individuals responsible for creating policy or who oversee policy implementation details, that contain

materials addressing specific policy-related issues. The study of interactions between senior management and experts in organizations who have the knowledge and skills necessary to meet Basel II operational risk management requirements was supported by agency theory (Hale, 2011). Considering that information systems are cross-organizational in nature and technology and business procedures are tightly integrated within banks, employees like information security specialists must be highly involved in operational risk management compliance activities. Operational risk is closely related to an organization's culture, decision-making processes, and the gap between planned and actual business results (Chernobai et al., 2021). Executive guidance must be communicated through policy and organized within operational procedures and processes to create the organizational change necessary to affect a difference in risk. In doctoral dissertation R. Hale concluded that the improvement of operational risk management was observed to be significantly influenced by information security specialists acting in their agent role (2011). Security specialists must ensure that they are forming the necessary connections inside the organization and delivering proper support to business unit leaders, for example, the sharing of knowledge and experience related to information system risks and their impact on internal, external, business unit, and incident management activities in banks. Information security leaders in organizations need to ensure that their information security specialist staff is fully capable to fill this role.Each theoretical opinion discussed implementation components, taking into account the variety of organization types, human errors, stress, mindset, emotional

intelligence, implementation strategies, and factors that may have an influence on the success of regulatory initiatives, therefore during times of instability, when implementing or changing policies these aspects should be taken into consideration. Operational risk management has been described as resulting from attitudes and actions of individuals and on business priorities that are communicated throughout the organization. Organizational culture is significant factor that influence operational risk management during uncertain times.

1.3. Technology

Anderson (2003) noted that information security is as much an art as it is science and defines it in terms of providing a reasonable belief that there is a balance between risk and controls in organizations. Digital technology was used as a result of the Covid-19 pandemic's new difficulties for consumers worldwide (Cifuentes-Faura, 2020; Al Halbusi et al., 2022). IT governance and Business Continuity Management (BCM) have been the subject of very few studies and limited research (Wan & Chan, 2008; Järveläinen, 2013; Zhang et al., 2016). However, there are few studies looking into this matter in relation to the Covid-19. According to the ORX publication in 2022, the analysis showed that the total loss identified as being related to coronavirus was €3.4bn from 568 events. Technology & infrastructure failures was the event type with the highest total loss at €1.5bn, followed by natural disasters & other events and external theft & fraud. The median of losses related to technology & infrastructure failures is €427k with the average loss €21m. The latest case with Sweden's Swedbank, which in 2022 year caused significant

disruptions in the bank's information technology (IT) system cost bank administrative fine of 850 million Swedish kronor (approximately € 75 million) was imposed by Financial Inspectorate (The Swedish financial regulator). The investigation established that Swedbank had made changes in the IT system, disregarding the internal procedures regarding such changes. The significance of IT strategies in achieving corporate success, especially during pandemics, has been emphasized in numerous studies (Dwivedi et al., 2020; Al-Hattami et al., 2021; Su et al., 2022).

1.4. External events

As it was mentioned in the section above, external theft & fraud preventive activities are important during times of instability. ORX reported that €771.3m were spent to coronavirus events related to external theft &fraud events with average loss €55.1m. To address the economic disruption brought on by Covid-19, some businesses have started to function in the "Work from Home" mode (Dwivedi et al., 2020; Kaushik & Guleria, 2020).

2. EXPERIMENTAL RESEARCH FOR OPERATIONAL RISK MANAGEMENT CHALLENGES

2.1. Methods of research

The study's methods are presented in this section. Its components are the research design, the study's population, the sample size and sampling method, the sources and methods used to gather the data, the research instrument and method used to analyse the data, the definition and measurement of the

variables, and the model's specifications.

2.1.1. Research design

Descriptive and correlational designs allow researchers to measure variables and describe relationships between them. This study used the survey method, which includes asking participants questions and gathering their responses (Gujarati, 2004). The survey research method was chosen because it clearly reveals the respondents' opinions, experiences,knowledge, attitudes, andfeelings. The survey was created using the QuestionPro software and distribution of the questionnaires was supported by Amazon Mechanical Turk, the crowdsourcing marketplace, that helps researches to accomplish time-consuming project by distributed workers over the Internet. The data analysis was done in IBM SPSS Statistics -22-win64.

