

## MITIGATING OPERATIONAL RISK THROUGH KNOWLEDGE MANAGEMENT

Wissam AlHussaini, Lebanese American University, Beirut, Lebanon  
Silva Karkoulian, Lebanese American University, Beirut, Lebanon

### ABSTRACT

*The purpose of this paper is to demonstrate a profound correlation between Operational Risk (OR) that subsists in Banking industry and Knowledge Management (KM). The research aims to provide empirical evidence with regards to whether KM mitigates OR or has no considerable effect on it. The variables under study, along with their distinct dimensions, are subjected to linear regression to obtain verifiable results. The results show that a significant relationship exists between the KM dimensions and the different OR dimensions. The findings verify that some of the KM elements mitigate some of the OR aspects. Hence, management must strive to implement KM techniques throughout the whole organization in an attempt to alleviate OR; provided that operational risk cannot be entirely purged. Culminating operational risk ultimately leads to amplified return on investments and, thus, improved profitability.*

**Keywords:** Knowledge Management, Operational Risk, Banking Industry

### 1. INTRODUCTION

For decades, operational risk has been dwelling in most banking institutions. However, the instability of the economy and the brutality of the business competition have nourished operational risk to become a perilous threat that most banks dread and struggle to avoid. Thus, the urging need for effective measures to defy operational risk has escalated; provided that it cannot be completely eradicated.

To further illustrate the latter, Société Générale, considerably one of the principal European banks, suffered from more than \$7 billion in operational losses in January 2008, as a result of a series of deceiving and fictitious acts of a rogue employee. Further, the former chairman of NASDAQ was charged for securities fraud that resulted in \$50 billion losses. Not to mention the losses incurred by Banks outside the United States (Rose, 2009).

In this paper, the researcher seeks to demonstrate that Knowledge Management is an effective mitigate of operational risk that subsists in banks and that there exists a profound correlation between Operational Risk (OR) and Knowledge Management (KM). The study provides empirical evidence with respect to whether KM mitigates OR or has no considerable impact on it. In order to examine the relationship among KM and OR, the following research problem should be addressed: What is the effect of Knowledge Management on Operational Risk in a bank?

### 2. LITERATURE REVIEW

Operational risk is a wide-ranging discipline that impacts reputation, customer satisfaction, and shareholder value. It basically condenses the risks an organization takes on when attempting to function within a given field or industry, increasing business instability and unpredictability. Operational risk, as defined by the Basel Committee on Banking Supervision (2006), is the risk of a value loss caused by failure of people, systems, and internal as well as external events.

As long as people, systems, and processes are imperfect, this unwillingly-occurred risk cannot be wholly eradicated and laid off (Credit-Suisse Group, 2003). The identification of operational risk from the Basel Committee of Banking Supervisors as a distinct risk management facet has endorsed concentrated and

fruitful discussions in the past years on how operational risk can be managed and mitigated. Martin and Beans (2000) identify operational risk “as all of those items that can lead to risk due to a break down in processes and actions of people both internally and externally”.

Additionally, Restrepo and Medina (2012) agree that operational risk prevails in every activity of any firm. Moreover, Castillo (2008) asserts that operational risk is the likelihood of financial losses in organizations which can emerge from failure in decision making, business strategies, activities of employees, and the technology used. However, Castillo (2008) does not consider any loss resulting from unforeseen changes in the economical, political, and social environment, connoting that there is no implication to external events.

In response to the vast increase in operational risk, regulatory requirements have been imposed to abate the threat and to ensure the sustainability of business firms, such as the Sarbanes-Oxley Act in 2002 (Scandizzo 2007; Chernobai et al., 2007; Lewis 2003). To minimize operational risk, organizations attempt to obtain advanced technology assets, employ smart and industrious people, and build inventive business processes. In addition to this, managing knowledge is considered a chief constituent for the effectiveness of organizations in responding to disasters while operating in a fast and turbulent changing environment (Yates and Paquette, 2011).

Knowledge management is the process which engrosses acquiring, sharing, and effectively using organizational knowledge. Li et al. (2008) simply defines knowledge as the “power” that forms the most vital asset in an organization. This knowledge can be either general or specific. General knowledge is shared among all firms in a certain industry, whereas specific knowledge forms the imperative competences and, hence, the competitive advantage possessed by a particular firm (Stonehouse et al., 2000).

