



## FACTORS AFFECTING OPERATION RISK MANAGEMENT IN ISLAMIC BANKS

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### ABSTRACT

The objective of this paper is to investigate the factors that affect the NFR control in Islamic banks. Questionnaire used as a tool to collect data. The effect of employees' demographic characteristics on NFR control was tested and the effect of NFR procedures and systems on NFR control was tested. The results showed that the higher experience and educational levels showed higher positive attitudes on managing NFR control. Moreover, different procedures and systems used had positive effect on NFR control. The highest impact was for the management of NFR on NFR control in Islamic banks.

### 1. Introduction

The concern with the non-financial operational risk in Islamic banks increased in the last years. Different classifications have been raised for the factors that affect the non-financial operation risk in Islamic banks. Abdul-Rahman and Yazid (2015) concerned the banks' human resources as a major contributor to these risks. They justify that the non-financial risk resulted mainly from human behaviour even though these risks are raised inside or outside the banks. This justification is logical, but it does not cover all non-financial risks in Islamic banks. The other classifications consider the source of risk inside or outside the bank (Archer and Haron, 2007). Basel II, through the Basel Committee on Bank Supervision (2001) classified the operation risk into seven categories:

1. Internal risk: which contributed to enterprise policy or misuse of internal regulations resulted with the contribution of enterprise human resources.
2. External risk: this type of risk associated with a third party may lead the bank to a risk.
3. Banks personnel: this source is related to any misbehave of the banks' staff due to lack of operational risk management knowledge or lack of experience to deal with raised issues.
4. Business processes and practices: this risk is related to the nature of the product if being competitive and meeting the customer needs
5. Banks' physical assets: this is associated with the proper selection of assets and infrastructure that meets the bank needs for a good time.
6. System failures: this risk is connected to any damages that occur in banks' systems anytime, leaving disturbances in introduced services
7. Business disruption and system failure: this risk is related to risks resulting from executing any bank processes.

Other authors classified non-financial operational risk into four categories (Haron, 2007, Fiennes (2007), Sundarjan (2005), Chapra and Khan (2000)). These four categories are general risk, *Shariah* risk, legal risk and fiduciary risk. *Shariah* risk raised from the compliant to Islamic roles in executing *istisna'*, *salam*, *Murabaha*, and *ijarah* (Akkizidis and Khandelwal, 2008; Izhar, 2010). The proper execution of different Islamic crediting activities requires high knowledge of its employees (Abdul-Rahman and Yazid, 2015).

The Islamic bank's staff background and experience play a crucial role in controlling the risk. Employee's training and education are discussed as two personnel characteristics that determine the ability of the bank to manage and take over all non-financial risks raised properly (Abdul-Rhaman and Yazid, 2015). Training is considered a way to improve employees' knowledge to handle risks raised from executing daily bank works. The educational background of the Islamic employee staff will determine their ability to handle risk issues related to Shari'ah procedures (Nogodalla and Abdelghani, 2014). On the other hand, the used systems and procedures inside the Islamic bank and the staff's familiarity with it will determine how to solve risk related.

## 2. Methodology

This research aims to test the factors that affect operation risk management in Islamic banks in Jordan. The questionnaire was used to collect data. The questionnaire composed of two parts; the demographic characteristics and the employees' knowledge of procedures and techniques used to control risk in Islamic banks. The second part of the questionnaire used five scale levels to measure the extent to which the staff agrees with the items. Inferential statistics were used to test the different hypotheses of this research. The tests included the effect of demographic characteristics, age, experience, education on dealing with and handling the issues related to non-financial risk in Islamic banks. The second part of inferential statistics was to test the effect of different employees' points of view of the procedures that existed in Islamic banks and their effect on non-financial risk management in Islamic banks.

## 3. Results

The non-financial operation risk management is affected by the personnel characteristics of the bank and the training. Two levels of analysis will be executed to discuss the factors that affect operation risk management in Islamic. The first level is concerned with the effect of demographic characteristics on operational risk management in Islamic banks in Jordan. The second stage of analysis will take over the effect of the point of view for the different aspects of taking over risk management and outputs of risk management according to the Islamic banks' employees.