2.1.2. Population of the study, research instrument

Since study is focused on operational risk management in banks during times of instability and the main survey research question is to find the gaps in operational risk management inworking remotely, the population of the study are people that work in financial sector worldwide, mainly bank employees. The survey method is used because it is difficult to get the published data as the information can be considered as sensitive orconfidential. Therefore, for this research, primary data was chosen. Additionally, it offers original study of high quality and excludes bias and third-party opinions. We have not focused on exact types of the roles or positions of the bank employees; thus,the questionnaires are created for all staff that has different work experience, seniority, and responsibility level, mostly relying on their knowledge of remote employment. Questionnaires were the type of instrument used to gather data for this research. The layout of the survey was made to be user-friendly and simpleto encourage respondents' thoughtful involvement.

2.1.3. Method of data collection

The survey consists of 10 questions:4 questions are designed straightforward and rate respondents' opinion on the basis of their responses as to whether they strongly agree (yes) or strongly disagree (no); 6 questions are designed based on coding number with possible detailed responses, thatwere built based on the literature review, personal observation, data review of the Operational Risk data Exchange Association (ORX), and proposed model. To exclude bias and to give room of independences to the respondent to choose any responses of their choice in a balanced and symmetric way the answers "nothing "and "others" were used for further analysis of the responses (Questions about operational risk controls).

2.1.4. Methods of data analysis

Descriptive and inferential statistical tools were used to measure the gathered data in accordance with the proxies for both the dependent and independent variables. The descriptive statistical tool shows the demographic characteristics of respondents, general work experience in finance sector, the experience of respondents to work from home, and response rate of data collected. In comparison, the inferential statistical tool

shows the model's measurement results. Furthermore, data was analysed using a statistical techniques Frequencies, Spearman's rho, and the analysis of Variance.

3. RESEARCH RESULTS

Preliminary tests, such as data screening and cleaning, checking, and treating missing values, normality test, as well as demographic characteristics of respondents, were conducted and presented by the researcher before the main findings were revealed. Importance to perform preliminary analysis before testing the main data were concluded by Hair et al. (2014). Afterwards, the researchers carried out the main data analysis through the structural model.

3.1. Response Rate, Missing Values and Normality Test

Table 1 below provides summaryof the number of questionnaires distributed and the number of questionnaires completed. The total of 1152 questionnaire were distributed and 895 (77.69%) were returned. Data screening was carried out on the retrieved questionnaire, and all were found to be useful. Thus, the analysis was based on 895 questionnaires filled and returned which represent (77.69 %) of the total questionnaire distributed. According to Yun and Trumbo (2000), and Converse et al. (2008) the response rate is considered sufficient for statistical reliability and generalization.

The data collected was screened for missing values, as it is one of the biggest

Table 1. Summary of Response Rate

Items	No of Copies	Percentage (%)
Copies of Questionnaire Distributed	1152	100
Copies of Questionnaire Completed	895	77.69

Source: Author's construction. Operational Risk Management in Working from Home environment survey, 2022.

Table 2. MVA, univariate statistics

	N	Mean	Std. Deviation	Missing	
				Count	Percent
Q2	885	1.91	.712	10	1.1
Q3	874	1.05	.216	21	2.3
Q4	884	2.29	.595	11	1.2
Q5	875	1.11	.314	20	2.2
Q6	883	1.15	.361	12	1.3
Q7	881	1.43	.496	14	1.6
Q8	888	1.93	.552	7	.8
Q9	895	2.56	1.173	0	0.0
Q10	883	2.57	1.195	12	1.3
Q11	591	3.45	1.401	304	34.0
Total data elements	8539		Total missing in the data set	411	

Source: Author's construction. Operational Risk Management in Working from Home environment survey, 2022.

issues in data processing (Tabachnick & Fidell, 2013). Q1 is excluded as it is not the question in the survey. Numeric variables are Q2 - Q11 (10 questions) and response IDs (cases). The data set should always be checked for missing numbers. Hair et al. (2014) recommend that researchers use 10% as a tolerable threshold for missing data. According to descriptives univariate statistics (Table 2), 411 of 8539 data elements were missing in data set. This covers up 4.8 % of the data collection, which is much less than the 10% benchmark and thus can be disregarded. Q11 has the most missing values – 34%, all other are not so essential to be considered.