Moreover, knowledge can be divided into two fundamental types: tacit and explicit. Explicit knowledge can be documented and commonly shared among individuals in an organization; it is generally conscious, externalized and structured (Duffy, 2000; Haldin-Herrgard, 2000; Martensson, 2000). On the other hand, tacit knowledge is personal such that it subsists in an individual’s brain, context-sensitive and cognitive (Gore and Gore, 1999; Guth, 1996) and is relatively difficult to document (Nonaka and Takeuchi, 1995).

Making the best use of knowledge is considered an approach to attaining a firm’s objectives (Davenport, 1994, and Alavi and Leidner, 2001). According to Despouza and Paquette (2011), successful organizations are able to control knowledge, link different parts of knowledge together, and leverage it towards achieving their objectives. Thus, organizations tend to compete on their knowledge-based assets.

The curiosity and interest in knowledge management among scholars, academics, and business people started in the mid-1990s (Ibrahim and Reid, 2010). With time, knowledge management itself has been broken down to various parts, each with its own subject of discussion.

Knowledge acquisition (KA) is part of knowledge management and encompasses acquiring knowledge from books, documents, and diverse people, including experts. Gamble and Blackwell (2001) claim that external knowledge sources are imperative and therefore a holistic outlook of the value chain should be taken.

Following this, knowledge sharing (KS), according to Teng and Song (2011), has been an essential concern in knowledge management research and practice. Knowledge sharing is the exchange of information, skills, or expertise amongst people who belong to a certain group. In the context of an institution, Frost (2014) believes that knowledge sharing depends on the culture of the organization and its capability to promote honesty, trust, and openness.

Furthermore, Ölçer (2007) states that there are several hurdles to Knowledge Management. One important barrier is the lack of communication between employees. Additionally, Szulanski (1994) brought into light four obstacles to successful knowledge sharing.

These comprise ignorance on both ends of the transfer, absorptive capacity, lack of relationship between the giver and receiver, and a slow rate of adoption. Serban and Luan (2002) affirm that the possessed knowledge by individuals is vital and helpful to a firm's function and continued existence.

Nevertheless, getting to the point where employees willingly share what they know is one of the hard-hitting things that organizations have to deal with. Even though technology has made it reasonably effortless to post and share information, this transfer of knowledge is sometimes seen as time consuming and as a danger to the individual employee's viability (Bukowitz and Williams, 1999). Unless the organizational culture rewards and encourages sharing, the intact endeavor to institutionalize a knowledge management structure will fail (Serban and Luan, 2002).

Yang (2007) avers that KS leads to organizational learning advancement and ultimately to the fortification of organizational effectiveness. Conversely, sharing the knowledge is not the end of knowledge management. The crucial test of following a knowledge management system is its use. Knowledge utilization (KU) is the application of knowledge by integrating it into the firm's products and services (Karadsheh et al., 2009).

Giving attention to each of KM's components alone, consequently, is critical. Results of a study conducted by Fugate et al. (2009) shows a positive association between the complete knowledge management process and operational performance. However, an investigation by Chen and Sherif (2008) demonstrates that knowledge utilization is the strongest contributor to the general performance of a business.

Different organizations compete on the basis of adopting an effective knowledge management process to achieve a competitive advantage. This phenomenon is to a great extent becoming visible in banking institutions. According to Mohsen et al. (2011), KM is available in almost every bank since it simplifies the transfer of effective information which is used in all the processes of planning, controlling, decision making and evaluation.

The augmentation of the knowledge management infrastructure has amplified the competition amongst the banks which has resulted in strategies that have improved customer satisfaction and performance (Prodromos & Vraimaki, 2009).

Danish et al. (2014) found that the leaders at banks are the foremost stream for knowledge flow support. According to Uğurlu and Kızıldağ (2013), bank managers consider the knowledge management strategies significant when they recognize the importance of making an outcome difference with knowledge.

Results of a study to examine the extent of knowledge management application in the banking sector in the UAE reveal that effective practices of KM are still absent in some of their operations (Alrawi and EL-Khatib, 2009). Moreover, a study by Mohsen et al. (2011) discloses that banks in Bahrain show an ample amount of spending on knowledge management projects.