### 3.1 Effect of Demographic Characteristics on Attitudes of Non-financial Risk Management

#### 3.1.1 Age

One way analysis of variance (ANOVA) was used to test the effect of age on the procedures used in Islamic banks as risk management procedures. Table 1 showed that age did not affect the different procedures used significantly. The results showed trends for effect. To realise the source of risks in the Islamic bank, the first age group (20-29 years) showed the highest positive attitude recorded. This indicates that the new staff receives more information about the source of risk through their education. Moreover, the first age group (20-29 years) showed a more positive attitude toward the used risk management system, including the model's framework. The first group also showed positive attitudes compared to other ages to classify the NFR, realising operational control and mitigation plans of NFR. In reviewing operational risk controls of banks, the impact of using standardised models to manage NFR, and training and awareness of staff for NFRM.

Table: 1 One-way ANOVA analysis for the effect of age on risk management constraints

		N	Mean	Std. Deviation	F	Prob
The realization of source of risks in the bank	20-29	21	3.44	0.62	1.16	0.316
	30-39	48	3.06	1.07		
	40-49	68	3.10	1.05		
	Total	137	3.14	1.01		
The ability to classify the NFR in the bank	20-29	21	3.49	0.88	0.447	0.640
	30-39	48	3.30	1.13		
	40-49	68	3.22	1.18		
	Total	137	3.29	1.12		
The used risk management system including models framework	20-29	21	3.45	0.90	0.715	0.491
	30-39	48	3.13	1.19		
	40-49	68	3.22	0.95		
	Total	137	3.22	1.03		
Management of NFR	20-29	21	3.60	0.75	0.667	0.515
	30-39	48	3.36	1.04		
	40-49	68	3.32	0.99		
	Total	137	3.38	0.97		
Realizing operational control and mitigation plans of NFR	20-29	21	3.64	0.76	0.964	0.384
	30-39	48	3.33	1.02		
	40-49	68	3.31	1.00		
	Total	137	3.37	0.98		
Reviewing operational risk controls of banks	20-29	21	3.29	1.10	0.197	0.822
	30-39	48	3.11	1.15		

	40-49	68	3.18	1.00		
	Total	137	3.17	1.06		
Impact of using standardized models to manage NFR	20-29	21	3.54	0.95	0.944	0.392
	30-39	48	3.30	1.03		
	40-49	68	3.20	0.97		
	Total	137	3.29	0.99		
Training and awareness of staff for NFRM	20-29	21	3.70	0.79	1.922	0.150
	30-39	48	3.28	1.11		
	40-49	68	3.17	1.14		
	Total	137	3.29	1.09		

### 3.1.2 Gender

Table 2 shows the effect of gender on the attitudes to evaluate the procedures in the Islamic banks to manage NFR. Gender does not affect the attitudes of evaluating the NFRM procedures in Islamic banks. For the realisation of the source of risk in the bank and the ability to classify the NFR. Management of NFR, the attitudes of males, were higher, while for the rest of the procedures, females' attitudes were higher.

Table: 2 T-test analysis for the effect of gender on risk management constraints

		N	Mean	Std. Deviation	T-value	Prob
The realisation of the source of risks in the bank	Male	101	3.15	0.98	0.538	0.722
	Female	36	3.08	1.09		
The ability to classify the NFR in the bank	Male	101	3.30	1.12	0.589	0.861
	Female	36	3.26	1.12		
The used risk management system including models framework	Male	101	3.21	1.00	0.598	0.784
	Female	36	3.26	1.12		
Management of NFR	Male	101	3.39	0.96	0.647	0.802
	Female	36	3.34	1.02		
Realizing operational control and mitigation plans of NFR	Male	101	3.36	0.97	0.736	0.842
	Female	36	3.39	1.00		
Reviewing operational risk controls of banks	Male	101	3.11	1.04	0.633	0.286
	Female	36	3.33	1.14		
Impact of using standardized models to manage NFR	Male	101	3.28	0.99	0.922	0.949
	Female	36	3.30	0.99		
Training and awareness of staff for NFRM	Male	101	3.28	1.10	0.806	0.817
	Female	36	3.33	1.09		

### 3.1.3 Education

Table 3 show the results of testing the effect of education on different NFR procedures used in Islamic banks. If the attitudes of high school dropped as it represents one employee, the results showed that the bachelor was more positive for the realisation of the source of risks in Islamic banks. The PhD educational levels showed a more positive attitude for classifying the NFR. Also, PhD educational levels show higher attitudes for the used risk management system including model's framework, management of NFR, realising operational control and mitigation plans of NFR, reviewing operational risk controls of banks, the impact of using standardised models to manage NFR, and training and awareness of staff for NFRM.