After examining missing patterns (Table 3), we can conclude detailed cases with missing values for each variable: n – 337 cases that can have 1,2,3,4 missing values, and there are 3 cases that have 9 missing values, that cover 90% of total missing values.

Table 4 provides summary of table 3 and demonstrates numbers of cases that have 1,2,3,4 or 9 missing values.

Table 3 proves that 3 cases that have 9 missing values cover 90% of total missing values, therefore we can consider deleting these 3 cases, but after analysing tabulated patterns, we decide to handle remaining missing values through imputation process (Hair et al., 2014). We should only perform missing value imputation if there is randomness in the missing value process (Hair et al., 2014). To determine whether the missing value process is random, we use Missing completely at random (MCAR) test.

Table 3.Missing Patterns (cases with missing values)

Case ID	# Missing	% Missing	Missing and Extreme Value Patterns									
			Q9	Q8	Q2	Q4	Q6	Q10	Q7	Q5	Q3	Q11
99480693	1	10.0	-				-			-	-	S
99480704	1	10.0	-				-			-	-	S
…n	1,2,3,4	-	-				-			-	-	S
99499480	4	40	-			S	S	S	-	S		
102224425	9	90	S	S	S	S	S	S	S	S	S
99731785	9	90	S	S	S	S	S	S	S	S	S
99221041	9	90	S	S	S	S	S	S	S	S	S

Source: Author's construction. Operational Risk Management in Working from Home environment survey, 2022.

Table 4. Number of cases with 1,2,3,4,9 missing values

N cases	# Missing values for n cases	Total missing values in cases
311	1	311
18	2	36
7	3	21
4	4	16
3	9	27
Total cases 343		Total 411

Source: Author's construction. Summary of all data from Table 3. Operational Risk Management in Working from Home environment survey, 2022.

This test will tell us if it is safe to impute the missing values without affecting the results of analysis (Hair et al., 2014). Table 5, the Separate Variance t Tests shows mean value of valid cases and missing value cases. The t-value indicates the comparison between variance of valid cases and missing value cases across variables, that allows us to evaluate the randomness of missing data through group comparison between missing and valid data. We examine the P value of t-test, if the P value is not significant, that mean that there is no difference between variance of valid cases and missing value cases. A statistically significant test result (P ≤ 0.05) means that the test hypothesis is false or should be rejected, and data imputation is not recommended because missing values are not random and may have effect on the result. (Hair et al., 2014). A P value greater than 0.05 means that no effect was observed.

The results show concerns in Q11, since P value is less than 0.05 in 7 comparisons with Q2, Q3, Q5, Q6, Q7, Q9 and Q10, indicating group difference between these variables. All other t-tests for Q2, Q3, Q4, Q5, Q6, Q7, Q9 and Q10 are nonsignificant, indicating no group difference in these variables, therefore indicator variables with less than 5% missing are not displayed in Table 5. The only variable of concern is Q11. Before deleting Q11, we examine the MCAR test results in EM Means table (Table 6). MCAR test is non-significant, as p value is 0.771(P >0.05), indicating the randomness of missing values and we decide not to delete Q11, but perform data imputations process. The technique that is most frequently used to replace missing values is mean substitution (Hair et al., 2014). We replace missing values with mean, and new variables are added and labelled with SMEAN, indicating usage of mean method.