Likewise, the outcome of an investigation by Uğurlu and Kızıldağ (2013) illustrates that banks in Turkey make investments in information technologies with the intent of creating efficient and effective knowledge management strategies. In addition to this, it is worth mentioning that Rodriguez and Edwards (2008) conducted a pilot study for the retail banking sector and results showed that there exists a positive relationship between Knowledge Sharing and the perceived value of OR Management.

Furthermore, according to Mainelli (2002), banks are usually satisfied with their management of risk, but they can still set to learn a lot about managing operational risk. There are at least three lessons that can be taught to banks.

These cover the usage of activity-based costing variances to quantify operational risk, the linkage of operational risk to external prices through an enterprise risk/reward management system, and the establishment of measures to govern an enterprise risk/reward unit (Mainelli, 2002). In the past decade, the business world has witnessed a steep rise in magnitude and frequency of Operational Risk (OR) losses; particularly in the banking and finance industry (Chernobai et al. 2007; Moosa 2008).

Longo (2009) asserts that banks and other institutions ought to assess the possibility of knowledge, with its various divisions, in generating operational risk events as well as consider the way knowledge can essentially be used to evade undesirable events. Using this as a starting point, it is possible to identify the associations between the knowledge management components and the mitigation of operational risk.

### **3. HYPOTHESIS DEVELOPMENT**

The literature discussed earlier lucidly depicts KM and OR. Nonetheless, the question of whether there exists a significant negative relationship among both variables remains. Should management adopt KM to effectively mitigate OR? In order to answer the latter, the researcher has devised the following four hypotheses that address the key dimensions of OR and their relation to KM variables.

Hypothesis 1: KA is negatively related to the variables of OR (People, Systems, Processes and External Risk).

Hypothesis 2: KS is negatively related to the variables of OR (People, Systems, Processes and External Risk).

Hypothesis 3: KU is negatively related to the variables of OR (People, Systems, Processes and External Risk).

### **4. METHODOLOGY**

#### ***Research Design***

The study is quantitative for the results were measured numerically and analyzed using statistical software SPSS. Moreover, the paper is an explanatory study since the research establishes a causal relationship between knowledge management and operational risk.

Operational Risk is addressed in terms of People, Systems, Processes and External Risks. Knowledge Acquisition, Knowledge Sharing and Knowledge Utilization are used as the key dimensions of Knowledge Management. This paper assesses the relationship between Operational Risk and Knowledge Management and determines whether KM mitigates Operational Risk or not. The research is a cross-sectional study since it involved a one-time interaction with the sample.

#### ***Sample & Questionnaire***

The target population of the research is employees who work in medium and large sized banks. A questionnaire was distributed to bank employees in Lebanon. The self-created questionnaire included questions of both Choice-Determinant and Likert Scale types. It encompassed 49 questions, divided into three parts. The first part was targeted to collect demographic data. These comprise gender, age, level of

education, years of employment, working experience, organizational level, and the size of the bank. The second part contained questions pertaining to the four basic dimensions of Operational Risk: People (Q.1-Q.7), Systems (Q.8-Q.16), Processes (Q.17-23), and External Risks (Q.24-27). The third part included the Organization for Economic Cooperation and Development scale (*OECD*) relating to the three elements of Knowledge Management: Knowledge Acquisition (Q.28-Q.32), Knowledge Sharing (Q.33-Q37), and Knowledge Utilization (Q.38-Q.42).

### ***Content Validity***

In order to validate the content of the survey, a content validation questionnaire was generated that comprised of the twenty seven questions related to Operational risk. They were evaluated according to a three-point scale:

“1= not necessary”; “2 = useful but not essential”; “3=essential”.

A total of twenty banking experts identified on the basis of their daily work and involvement in the banking operations were approached. Subsequently, the content validity questionnaire was sent to them via e-mail. Responses from all the experts were then collated by counting the number of essential response for each item in the questionnaire.

For each item, a content validity ration (CVR) was estimated and evaluated for a statistical level of significance of 0.05. Items that were not significant were eliminated. Out of the twenty seven questions in the OR and KM survey, the experts deemed that twenty four were essential to include in the final questionnaire.

