

Effects of risk management practices on banks' performance: An empirical study of the Jordanian banks

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ABSTRACT

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Despite the importance of risk management in the banking sector, little research has been devoted to the Arabian settings. This paper investigates the effect of risk management practices (i.e., understanding risk and risk management, risk analysis and assessment, risk identification, risk monitoring, and credit risk analysis) on Jordanian commercial banks' performance. The study utilizes a quantitative approach by obtaining survey data from risk managers and employees in risk management departments (n=23) of commercial banks. A partial least squares structural equation modeling (PLS-SEM) was applied on the data and the results showed that the components of risk management practices had positive and significant impacts on the performance of banks. In sum, the findings corroborate existing work in the Western settings and underscore the importance of risk management in the Arabian banking context.

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1. Introduction

The common ideology of risk management (RM) in most industries is to curtail the potential for risks and scale down the effect of possible losses (Sleimi & Davut, 2015). In this view, RM can exert competitive business implications. For example, properly designed RM strategies not only diminish potential losses, but also offer an avenue in which enterprises can exploit new business opportunities (Sleimi & Emeagwali, 2017). Risk mostly surface in unstable environment and uncertain conditions e.g., credit risk, interest rate risk, liquidity risk, market risk, exchange risk etc. (Tan et al., 2017; Sleimi et al., 2018). This makes effective RM valuable for top management and decision makers, thus, ineffective RM could be viewed as a step toward failure (Khan et al., 2016). As a cardinal strategic notion, RM seeks to find the maximum value added to all activities in the banks (Soltanizadeh et al., 2016). RM helps decision makers understand the positive and negative effects of factors in their immediate environment, which results to higher probability of success and lower rate of failure (Krause & Tse, 2016; Van Greuning & Brajovic-Bratanovic, 2009).

According to Bülbül et al. (2019), intense competition is a strong determinant for RM practices implementation, and weaker RM practices can signal poor control mechanisms (Wang et al., 2018). RM research stream primarily focuses on hazard risks, losses and preventions. For instance, in engineering, RM entails risks associated with technical and operational factors (Verbano & Venturini, 2013). Project RM focuses on project life cycle, potential threats, opportunities and response strategies (Badri, 2015). Insurance RM focuses on prevention strategies e.g., bearing extra expenses through the possession of insurance (Dionne, 2013). Supply chain RM deals with risks impacting logistics, supply chain information, relationships and delays (Ho et al., 2015). Clinical focuses on safety, quality and identification of the circumstances that can victimize patients and risks control mechanism (Vincent, 2001). Couple with globalization, intense competition, volatile economic and political conditions around the world and the Middle East in particular, have forced decision-makers in the banking industry to leverage RM

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(Abu Hussain & Al-Ajmi, 2012; Abuhjeeleh et al., 2019). In this sense, we analysis of risk succors for establishment of risk intensity of a condition e.g., acceptable, tolerable or unacceptable risks. According to Belas et al. (2015) and de Araújo Lima et al. (2019), financial RM are not core obstacles for non-financial firms, but exert substantial effect on the business operations, financial performance and long-term sustainability of any kind of firm. In an attempt to scrutinize these claims laid in Western organizations, the present study explores the potential impacts of RM practices (i.e., understanding risk and risk management, risk assessment and analysis, risk identification, risk monitoring, credit risk management) on bank performance in Jordan. In addition, this paper examines the importance of major types of risks facing the Jordanian banks.

2. Literature Review

2.1. Risks and Risk Management

Risk is measured by a probability. According to Harland et al. (2003), “the word risk refers to an uncertain event, a chance of danger, loss, damage or other undesired consequences”. In the context of financial world, risk is associated with earning and loss uncertainty (Bessis, 2002), which makes it a primary component of investment. According to Marks (2011), investors often consider these cardinal points: “understanding risk, recognizing when the risk is high, and controlling the risk”. Scholars in the financial world, argued that risk can have an adverse effect on investment goals such as prices, quality, timing and customer satisfaction (Park, 2010). Henceforth, risk management denotes a structured process involving actions or activities to lessen the probability of undesirable situations occurrence and/or condense their adverse impacts (Wang & Hsu, 2009). Monetary policies, passive interest rates policies, exchange rates and economic recessions are factors that can result in risk in the banking sector. Risk has been shown to have a negative impact on bank revenues. Risk in the banking sector is widely researched and discussed by Western authors (Bessis, 2002; Ghosh, 2012).

