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The impact of resilience on corporate reputation in Muslim Countries

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A R T I C L E I N F O

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Abstract: This study addresses the relationship between resilience and Corporate Reputation (CR) in Muslim countries (Iran, Bahrain, Iraq, Kuwait, Saudi Arabia, and UAE). The problem of the study was determined by the nature of the relationship between financial flexibility and the reputation of banking companies, which is a problem in itself. And studying the methods used in banks to face reputational risks and knowing the extent to which indicators of financial flexibility can be applied in banks, and knowing what is the level of relationship between the indicators of the study variables and their nature

This study investigates whether and how resilience affects CR in Muslim countries. This study is causal correlational. It used information from the companies listed on Tehran Stock Exchange in Iran, Bahrain, Iraq, Saudi Arabia, and UAE from 2014 to 2019. Hypotheses are tested via Logistic Regression. Findings show a positive and significant relationship between resilience and CR in the studied Muslim Countries. This relationship is higher in more resilient companies with higher reputations. The coefficient of determination and McFadden's value indicates that Bahrain companies have the highest relationship while Kuwaiti companies have the lowest. Since this study is conducted in the emerging financial markets of Iran, Bahrain, Iraq, Kuwait, Saudi Arabia, and UAE, with their unique economic and political situations, it provides a wealth of information .

This study and the mentioned ones found that enhancing the firm's resilience improves the interested parties' perceptions because the company's reputation is regarded among its performance, behaviors, and policies (Lombardi et al., 2020). Managers should cooperate more with their colleagues, suppliers, distributors, and customers. Therefore, they can receive support during the crisis and be more resilient. Therefore, according to the hypothesis test results, companies must pay considerable attention to resilience.

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تأثير المرونة على سمعة الشركات في البلدان الإسلامية

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المستخلص

تتناول هذه الدراسة العلاقة بين المرونة وسمعة الشركات (CR) في الدول الإسلامية (إيران والبحرين والعراق والكويت والمملكة العربية السعودية والإمارات العربية المتحدة). تم تحديد مشكلة الدراسة من خلال طبيعة العلاقة بين المرونة المالية وسمعة الشركات المصرفية، وهي مشكلة في حد ذاتها. ودراسة الأساليب المتبعة في البنوك لمواجهة مخاطر السمعة ومعرفة مدى إمكانية تطبيق مؤشرات المرونة المالية في البنوك، ومعرفة مستوى العلاقة بين مؤشرات متغيرات الدراسة وطبيعتها. كيف تؤثر المرونة على المسؤولية الاجتماعية في البلدان الإسلامية. هذه الدراسة علاقة سببية. استخدمت معلومات من الشركات المدرجة في بورصة طهران في إيران والبحرين والعراق والمملكة العربية السعودية والإمارات العربية المتحدة من 2014 إلى 2019. تم اختبار الفرضيات من خلال الانحدار اللوجستي. تظهر النتائج وجود علاقة إيجابية وذات مغزى بين المرونة وCR في البلدان الإسلامية المدروسة. تكون هذه العلاقة أعلى في الشركات الأكثر مرونة ذات السمعة العالية. يشير معامل التحديد وقيمة مكفادين إلى أن الشركات البحرينية لديها أعلى العلاقات بينما الشركات الكويتية لديها أقل العلاقات. نظرًا لإجراء هذه الدراسة في الأسواق المالية الناشئة في إيران والبحرين والعراق والكويت والمملكة العربية السعودية والإمارات العربية المتحدة، مع أوضاعها الاقتصادية والسياسية الفريدة، فإنها توفر ثروة من المعلومات. وجدت هذه الدراسة والدراسات المذكورة أن تعزيز مرونة الشركة يحسن تصورات الأطراف المعنية لأن سمعة الشركة تعتبر من بين أدائها وسلوكياتها وسياساتها (Lombardi et al., 2020). يجب أن يتعاون المديرون أكثر مع زملائهم وموردیهم وموزعيهم وعملائهم. لذلك، يمكنهم تلقي الدعم أثناء الأزمة ويكونون أكثر مرونة. لذلك، وفقًا لنتائج اختبار الفرضية، يجب على الشركات أن تولي اهتمامًا كبيرًا بالمرونة.