To investigate whether a variable can be assumed to be normally distributed, the data

Table 5. Separate Variance t Tests

Q11	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
t	3.0	2.8	-.8	3.2	3.6	2.9	-1.3	3.2	3.4	
df	630.8	828.1	674.1	767.4	748.4	614.4	591.3	614.3	614.2	
P(2-tail)	.003	.005	.430	.001	.000	.003	.208	.001	.001	
# Present	586	581	588	578	585	584	590	591	584	591
# Missing	299	293	296	297	298	297	298	304	299	0
Mean (Present)	1.96	1.06	2.28	1.13	1.18	1.47	1.91	2.65	2.66	3.45
Mean (Missing)	1.81	1.02	2.31	1.07	1.10	1.36	1.96	2.39	2.38	

Source: Author's construction. Operational Risk Management in Working from Home environment survey, 2022.

Table 6. EM Estimated Statistics, Means table

Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
1.90	1.05	2.29	1.11	1.15	1.43	1.93	2.56	2.57	3.39

Little's MCAR test: Chi-Square = 218.605, DF = 235, Sig. = .771

Source: Author's construction. Operational Risk Management in Working from Home environment survey, 2022.

Table 7. Tests of Normality

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Q2 (Work experience in finance, years)	.238	552	.000	.809	552	.000

Source: Author's construction. Operational Risk Management in Working from Home environment survey, 2022, question 2.

collected was screened and tested for normality. This is unimportant decision as most of the parametric statistical tests rely on the assumption that variables are normally distributed, unless sample sizes are very large (Wayne,1990). We performed the Kolmogorov-Smirnov test and Shapiro-Wilk test (Table 7).

The Kolmogorov Smirnov (K–S) test showed that statistic takes value 0.238. This has degrees of freedom which equals the number of data points, namely552.

P-value provided by SPSS (quoted under Sig. for Kolmogorov-Smirnov) is .000 (reported as p < .001). Shapiro-Wilk test proved the same. We tested all variables (Q3-Q11) and Sig. values are0. We therefore have significant evidence to reject the null hypothesis that the variable follows a normal distribution.

3.2. Characteristics of Respondents

This section presents characteristics of respondents. Statistics include experience distribution, years in which respondents have been working with their organizations, remote work experience and the experience of respondents to work from home now, without unforeseen circumstances (in our case after pandemic).The results are presented in Table 3.2 and show that almost half of the respondents that participated in this study are working in finance sector within period of five to ten years, constituting of 429 respondents, which is equivalent to 48 percent of the total responses usable for the analysis of this research, whereas 270 participants representing 30 percent of the total respondents have been working in finance

Table 8. Characteristics of Respondents

Characteristics		Frequency	Percentage
Working experience in finance sector	0-5 years	270	30.2
	5-10 years	429	47.9
	Over 10 years	186	20.8
Remote working experience	Yes	831	92.8
	No	43	4.8
Days working remotely after pandemic (per week)	0	66	7.4
	1-2	499	55.8
	3 and more	319	35.6

Source: Source: Author's construction. Operational Risk Management in Working from Home environment survey, 2022.

sector less than five years, and 186 participants representing 20 percent of the total respondents have been working over ten years in finance sector. Also, from the Table 8 it can be deduced that only 4.8% of the sampled respondents do not have remote working experience. On the other hand, 831 respondents which constitute 92.8% of the total response have working from home experience. Moreover, 499 respondents, which constitute 55.8%, confirmed that they work remotely from one to two days per week now, after pandemics and 319 respondents which constitute 35.6% of the total responses work remotely three or more days per week. Only 66 respondents (7.4%) claimed that they do not work from home now (data taken Dec2022 – Jan 2023).

This therefore implies that most of the respondents for this study have been working with the bank for more than five years and have remote working experience. Thus, they are suitable for data collection because of their long year of services in the work. Working experience and experience to work remotely can be considered independent variables, dependent variables considered in the study are discussed in section 3.3.

4. DISCUSSION

4.1. Dependent variables for proposed model

Figure 2 illustrates the variables for proposed model. Independent variables were discussed in the section above, dependent variables were chosen based on the literature review provided in section 1. Although only ten questions were asked to the respondents, the survey included all the variables considered in the Figure 2, meaning the riskiest processes in working from home environment and the root cause of impact, changes in error ratio, documentation, internal controls, BCP, etc.