2.2. Ways to Measure Risk in Banks

To manage risk, there is a need to anticipate or measure its tendency. Statistical techniques for measuring risks such as Value at Risk (VaR) is modern technique equipped with functions to compute the loss value caused by different types of investments due to market insecurity situations. Banks hedge from the market risk by computing VaR on several investment portfolios frequently at different points of time to estimate the decline in assets values and evaluate the capital adequacy which is required to cover possible market risks. In addition, VaR is a practice that is applied to compute the probable losses in portfolios and investments based on market fluctuations (Ghosh, 2012). In 2009 Basel committee announced the stress test as a pivotal instrument in risk measuring used by RM departments in the banking system which has a functional role in the strategy of capital adequacy mentioned by Basel II (Abu Hussain & Al-Ajmi, 2012). This test assists in RM by giving data for risk evaluation, provides interior and exterior communicating, supporting capital and liquidity plans and the recommended risk bearing level, developing risk elimination and set alternative plans (Bolton et al., 2011; Blundell-Wignall & Atkinson, 2010). Khalid and Amjad (2012) proposed five steps for RM practices. The steps must be fully organized and followed according to the level of necessity in a non-compounded way and this in turn leads to more efficient outcomes (Tan et al., 2017). The steps are as follows:

- i. **Risk understanding and risk management** - denotes a systematic process of applying sophisticated and advanced RM techniques that involves continuous review and evaluation of potential risk (Khalid & Amjad, 2012; Sleimi & Emeagwali, 2017). Entities (i.e., top management, managers and employees) in the banking industry which are required to understand the concepts of risk within the bank processes and the risk that threatens its investments and activities. Accordingly, perfect understanding of risk and RM practices may indicate banks' efficiency in managing risks for the long run and has a beneficial impact on other risk management practices (Powers et al., 2007). In light of the above evidence, there is a tendency that a clear understanding of risk and RM could boost banks performance.
- ii. **Risk identification** - risk identification is a process of initiating actions; creating awareness, a common view, and commitments; as well as clarifying expectations. This could be achieved by making risk identification rules, which attempt to identify specific risks through risk factors. According to Ayam and Ahinful (2015), risk identification denotes recognizing the sources of risks and activities that are affected by the risk. Scholars studying risk in the banking industry argued that risk identification is a premiere step in RM execution (Jabnoun & Hassan Al-Tamimi, 2003; Powers et al., 2007) and useful in controlling and managing risks processes (Tchankova, 2002). Laycock (2014) proposed two important methods to identify risks namely: (a) Risk mapping - requires banks' knowledge of the surrounding types of risks that may affect the performance and classify them according to the number of occurrence and their strength. Hence, banks try to evade or avoid high frequency and/or high effect types of risks at the same time as well as risk mapping assort risks based on their effect; (b) Analyzing risk - classifies risks according to their significance which allows management to utilize sources perfectly and to expand with its risk management plan.
- iii. **Risk analysis and assessment** – “is the process of assessing the likelihood of occurring risk using quantitative and qualitative analysis method, assessment of the costs and benefits of addressing risk and analyzing risk includes prioritizing of risk and selecting those that need active management” (Khalid & Amjad, 2012). Other facets that need consideration during risk analysis and assessment include economical, legal, environmental, and social facets. Active risk analysis and assessment process help decision-makers in commercial banks set future plans, technically enabling them to measure,

prioritize and reduce risks in an optimal way (Rosman, 2009). For example, risk rating enables top managements to gauge the intensity of risk. Therefore, banks with such ability may have greater business performance.