Table: 3 One-way ANOVA analysis for the effect of education on risk management constraints

		N	Mean	Std. Deviation	F	Prob
The realisation of source of risks in the bank	High school	1	5.00		0.975	0.424
	Diploma	3	3.08	0.80		
	Bachelor	72	3.11	1.03		

	Master	51	3.09	0.98		
	Doctorate/PhD	10	3.33	1.06		
	Total	137	3.14	1.01		
The ability to classify the NFR in the bank	High school	1	5.00		0.605	0.659
	Diploma	3	3.17	1.66		
	Bachelor	72	3.26	1.11		
	Master	51	3.29	1.11		
	Doctorate/PhD	10	3.35	1.15		
	Total	137	3.29	1.12		
The used risk management system including models framework	High school	1	5.00		1.076	0.371
	Diploma	3	2.87	1.80		
	Bachelor	72	3.15	1.06		
	Master	51	3.26	0.96		
	Doctorate/PhD	10	3.46	0.93		
	Total	137	3.22	1.03		
Management of NFR	High school	1	5.00		1.285	0.279
	Diploma	3	3.29	1.38		
	Bachelor	72	3.26	0.94		
	Master	51	3.46	0.96		
	Doctorate/PhD	10	3.66	1.12		
	Total	137	3.38	0.97		
Realizing operational control and mitigation plans of NFR	High school	1	5.00		1.810	0.131
	Diploma	3	3.80	0.53		
	Bachelor	72	3.32	1.02		
	Master	51	3.27	0.91		
	Doctorate/PhD	10	3.90	0.86		
	Total	137	3.37	0.98		
Reviewing operational risk controls of banks	High school	1	5.00		2.08	0.087
	Diploma	3	3.00	1.86		
	Bachelor	72	3.02	1.03		
	Master	51	3.23	1.04		
	Doctorate/PhD	10	3.80	0.93		
	Total	137	3.17	1.06		

Impact of using standardized models to manage NFR	High school	1	5.00		0.975	0.424
	Diploma	3	3.44	1.07		
	Bachelor	72	3.24	1.00		
	Master	51	3.27	0.98		
	Doctorate/PhD	10	3.53	0.97		
	Total	137	3.29	0.99		
Training and awareness of staff for NFRM	High school	1	5.00		1.270	0.285
	Diploma	3	3.00	1.75		
	Bachelor	72	3.17	1.08		
	Master	51	3.37	1.10		
	Doctorate/PhD	10	3.68	0.83		
	Total	137	3.29	1.09		

### 3.1.4 Experience

Table 4 shows the effect of experience on employees' attitudes toward NFR constraints in Islamic banks. The results show that the experience does not affect the different constraints significantly ( $p > 0.05$ ). The results show that the low experience category shows higher positive attitudes for realising the source of risks in the bank, the ability to classify the NFR, the used risk management system including model's framework, Management of NFR, realising operational control and mitigation plans of NFR. The experience of 16-20 years shows higher positive trends for training and awareness of staff for NFRM, the impact of using standardised models to manage NFR, reviewing operational risk controls of banks. The results related to these two categories may be justified due to the knowledge of the low experience group through education and the knowledge of the 16–20-year experience group through the experience gained through Islamic bank work.