Table 9 presents characteristics of responses based on the proposed variables described in the model above. The results show that almost 87% of the respondents that participated in this study have guidelines for remote work in finance sector, constituting of 778 respondents, whereas 97 participants representing 10 % have do not have remote work policy. Moreover, 83.5 % of respondents confirmed that these guidelines are part of Business ContinuityPlanning
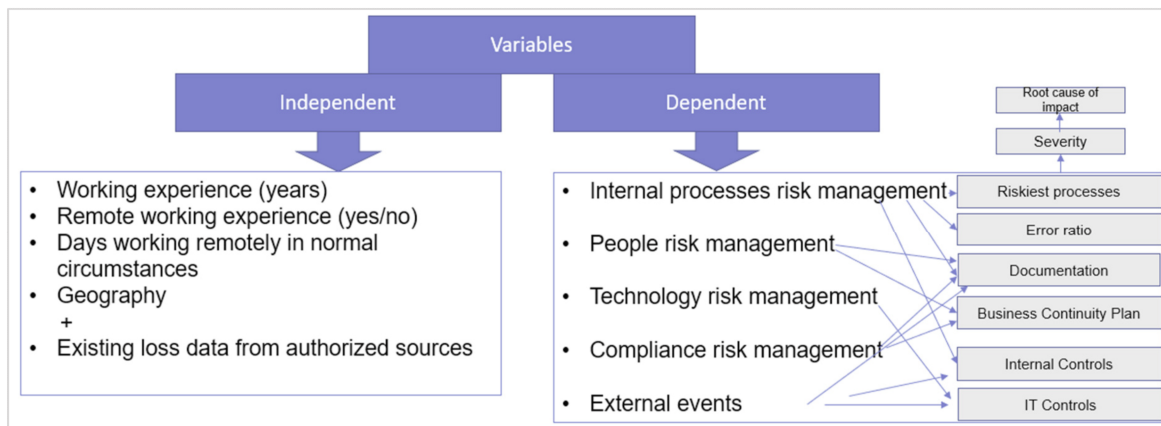
Source: Source: Author's construction. Operational Risk Management in Working from Home environment survey, 2022.

Figure 2. Variables for proposed model. Operational risk management during times of instability

(BCP) in their organizations, whereas 15 % of respondents claimed that guidelines are not part of their BCP. The lack of policies isn't that surprising, though. This is probably a consequence of the learning challenge that organizations go through in the early stages. Remote jobs are still a new concept, and companies need to adapt. Another finding is that more than half of respondents, which is equivalent to 56 % claim that the error ratio has increased due to remote work, meaning that employees make more mistakes being out of office environment, although 42 % of respondents have opposite opinion, stating that they do not see any increase in mistakes due to working from home environment. This can also support the result that 19 % of respondents do not see the risk in remote work. However, 613 participants representing 68.5 % of respondents consider the risk as moderate, but 105 respondents, presenting 11.7 % find huge risk in remote

Table 9. Characteristics of responses

Characteristics		Frequency	Percent
Do respondents have guidelines for remote work	Yes	778	86.9
	No	97	10.8
Are this guidelines part of BCP plan	Yes	747	83.5
	No	136	15.2
Has error ratio increased due to remote work	Yes	501	56.0
	No	380	42.5
The evaluation of operational risk in remote working environment	No risk	170	19.0
	Moderate risk	613	68.5
	Huge risk	105	11.7
The reason of operational risk working remotely	less attention and external intervention (family, TV, pets, etc.)	215	24.0
	less efficiency and time management	217	24.2
	less knowledge and support to perform the task	243	27.2
	access limitations to internal documents/systems	185	20.7
	fraud possibility (external &internal)	35	3.9
The riskiest processes when working remotely	communication with clients/stakeholders	207	23.1
	data analysis/maintenance	215	24.0
	transaction processing (payments, securities, FX, etc.)	279	31.2
	documentation preparation (agreements, T&C, etc.)	116	13.0
	Conducting a presentation (external & internal)	66	7.4
Existing controls in the organization, working remotely	alerts in the systems	237	26.5
	duality /4 eye principal	43	4.8
	all mentioned above	200	22.3
	others	32	3.6
	nothing	79	8.8