- iv. **Risk monitoring** - “is the process of assessing the level of internal control for the risks that may face banks and determining the availability of reporting and communication processes that support the effective management of risk. It entails evaluating of the effectiveness of the existing controls and RM responses through action plans for implementing decisions about identified risks” (Khalid & Amjad, 2012). According to Airmic (2002), risk monitoring aims to ensure that RM implementations are in an ordered manner and helps in error detection. Risk monitoring is useful for cross-checking the effectiveness of RM system (Pausenberger & Nassauer, 2000), because the employees are very busy and do not have enough time for serious monitoring (Rosman, 2009).
- v. **Credit risk analysis** – According to (Khalid & Amjad, 2012) this risk is a systematic analysis of credit worthiness analysis, client’s characters, capacity, collateral, capital, and conditions before granting loans, and credit granted to defaulted clients which must be reduced”. In other words, it is an assessment of financial authenticity of debtors from bank perspective. Credit risk is the biggest threat to the banking system solidity where 60% from banks risks infects banks performance (Bessis, 2011). The aim of credit risk analysis is for banks to raise their risk adjusted rate of return by avoiding credit risk that’s in turn lowering chances of default either client’s repayments failure or low banks credit standing which are involved under credit risk analysis (Bessis, 2011).

2.3. Risk management and performance

The RM is worthy and pertinent to raise institutional value (Othmar et al., 2015). RM is also crucial to protect the assets and owners’ equity. Furthermore, banks that efficiently apply RM can benefit international regulations, attract customers and also generate profits which support bank performance (Soltanizadeh et al., 2016). Zaleha et al. (2014) reported that RM procedures allow banks to improve their credit systems, which help increase productivity and profitability. Faupel and Michels (2014) also asserted that there was strong correlation between RM practices and performance. The present study hypothesizes that RM practices will have significant influence on bank performance.

- H₁**: RM practice (understanding risk and risk management) has a significant impact on Jordanian banks performance.
H₂: RM practice (risk assessment and analysis) has a significant impact on Jordanian banks performance.
H₃: RM practice (risk identification) has a significant impact on Jordanian banks performance.
H₄: RM practice (risk monitoring) has a significant impact on Jordanian banks performance.
H₅: RM practice (credit risk analysis) has a significant impact on Jordanian banks performance.

3. Methodology

The present study deploys a quantitative approach by randomly administering and surveying RM department employees working in Jordanian commercial banks. The benchmark for the sampling size is based on 95% confidence level and 5% margin error. A total of 120 survey packets were distributed, anonymity of the participants was assured to reduce social desirability bias (Abubakar et al., 2019a, 2019b). Given the nature of the participants and size of the sample, partial least squares structural equation modeling (PLS-SEM) was deployed due to its suitability for small sample size (Sarstedt et al., 2014). The factor loadings of each scale items were observed (42 items). In total 9 had low factor loadings (<0.40), and the remaining 33 scale items had acceptable loadings and were statistically significant. Items with low factor loadings are shown in Fig. 1 (i.e., TC2, TC1, OG4, TC3, TC4, KM3, KM5, RI5, and KM4).

4. Results and data analysis

To tests the proposed model several statistical methods and measurements were utilized namely: skewness and kurtosis, normal distribution test, variance inflation factor (VIF), reliability test, convergent and divergent validity as well as path analysis to test the hypotheses. To assess the normality of obtained data, “Skewness” and “Kurtosis” coefficients were analyzed. The cut-off point for Skewness is 1, while the cut-off point for Kurtosis test is 2 (Hair et al., 2009, 2011, 2012, 2013, 2014). Table 1 denotes that the data is normally distributed because the coefficients are less than the cut-off points.