The average CVR value for all constructs fell between a minimum of 0.35 and a maximum of 0.886. Thus, the questions in the survey possessed a high level of content validity and are representative of the case at study.

## **5. STATISTICAL ANALYSIS**

### ***Descriptive Analysis***

The majority of the survey participants were males (56.7%) and 43.3% were females. Most of the respondents fell into the age category of 20 to 29 years old (59.2%), 30.8% were between the ages of 30 and 39, 5.8% were between 40 and 49 years old, and only 4.2% fell into the age category of 50 to 59 years old. Moreover, 44.2% of the participants were holders of a BA/BS degree, whilst 50% had a Masters degree.

Regarding years of work experience, most of the respondents (38.3%) had 2 to 5 years of experience, 31.7% had 6 to 10 years of experience, while 28.3% had over 10 years of work experience. In addition to this, 43.3% had been employed at the bank for 2 to 5 years, 30.8% had been employed between 6 to 10 years, and 24.2% had been working at the bank for over 10 years.

Pertaining to the organizational level, the majority of the participants (43.3%) were in non-management positions, 20% belonged to the operational management, 22.5% occupied middle management positions, and 10.8% of the survey participants were in senior management positions.

Relating to the size of the bank, the majority of the respondents (63.3%) worked in a bank with over 500 employees, 11.7% worked in a bank with 250 to 500 employees, another 11.7% worked for a bank with 100 to 249, and 10% worked for a bank with 50 to 99 employees.

**Regression Analysis:**

In order to test the relationship between the first dimension of operational risk ‘people’ and each of the three elements of knowledge management, KA, KS, and KU, the ANOVA test was conducted. A regression equation is attained with people as the dependent variable, and KA, KS, and KU as the independent variables. The overall model is significant, resulting in an F-value of 157.759 and a p-value of 0.000. This is shown in Table 1 below.

The regression equation obtained is:  $People = 0.665 + 0.424KA - 0.030KS + 0.449KU$

The significant variables are KA and KU with p-values of 0.000. However, KS is not significant at a 0.05 level of significance, with a p-value of 0.672, as illustrated in Table 2 below.

Table 1: ANOVA; People and KA, KS, and KU

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	94.229	3	31.410	157.759	.000 <sup>a</sup>
	Residual	46.987	236	.199		
	Total	141.216	239			

a. Predictors: (Constant), kUtilization, kSharing, kAcquisition

b. Dependent Variable: people

Table 2: Coefficients; KA, KS, and KU

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.665	.193		3.438	.001
	kAcquisition	.424	.052	.467	8.212	.000
	kSharing	-.030	.072	-.020	-.424	.672
	kUtilization	.449	.057	.428	7.908	.000

a. Dependent Variable: people

Similarly, a regression equation is obtained with the second dimension of operational risk ‘systems’ as the dependent variable, and each of the knowledge components, KA, KS, and KU as the independent variables. Results disclose that the overall model is significant as it shows an F-value of 49.758 and a p-value of 0.000.

The attained regression equation is:  $Systems = 2.369 + 0.238KA - 0.032KS + 0.251KU$

KA and KU are significant with p-values of 0.000. Nevertheless, KS is not a significant variable at a 0.05 level of significance, with a p-value of 0.653.

Likewise, the ANOVA test was applied to examine the relationship between the dependent variable ‘processes’ and each of the independent variables KA, KS, and KU. Results reveal that the overall model is significant, with an F-value of 152.520 and a p-value of 0.000.

The regression equation obtained is:  $\text{Processes} = 0.854 + 0.513\text{KA} + 0.151\text{KS} + 0.175\text{KU}$

KA, KS, and KU are all significant with p-values of 0.000, 0.026, and 0.001, respectively.

Correspondingly, a regression equation is attained with the last aspect of operational risk 'external risk' as the dependent variable, and each of the knowledge components, KA, KS, and KU as the independent variables. The results display that the overall model is significant as it shows an F-value of 3.516 and a p-value of 0.016.