Source: Source: Author's construction. Operational Risk Management in Working from Home environment survey, 2022.

working environment. Respondents have different opinions about the reason of operational risk working remotely, 27.2 % of the participants claim that the reason is behind the lack of knowledge and support from the colleagues to perform their tasks, 24.2 % of respondents call into question efficiency and time management working at home and 24% have less attention and feel external intervention from their family, TV, pets, ect. Another reason of operational risk working remotely can be access limitations to internal documents/systems, this statement supports 20.7 % of respondents and 3.9 % find remote work risky due to external or internal fraudpossibility. Participants were also asked about existing internal control that they have in the organization. IT controls, like alerts in the systems are known for 26.5 % of participants and this control exist in their organizations, 4.8 % supported duality (4 eye principle) and 22 % have both IT alerts and duality controls when working remotely. However, 8.8 % of participants claimed that they do not have any controls in remote work environment.

4.2. Spearman's rho correlation

Spearman's rho is a non-parametric statistical test of correlation that allows a researcher to determine the significance of their investigation. Spearman rank correlation can be used as a measure of a monotonic association; thus, a Spearman rank correlation describes the monotonic relationship between 2 variables. It is used in studies that are looking for a relationship, where the data is at least ordinal, therefore after preliminary tests explained in section 3.1 it was decided to calculate Spearman's rho correlation coefficient. Correlation coefficient is scaled such that range from −1

to +1, where 0 indicates that there is no linear or monotonic association, and the relationship gets stronger and ultimately approaches a constantly increasing or decreasing curve (Spearman correlation) as the coefficient approaches an absolute value of 1.

The results in Table 10 show that Q4 correlates with Q5, Q6, Q7 and Q12, meaning that respondents who have more remote working experience confirmed that they have guidelines for remote work in the organization and these guidelines are part of BCP plan (correlation between Q6 and Q7). Moreover, the error ration increase due to remote work are interconnected firstly if the respondents have guidelines for remote work, secondly with the evaluation of operational risk in remote working environment and thirdly with existing controls during remote work (Q8, Q7, Q9 and Q12). The riskiest processes in working remotely are correlated with the reason of the operational risk working remotely (Q10, Q11) and the existing controls question working remotely have correlation with remote working experience, with guidelines for the remote work, BCP approach, with error ratio increase and with the evaluation of the operational risk in remote working conditions.

4.3. Analysis of Variance. Significant effect of factors

To determine whether a relationship exists between one independent variable and other dependent variables, we use a one-way ANOVA, which stands for Analysis of Variance. As described in section 3.3, working experience of respondents in finance sector, experience to work remotely, also days per week respondents are working

Table 10. Non-parametric correlation. Source: Source: Author's construction. Operational Risk Management in Working from Home environment survey, 2022