Table 4: One way ANOVA analysis for the effect of experience on risk management constraints

		N	Mean	Std. Deviation	F	Prob
The realisation of source of risks in the bank	Less than 5 years	17	3.34	1.10	0.716	0.582
	5-10 years	20	3.05	0.85		
	11-15 years	49	3.15	0.98		
	16-20 years	38	3.20	1.08		
	> 20	13	2.75	1.03		
	Total	137	3.14	1.01		
The ability to classify the NFR in the bank	Less than 5 years	17	3.41	1.28	0.555	0.696
	5-10 years	20	3.19	1.05		
	11-15 years	49	3.30	1.10		
	16-20 years	38	3.41	1.12		
	> 20	13	2.92	1.13		
	Total	137	3.29	1.12		
The used risk management system including models framework	Less than 5 years	17	3.42	1.17	0.780	0.540
	5-10 years	20	3.06	0.86		
	11-15 years	49	3.14	1.09		

	16-20 years	38	3.39	1.03		
	> 20	13	3.00	0.85		
	Total	137	3.22	1.03		
Management of NFR	Less than 5 years	17	3.55	0.96	1.100	0.359
	5-10 years	20	3.31	0.94		
	11-15 years	49	3.36	0.92		
	16-20 years	38	3.52	1.02		
	> 20	13	2.91	1.09		
	Total	137	3.38	0.97		
Realizing operational control and mitigation plans of NFR	Less than 5 years	17	3.34	1.26	0.576	0.680
	5-10 years	20	3.28	0.92		
	11-15 years	49	3.38	0.90		
	16-20 years	38	3.52	0.97		
	> 20	13	3.06	1.00		
	Total	137	3.37	0.98		
Reviewing operational risk controls of banks	Less than 5 years	17	3.04	1.37	0.380	0.823
	5-10 years	20	3.22	1.00		
	11-15 years	49	3.16	1.01		
	16-20 years	38	3.30	1.06		
	> 20	13	2.92	1.01		
	Total	137	3.17	1.06		
Impact of using standardised models to manage NFR	Less than 5 years	17	3.29	1.24	1.146	0.338
	5-10 years	20	3.30	0.88		
	11-15 years	49	3.29	0.97		
	16-20 years	38	3.45	0.96		
	> 20	13	2.77	0.93		
	Total	137	3.29	0.99		
Training and awareness of staff for NFRM	Less than 5 years	17	3.37	1.24	1.008	0.406
	5-10 years	20	3.21	0.98		
	11-15 years	49	3.24	1.07		
	16-20 years	38	3.51	1.04		
	> 20	13	2.85	1.26		
	Total	137	3.29	1.09		

### 3.2 Effect of Realization of Source of Risks on Reviewing Operational Risk Controls of Banks

Table 5 shows the linear regression of the effect of realising the source of risks on the NFR control in Islamic banks. The adjusted regression coefficient shows that this constraint justifies 51.4% of NFR control in Islamic banks. The model of this regression was significant ( $p < 0.05$ ), and the t-test for the independent factor of the regression was significant too ( $p < 0.05$ ).

Table 5: Linear regression for the effect of source of risk on reviewing operational risk controls

Source of variation	Value	t-value	Prob	Ad. Reg. Coef	Model F	Prob
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Constant	0.789	3.799	0.001	0.514	145.024	0.0001
Realization of source of risk	0.760	12.043	0.001			

### 3.3 Effect of Ability to Classify Non-financial Risk on Reviewing Operational Risk Controls

Table 6 shows the significant effect of classifying NFR on NFRM in Islamic banks. This constraint justified 51.3% of NFR management in Islamic banks. The results directly relate to the effect of the ability to classify non-financial risk on NFR management in Islamic banks in Jordan.

Table 6: Linear regression for the effect of the ability to classify the non-financial risk on reviewing operational risk controls

Source of variation	Value	t-value	Prob	Ad. Reg. Coef	Model F	Prob
Constant	0.923	4.640	0.0001	0.513	142.04	0.001
Ability to classify the NFR	0.683	11.929	0.0001			

### 3.4 Effect of Used Risk Management on Reviewing Operational Risk Controls

Table 7 shows that risk management justified 50.4% of NFR control in Islamic banks with the significant model. The effect of the model was significant ( $p < 0.05$ ). The effect directly indicated that the used risk management would reflect the extent of risk control in Islamic banks.