The obtained regression equation is:  $\text{External Risk} = 2.578 - 0.135\text{KA} + 0.330\text{KS} - 0.042\text{KU}$

KS is the only significant variable with a p-value of 0.002. Nonetheless, KA and KU are not significant at a 0.05 level of significance, with p-values of 0.082 and 0.618, respectively.

Therefore, the above mentioned results provide strong evidence that Knowledge Acquisition is positively related to people, systems, and processes, even though it is negatively related to external risk. The results also offer evidence that a positive relationship exists between Knowledge Sharing and processes and external risks, but a negative relationship is existent between KS and people and systems.

Additionally, the results present evidence that Knowledge Utilization is positively related to people, systems, and processes, but it is negatively related to external risk. Hence, the Knowledge Management dimensions mitigate some aspects of Operational Risk.

## 6. CONCLUSION

The risk of incurring losses from inadequate systems, people, processes, or from external events, known as operational risk, is a chief concern for organizations which struggle with attempting to minimize it and grow their asset value.

The notion that knowledge is critical for value creation of organizations is being recognized more with each passing day. Knowledge management is acquiring, sharing, and effectually using knowledge. It is yet another major concern in today's management topics.

This paper discussed the linkage between Knowledge Management and Operational Risk, targeting the improvement of understanding this elusive connection. The findings of this research proved that a relationship exists between the different dimensions of KM (KA, KS, and KU) and the OR elements (people, systems, processes, and external risk).

The KM elements mitigate some of the OR aspects. For this reason, management ought to do its utmost to implement KM techniques throughout the organization in order to reduce OR.

This study, however, only took one country, Lebanon, into consideration. Future research should attempt to consider more than one nation. This allows for a comparison of KM and its effects on OR across different countries and cultures. Moreover, a longitudinal study can be performed in order to investigate the long term effects of KM.

## REFERENCES:

Alavi, M., and Leidner, D. E. 2001. Review: Knowledge management and knowledge management systems: Conceptual foundations and research nos. *MIS Quarterly*, 25 (1), 107-136.

- Alrawi, K., and Elkhatib, S. 2009. Knowledge management practices in the banking industry: Present and future state-Case study. *Journal of Knowledge Management Practice*, 10 (4). 1-15.
- Basel Committee on Banking Supervision 2006, paragraph 644, p. 144.
- Bukowitz, W. R., and Williams, R. L. 1999. *The Knowledge Management Fieldbook*. Upper Saddle River, N.J.: Financial Times, Prentice Hall.
- Castillo, M. A. 2008. Diseño de una metodología para la identificación y la medición del riesgo operativo en instituciones financieras. *Revista Universidad de Los Andes*, 45-52.
- Chen, L., and Sherif, M. 2008. Contribution of knowledge management activities to organisational business performance. *Journal of Engineering, Design and Technology*, 6(3), 269-285.
- Chernobai, A.S, Rachev, S.T., and Fabozzi, J. 2007. *Operational risk: A guide to Basel II capital requirements, models, and analysis*. John Wiley & Sons, Inc., Hoboken, New Jersey.
- Credit-Suisse Group. 2003. Operational risks in financial services an old challenge in a new environment. Basel, Switzerland. Available at:  
[https://www.credit-suisse.com/governance/doc/operational\\_risk.pdf](https://www.credit-suisse.com/governance/doc/operational_risk.pdf)
- Danish, R., Asghar, A., and Asghar, S. 2014. Factors of knowledge management in banking sector of Pakistan. *Journal of Management Information System and E-commerce*, 1 (1), 41-49.
- Davenport, T.H. 1994. Saving IT's soul: Human centered information management. *Harvard Business Review*, 72 (2), 119-131.
- Desouza, K.C., and Paquette, S. 2011. *Knowledge management : An introduction*. Published by Neal-Schuman Publishers, Inc. 100 William St., Suite 2004 New York, NY 10038
- Duffy, J. 2000. Knowledge management to be or not to be? *Information Management Journal*, 34 (1), 64-70.
- Frost, A. 2014. *A Synthesis of Knowledge Management Failure Factors*.
- Fugate, B., Stank, T., and Mentzer, J. 2009. Linking improved knowledge management to operational and organizational performance. *Journal of Operations Management*, 27 (3), 247-264.
- Gamble, P. R., and Blackwell, J. 2001. *Knowledge Management: A State of the Art Guide*, Kogan Page, London.
- Gore, C. and Gore, E. 1999. Knowledge management: the way forward. *Total Quality Management*, July.
- Guth , R. 1996. Where IT cannot tread. *Computer World*, 30 (4), 72.
- Haldin-Herrgard, T. 2000. Difficulties in diffusion of tacit knowledge in organizations. *Journal Intellectual Capital*, 10 (4), 357-65
- Ibrahim, F., and Reid, V. 2010. Unpacking knowledge management: Management fad or real business practice? *Enterprise risk management*, 2 (1), 24-38.