Table 1
Skewness and Kurtosis Test

Variables	Skewness			Kurtosis		
	Result	Std. Err	Std. Err*2	Result	Std. Err	Std. Err*2
Risk management practices	-.335	.131	0.267	-.254	.266	0.509
Bank performance	-.390	.129	0.258	-.296	.257	0.514

Correlation between independent variables is the main cause of multicollinearity problem which leads to inaccurate estimation for the outcomes. To obtain reliable and accurate outcomes collinearity test was conducted, VIF and tolerance test were examined to detect the presence and/or absence of multicollinearity. VIF value of <5 and tolerance level >0.2 indicates the

absence of multicollinearity. Based on the results of Table 2, we concluded that the data is not infested with collinearity problem.

Table 2

Multicollinearity test

Variables	Tolerance	VIF
Risk management practices	0.612	1.548
Understanding risk and risk management	0.398	2.121
Risk assessment and analysis	0.313	3.402
Risk identification	0.402	2.604
Risk monitoring	0.719	1.116
Credit risk management	0.436	2.651

We ran the measurement model and assess the coefficients of retained items outer loadings, construct reliability and validity, and discriminant validity. The value of composite reliability (CR) is above 0.7, the average variance extracted (AVE) value is above 0.5. The retained items factor loadings were above 0.4 and deem significant. Based on these we establish scale reliability and convergent validity. See Table 3.

Table 3

Reliability, convergent validity

Variables	CR	AVE
Understanding risk and risk management	0.870	0.576
Risk assessment and analysis	0.907	0.661
Risk identification	0.833	0.558
Risk monitoring	0.911	0.673
Credit risk management	0.920	0.696
Business performance	0.903	0.514

Note: CR, composite reliability; AVE, average variance extracted

Next, for divergent validity, HTMT-ratio and The Fornell–Larcker criterion were assessed, Heterotrait-monotrait (HTMT) ratio of correlation was acceptable below 0.9 (Henseler et al., 2013, 2015) and AVEs were no more than the construct correlations (Fornell & Larcker, 1981). So, discriminant validity test has been approved. See Table 4 and Table 5.

Table 4

Fornell and Larcker Criterion Test

	1	2	3	4	5	6
1. Business performance	0.791					
2. Credit risk management	0.717	0.834				
3. Risk assessment and analysis	0.776	0.707	0.813			
4. Risk identification	0.736	0.647	0.774	0.747		
5. Risk monitoring	0.784	0.717	0.715	0.737	0.820	
6. Understanding risk and risk management	0.727	0.640	0.769	0.703	0.697	0.759

Table 5

Heterotrait-Monotrait Ratio Test

	1	2	3	4	5	6
1. Business performance	-					
2. Credit risk management	0.885	-				
3. Risk assessment and analysis	0.875	0.803	-			
4. Risk identification	0.701	0.792	0.751	-		
5. Risk monitoring	0.881	0.810	0.820	0.820	-	
6. Understanding risk and risk management	0.846	0.734	0.801	0.893	0.826	-

4.1. Path analyses and coefficients

Analysis with PLS-SEM reveals the direct impact of the exogenous variables on the endogenous variable. *First*, understanding risk and risk management have positive and significant impact on bank business performance ($\beta = .122$, $\rho = .011$). This could be interpreted as, 12.2% of Jordanian banks business performance occurs because of understanding risk and risk management. *Second*, risk assessment and analysis have positive and significant impact on bank business performance ($\beta = .185$, $\rho = .000$). This could be interpreted as 18.5% of Jordanian banks business performance occurs because of risk assessment and analysis.

Third, risk identification has positive and significant impact on bank business performance ($\beta = .109, \rho = .028$). This could be interpreted as, 10.9% of Jordanian banks business performance occurs because of risk identification. Fourth, risk monitoring has positive and significant impact on bank business performance ($\beta = .247, \rho = .000$). This could be interpreted as, 24.7% of Jordanian banks business performance occurs because of risk monitoring. Fifth, credit risk management has positive and significant impact on bank business performance ($\beta = .335, \rho = .000$). This could be interpreted as, 33.5% of Jordanian banks business performance occurs because of credit risk management. See Fig. 1.