Table 7: Linear regression for the effect of used risk management on reviewing operational risk controls

Source of variation	Value	t-value	Prob	Ad. Reg. Coef	Model F	Prob
Constant	0.799	3.784	0.001	0.504	139.058	0.0001
Used risk management	0.736	11.792	0.001			

### 3.5 Effect of Management of NFR on Reviewing Operational Risk Controls

Table 8 shows the linear regression for the effect of management of NFR on reviewing NFR management in Islamic banks. The results show that management of NFR justifies 60.9% of controlling the NFR in Islamic banks. The adjusted regression coefficient indicates that management of NFR contributes the highest among other factors for the control of NFR in Islamic banks.

Table 8: Linear regression for the effect of management of NFR on reviewing operational risk controls

Source of variation	Value	t-value	Prob	Ad. Reg. Coef	Model F	Prob
Constant	0.285	1.384	0.169	0.609	212.489	0.001
Management of NFR	0.855	14.577	0.0001			

### 3.6 Effect of Realizing Operational Control and Mitigation Plans of NFR on Reviewing Operational Risk Controls

Table 9 shows that realisation operational control and mitigation plans of NFR has the least effect on NFR control in Islamic banks as the adjusted regression coefficient was the least.

Table 9: Linear regression for the effect of realizing operational control and mitigation plans of NFR on reviewing operational risk controls

Source of variation	Value	t-value	Prob	Ad. Reg. Coef	Model F	Prob
Constant	0.627	2.640	0.009	0.476	124.474	0.001
Realization operational control and mitigation plans	0.756	11.157	0.001			

### 3.7 Effect of Using Standard Models to Manage on Reviewing Operational Risk Controls

Table 10 shows the positive effect of using standardised models on NFR control. Adjusted regression coefficient justifies 54.1% of NFR control in Islamic banks.

Table 10: Linear regression for the effect of using standard models to manage on reviewing operational risk controls

Source of variation	Value	t-value	Prob	Ad. Reg. Coef	Model F	Prob
Constant	0.563	2.623	0.01	0.541	161.109	0.001
Using standard models	0.793	12.693	0.0001			

### 3.8 Effect of Training and Awareness on NFR Control

Table 11 shows that training and awareness of NFR justify 52.4% of the NFR control in Islamic banks. The effect was direct, explaining the importance of training and awareness to control NFR in Islamic banks.

Table 11: Linear regression for the effect of training and awareness of staff for NFR on reviewing operational risk controls

Source of variation	Value	t-value	Prob	Ad. Reg. Coef	Model F	Prob
Constant	0.839	4.197	0.001	0.524	150.919	0.001
Training and awareness	0.709	12.285	0.001			



### 3.9 Overall Effect

Table 12 show the effect of different constraints when collected in one model. The adjusted regression coefficient indicated that the different constraints explain 65% of NFR control in Islamic banks. The results show that the highest contribution of NFR control in Islamic banks was for management of NFR, realising operational control and mitigation plans, the impact of using standardised models to manage NFR, then the realisation of the source of risks in banks.

Table 12: Overall effect on reviewing operational risk controls

	B	Std. Error	Beta	t	Sig.
(Constant)	-0.044	0.213		-0.208	0.836
The realization of source of risks in the bank	0.111	0.105	0.106	1.058	0.292
The ability to classify the NFR in the bank	0.068	0.110	0.071	0.612	0.541
The used risk management system including model's framework	-0.017	0.120	-0.017	-0.143	0.886
Management of NFR	0.404	0.130	0.370	3.101	0.002
Realizing operational control and mitigation plans of NFR	0.213	0.091	0.196	2.354	0.020
Impact of using standardized models to manage NFR	0.181	0.111	0.168	1.630	0.106
Training and awareness of staff for NFRM	0.006	0.120	0.006	0.052	0.959

## 4. Conclusion

This research aims to find out the factors that affect NFR control in Islamic banks according to their employees' points of view. The data was collected using a questionnaire. This research showed that the demographic characteristics, including experience, age, gender, and education, do not affect the control of NFR in Islamic banks. The results showed that for education, the PhD. Degree employees have positive attitudes on the procedures and systems used to control NFR in Islamic banks. For the experience, the low experience category and the experience of 16-20 years show higher positive attitudes for the procedures and systems used in Islamic banks to control NFR. This research showed that the different constraints related to systems and procedures to control NFR affect the control of NFR positively in Islamic banks. The extent of the effect was various from one factor to another.

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