Spearman's rho		Q2 (Working experience in finance, years)	Q4 (Remote working experience)	Q5 (Days working remotely, after Pandemic, per week)	Q6 (Do respondents have guidelines for remote work)	Q7 (Are these guidelines part of BCP plan)	Q8 (Has error ratio increased due to remote work)	Q9 (The evaluation of operational risk in remote working environment)	Q10 (The reason of operational risk working remotely)	Q11 (The riskiest processes when working remotely)	Q12 (Existing controls in the organization, working remotely)
Q2 (Working experience in finance, years)	Correlation Coefficient	1.000	-.006	.140**	.052	.112**	.189**	-.061	.070*	.071*	.088*
	Sig. (2-tailed)		.851	.000	.123	.001	.000	.072	.037	.035	.033
	N		885	869	878	869	876	875	881	885	876	586
Q4 (Remote working experience)	Correlation Coefficient	-.006	1.000	-.238**	.407**	.296**	.198**	-.176**	-.094**	.018	.230**
	Sig. (2-tailed)	.851		.000	.000	.000	.000	.000	.006	.592	.000
	N	869	874	870	859	867	866	870	874	866	581
Q5 (Days working remotely, after Pandemic, per week)	Correlation Coefficient	.140**	-.238**	1.000	-.068*	-.079*	.127**	-.039	-.005	-.018	.010
	Sig. (2-tailed)	.000	.000		.044	.019	.000	.249	.893	.593	.808
	N	878	870	884	868	876	875	880	884	875	588
Q6 (Do respondents have guidelines for remote work)	Correlation Coefficient	.052	.407**	-.068*	1.000	.612**	.263**	-.208**	-.076*	.100**	.327**
	Sig. (2-tailed)	.123	.000	.044		.000	.000	.000	.024	.003	.000
	N	869	859	868	875	866	869	872	875	866	578
Q7 (Are these guidelines part of BCP plan)	Correlation Coefficient	.112**	.296**	-.079*	.612**	1.000	.281**	-.214**	-.045	.077*	.364**
	Sig. (2-tailed)	.001	.000	.019	.000		.000	.000	.179	.023	.000
	N	876	867	876	866	883	873	879	883	876	585
Q8 (Has error ratio increased due to remote work)	Correlation Coefficient	.189**	.198**	.127**	.263**	.281**	1.000	-.269**	.083*	.089**	.378**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000	.013	.008	.000
	N	875	866	875	869	873	881	877	881	874	584
Q9 (The evaluation of operational risk in remote working environment)	Correlation Coefficient	-.061	-.176**	-.039	-.208**	-.214**	-.269**	1.000	-.046	-.111**	-.309**
	Sig. (2-tailed)	.072	.000	.249	.000	.000	.000		.169	.001	.000
	N	881	870	880	872	879	877	888	888	879	590
Q10 (The reason of operational risk working remotely)	Correlation Coefficient	.070*	-.094**	-.005	-.076*	-.045	.083*	-.046	1.000	.218**	-.098*
	Sig. (2-tailed)	.037	.006	.893	.024	.179	.013	.169		.000	.018
	N	885	874	884	875	883	881	888	895	883	591
Q11 (The riskiest processes when working remotely)	Correlation Coefficient	.071*	.018	-.018	.100**	.077*	.089**	-.111**	.218**	1.000	.115**
	Sig. (2-tailed)	.035	.592	.593	.003	.023	.008	.001	.000		.006
	N	876	866	875	866	876	874	879	883	883	584
Q12 (Existing controls in the organization, working remotely)	Correlation Coefficient	.088*	.230**	.010	.327**	.364**	.378**	-.309**	-.098*	.115**	1.000
	Sig. (2-tailed)	.033	.000	.808	.000	.000	.000	.000	.018	.006	
	N	586	581	588	578	585	584	590	591	584	591

Table 11. One-way ANOVA

Working experience in finance, years (Q2)		Days working remotely per week, after Pandemic (Q5)	
Q	Sig.	Q	Sig.
Q4 (Remote working experience)	.000	Q2 (Work experience in finance, years)	.000
Q5 (Days working remotely, after Pandemic, per week)	.000	Q6 (Do respondents have guidelines for remote work)	.000
Q6 (Do respondents have guidelines for remote work)	.000	Q7 (Are these guidelines part of BCP plan)	.000
Q7 (Are these guidelines part of BCP plan)	.000	Q8 (Has error ratio increased due to remote work)	.000
Q8 (Has error ratio increased due to remote work)	.000	Q9 (The evaluation of operational risk in remote working environment)	.000
Q9 (The evaluation of operational risk in remote working environment)	.000	Q10 (The reason of operational risk working remotely)	0.833
Q10 (The reason of operational risk working remotely)	.006	Q11 (The riskiest processes when working remotely)	0.808
Q11 (The riskiest processes when working remotely)	0.014	Q12 (Existing controls in the organization, working remotely)	.000
Q12 (Existing controls in the organization, working remotely)	.000	Q4 (Remote working experience)	.000

Source: Source: Author's construction. Operational Risk Management in Working from Home environment survey, 2022.

from home, are considered independent variables. We have tested these variables and Table 11 illustrates the results. Sig < 0.05, then this will result in significant effects (95% factor impacts the result, Sig < 0.01 - factor impacts the result 99%).