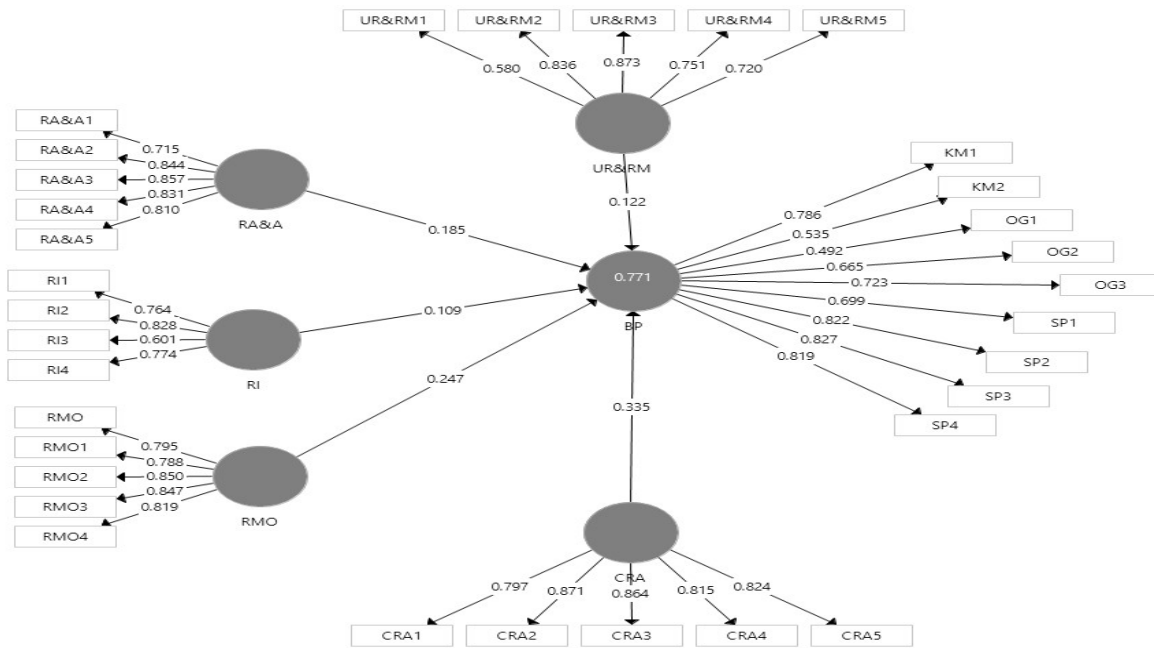


Fig. 1. The final test of structural equation model

Table 6
Path coefficients

	Sample (O)	Sample (M)	STDEV	(O/STDEV)	ρ
Credit risk management → Business performance	0.335	0.334	0.047	7.081	0.000
Risk assessment and analysis → Business performance	0.185	0.187	0.052	3.565	0.000
Risk identification → Business performance	0.109	0.105	0.049	2.201	0.028
Risk monitoring → Business performance	0.247	0.247	0.047	5.256	0.000
Understanding risk & risk management → Business performance	0.122	0.126	0.048	2.559	0.011

Note: sample (O), original sample beta coefficient; sample (M), sample mean beta coefficient; STDEV, standard deviation; |O/STDEV|, t-statistics; ρ , p-values

Table 7
Path coefficients (collectively)

	Sample (O)	Sample (M)	STDEV	(O/STDEV)	ρ
Risk management practices → Business performance	0.875	0.876	0.013	69.715	0.000

Note: sample (O), original sample beta coefficient; sample (M), sample mean beta coefficient; STDEV, standard deviation; |O/STDEV|, t-statistics; ρ , p-values