- Karadsheh, L., Mansour, E., Alhawari, S., Azar, G., and El-Bathy, N. 2009. A theoretical framework for knowledge management process: Towards improving knowledge performance. *Communications of the IBIMA*, 7, 67-79.
- Lewis, M.A. 2003. Cause, consequence and control: towards a theoretical and practical model of operational risk. *Journal of Operations Management*, 21, 205-224.
- Li, J., Brake, G., Champion, A., Fuller, T., Gabel, S. and Hatcher-Busch, L. 200. Workplace learning: the roles of knowledge accessibility and management
- Longo, E. 2009. The Knowledge Management Role in Mitigating Operational Risk. ResearchGate
- Mainelli, M. 2002. Industrial strengths: operational risk and banks. *Balance Sheet*, 10 (3), 25-34.
- Martensson, M. 2000. A critical review of knowledge management as management tool. *Journal Knowledge Management*, 4 (3), 204-216.
- Martin, P., and Beans, K.M. 2000. Enterprise-Wide Rm. *Journal of Lending and Credit Risk Mangement*, 6, 82.
- Mohsen, Z.A., Ali, M., and Jalal, A. 2011. The significance of knowledge management systems at financial decision making process. *International Journal of Business and Management*, 6 (8), 130-142.
- Moosa, I.A. 2008. Operational Risk: A Survey. *Financial Markets, Institutions & Instruments*, 16 (4), 167-220.
- Nonaka, I. and Takeuchi, H. 1995. *The Knowledge Creating Company*, Oxford University Press, New York, NY, pp. 8, 10, 44-5, 238-9.
- Ölçer, F. 2007. Practices of knowledge management in companies: A Turkey survey, Proceedings of I-KNOW '07, Graz, Austria, September 5-7.
- Prodromos D. C. and Vraimaki, H. 2009 . Knowledge-sharing behavior of bank employees in Greece. *Journal Business Process Management*, 15 (2), 245-266.
- Restrepo, J., and Medina, S. 2012. Estimation of operative risk for fraud in the car insurance industry. *Global Journal of Business Research*, 6(3), 73–83.
- Rodriguez, E., and Edwards, J. 2010. People, technology, processes and risk knowledge sharing. *Electronic Journal of Knowledge Management*, 8 (1), 139 – 150.
- Serban, A. M., and Luan, J. 2002. [An Overview of Knowledge Management](#). University of Kentucky. Retrieved 17 April 2013.
- Scandizzo, S. 2007. *The Operational Risk Manager's Guide: Tools and Techniques of the Trade*. Riskbooks, London.
- Stonehouse, G.H., Barber, C.E. and Pemberton, J.D. 2000. Bases and sources of competitive advantage – an alternative analytical framework”, under review

- Szulanksi, G. 1994. Intra-Firm Transfer of Best Practices Project. Houston: American Productivity and Quality Center.
- Teng, J. T. C., and Song, S. 2011. An exploratory examination of knowledge-sharing behaviors: Solicited and voluntary. *Journal of Knowledge Management*, 15(1), 104-117.
- Uğurlu, Ö., and Kızıldağ, D. 2013. A comparative analysis of knowledge management in banking sector: An empirical research. *European Journal of Business and Management*, 5 (16), 12-19.
- Yang, J. 2007. The impact of knowledge sharing on organizational learning and effectiveness. *Journal of Knowledge Management*, 11(2), 83-90.
- Yates, D., and Paquette, S. 2011. [Emergency knowledge management and social media technologies: A case study of the 2010 Haitian earthquake](#). *International Journal of Information Management*, 31 (1), 6-13.