The results show that working experience factor (Q2) impacts all the dependent variables with 99% and days working remotely per week, after Pandemic (Q5) impacts all variables except Q10 and Q11, meaning riskiest processes and the reason of operational risk. Moreover, we tested third independent variable, experience to work remotely, however, test proved negative result, meaning that this factor does not influence the result.

5. CONCLUSIONS

Previously conducted analyses are the basis for making relevant conclusions about independent and dependent variables used for the proposed model, operational risk management in banks during times of instability. The results of the correlation analysis indicate the existence of the link between remote work performance of employees and analysis of variance provide

independent factors that influence the result. Moreover, it was concluded from characteristics of responses that although 92 % of the employees in finance sector had the remote working experience during pandemic, only 7 % are not working remotely now, and most of the employees (80%) find the risk in remote working environment, meaning that operational risk management frameworks in banks should be improved for remote and hybrid working environment. These are just the beginning of the enormous changes in the financial industry. Characteristics of responses also provide evidence of the challenges in operational risk management in remote conditions: lack of guidelines for remote work, gaps in business continuity planning of organizations, increase of mistakes due to remote work. Management and employees like information security specialists must be highly involved in operational risk management compliance activities. Also, banks should focus more on the processes related to transaction, as these are the riskiest processes also in remote working environment, mainly corporate items. The reasons for operational risk working remotely are different, but the most crucial are: less attention and external intervention, less efficiency and time management, less knowledge and support to perform the task. Although half of the banks have controls in the organization for working remotely, there are still organizations that have not established internal controls to secure their businesses for remote work or other unforeseen circumstances. Another finding of the study is that management style is very important during uncertain times, as leaders with member relations will fail, due to unstructured tasks and weak power position. The most effective leaders during

unpredictable moments are those who are task-oriented and get things done. Moreover, leaders should work on their emotional intelligence, basically how they respond to stress. Operational risk is closely linked to the organization's culture, ways of making decisions, and the gap between expected and actual business outcomes. Effective management of technology risk, employee risk, internal process risk, legal risk, and compliance risk, would increase financial performance of the banks and lower operational risk.

6. RESEARCH LIMITATIONS AND FURTHER LINES OF RESEARCH

The results of this research were limited to the operational risk management practices variables of banks because they appeared to be lacking in earlier literatures. Another study's limitation to use expo facto research methods, therefore as survey research method through the questionnaire were the best method to measure operational risk management practices. The survey can be used in the future to see the trend analysis. This study contributes and recommends for further investigation of other factors related to operational risk, such as organizational culture impact on operational risk, emotional intelligence of personnel and leadership style in times of uncertainty, investigation of human errors escalation, mitigation and monitoring procedure, and detailed understanding of IT controls.

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УПРАВЉАЊЕ ОПЕРАТИВНИМ РИЗИКОМ У БАНКАМА У ВРЕМЕ НЕСТАБИЛНОСТИ

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Извод

Управљање оперативним ризиком за банке постаје све важније из године у годину, нарочито у временима нестабилности. Према истраживању, већина банака није била спремна за пандемију COVID-19 и морале су одмах да преиспитају процедуре оперативног ризика како би осигурале своје пословање у раду од куће. Данашњи рат у Украјини је такође значајно утицао на управљање оперативним ризиком у банкама. Циљ рада је да се разумеју изазови управљања оперативним ризиком у банкама у време неизвесности, да се укаже на слабости управљања оперативним ризиком када се ради на даљину током пандемије или других непредвидивих околности и да се открију потенцијална решења за управљање оперативним ризиком за банке. Прикупљањем и анализом анкетних података о радној снази финансијског сектора и емпиријских доказа, истраживање има за циљ да идентификује недостатке у управљању оперативним ризиком у банкама током периода нестабилности, чинећи тему актуелном и релевантном. Фактори који утичу на управљање оперативним ризиком чине основу квалитативне методе коришћене у овој студији. Кључни резултати и закључци су да банке морају да преиспитају своје стратегије планирања континуитета пословања и да ојачају своје политике рада на даљину, да прилагоде постојеће контроле и унапреде процесе који уопште немају контролу са фокусом на обраду трансакција.

Кључне рачи: оперативни ризик банке, управљање оперативним ризиком

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