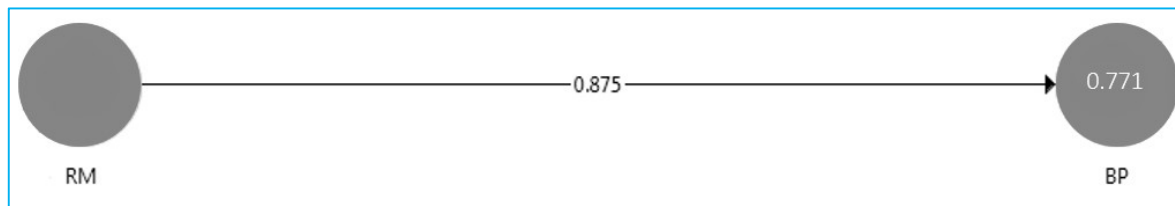


Fig. 2. Collective RM practices and banks' performance path analysis

Finally, we consolidated the dimensions of RM and tested their collective effects on business performance. Result in Fig. 2 above revealed that RM practices collectively exert a positive and significant impact on banks business performance ($\beta = .875, \rho = .000$). Further, R^2 value outlines the model's degree of fitness and the explained variance of the exogenous variables on the endogenous variable. In this study, the dimensions of RM practices had an R^2 value = .771 (see Fig. 1), similarly, when the dimensions were consolidated, R^2 value = .771 (see Fig. 2). This means that the exogenous variables whether independently or collective explain 77.1% of the model variance. Thus, hypotheses 1, 2, 3, 4 and 5 received empirical support.

5. Discussion

Research analysis has shown that the total risk management practices for exogenous variables have maintained supportive effects on Jordanian banks performance. Understanding Risk and Risk Management has a positive impact on banks performance in Jordan. Moreover, Risk Assessment and Analysis has a good impact on Jordanian banks performance. In addition, Risk Identification has a significance positive impact on performance. Furthermore, Risk Monitoring also commiserates with other practices in having a supportive impact on Jordanian banks performance while Credit Risk Analysis practice also impacts positively the performance of Jordanian banks. RM practices dimensions exerted a positive impact on Jordanian banks performance which can be seen in Fig. 2 and understands that total RM practices affect banks' performance by 87.5% whereas Jordanian banks performance will increase by 87.5 standard deviations when RM practices increase by one unit of standard deviation. Risk Identification has the least effect of 10.9% on Jordanian banks' performance followed by Risk Understanding and Risk Management with an effect of 12.2% then Risk Assessment and Analysis by 18.5% while performance is affected by 24.7% according to Risk Monitoring practices and finally Credit Risk Analysis has the greatest positive effect on banks performance in Jordan with 33.5%.

In this context the second question of research questions has been answered. Risk identification is the most frequent RM practice that is followed by Jordanian banks which has the highest mean value of (4.10) and the least standard deviation value of (0.84). While credit risk analysis is the least followed practice with least mean value of (3.00) and highest standard deviation (1.34) which supports what is concluded in the second conclusion. Whereas other RM practices are close to each other according to their rate of use. This part answers the fifth question of the research. Total performance level is high in Jordanian banks according to the descriptive analysis of its dimensions. All their mean values are considered to be high, so banks management are advised to maintain this satisfactory level of performance. Research result showed that all RM practices explained 77.1% of the variances of Jordanian banks performance which indicated a clear explanation for the endogenous variables variances from its mean.

5.1. Limitations and further researches suggestions

For future studies, it is necessary to mention limitations that encountered the researcher during research journey in order to guide them to skip such limitations in their researches. This research applied only non-financial measurements to assess banks performance using employees' opinion and it did not use any financial measurements. For later researches, it will be possible to examine the impact of risk management practices on banks' financial performance and compare result with the results of this research. Finally, risk management practices in general includes wide range of divisions or types that already divided by several researchers; this study investigates the managerial part applied regarding to one point of view only, for future studies, it is possible to cover different types of classifications that were not included within this research. For instance, future researchers can utilize artificial intelligence techniques (i.e., Abubakar et al., 2019a, 2019b) to abate risks and possibly predict risks areas and causes.

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