الكلمات المفتاحية: مرونة الشركة، سمعة الشركة.

Introduction

The banking sector in these countries is going through several issues, most notably the instability of the financial system and the weakness of the role of the stock exchange in varying ways, in addition to the negative impression prevailing on banks in these societies despite the disparity between those companies under study. This was confirmed by some studies that indicated that only (10%) of the Iraqi population have bank accounts (Al-Ta'i and Al-Jubouri, 2017). While this percentage rises to 90% in other banks in neighboring countries. World Bank reports indicate that the Iraqi banking sector, compared to the global and Arab banking sectors, is slowly improving due to the limited services provided by this sector in particular,

and the weak role of the stock market in general. Given the importance of the role played by banks in supporting financial systems, this study comes to show the impact of financial flexibility on the reputation of banks.

Western countries ' policies profoundly affected the financial crisis in 2008 (Scorsone and Plerhoples, 2010; Leisink and Bach, 2014). Governments had to provide economic austerity for public and welfare services. Deficit and debt rates soared (Holling, 1973), and revenues were minimized. Shehzad et al. (2021) believe that governments endured financial restrictions during the recent crisis. The impacts of these austerities are more significant at the national level. Therefore, governments have to be resilient to survive these shocks. When governments experience shocks (financial shocks like financial distress) affecting their financial management, Organizational resilience must change into Financial Resilience (FR).

It is argued that a more robust economy defuses the crises. They introduced two FR aspects applied by governments. The first aspect is the ability to withstand the FR effects. The second aspect refers to the multiple capabilities in rapidly responding to these shocks. A financially resilient organization can withstand its external shocks. Therefore, governments can strengthen their FR. Risk awareness, manoeuvre, and risk responses affect the FR.

Shehzad et al. (2021) identify five capacities for FR, including assurance, prediction rate, awareness, flexibility, and the ability to recover from the shocks. They believe these capacities determine the company's ability to bounce back to a satisfactory situation during a crisis and financial shocks. This study is the first to address the relationship between the company's resilience and CR in Muslim Countries. Financial Literature reviews show that the firm's FR affects firm performance. This performance will then bolster the CR.

1. Research Methodology

research problem: The study problem stems from the following main question**:**

- Does financial flexibility have an impact on reducing financial fragility and the reputation of banks?

Some sub-questions may also be asked for the study:

A. What are the levels of financial flexibility in the banks under study?

B. What is the extent of reputation and financial fragility facing the banks under investigation?

research assumes: In order to answer the questions raised in the research problem and reach the research objectives, the study was based on the following hypotheses:

A. The banks under investigation suffer from high varying financial fragility and uneven demand among banks.
B. There is a statistically significant effect of financial flexibility and reputation in reducing financial vulnerability.

Research importance: The study is of great importance due to the importance of the sample that was examined, because the banking sector is one of the important pillars of the financial systems in general. Developing remedies for the risks of financial fragility on banks and methods of employing financial flexibility to reduce them, and benefiting from the experiences of countries whose banks enjoy high flexibility and excellent reputation.

research aims: There are several goals that the research seeks to achieve, including:

A. Measuring the degree of financial flexibility enjoyed by the banks subject to investigation.
B. Measuring the degree of financial fragility experienced by the banks under investigation.
C. Determine the most prominent indicators of financial fragility.
D. Choosing the effect of financial flexibility on reducing fragility in the banks under study

2. Theoretical background and literature review: Organizational resilience (OR) describes the organization's capability to respond to constant changes. Hamel and Välikangas (2003) stated that successful organizations have clearly understood the dynamic feature of their business and have the tendency and capability to adapt. These features include rivals, availability, financial value, tax, government policy, and customers' needs and expectations. They believe efficient organizations must evolve like resilient ecosystems adapting to the external environment (McAslan, 2010). Resilient organizations must possess the following flexible features. These features are the flexible staff, supply chain (the wide range of products meeting the breadth of customers' needs), and organizational structures (Cheema Fox et al., 2021).

OR has switched its focus from the private sector to governmental organizations, and the realm of its threats has been redefined. Ghanbary, Salavatian and Kia (2020) believe that a resilient organization attains its overriding objectives during a disaster. Ghanbary, Salavatian and Kia (2020) believe this achievement is viable by alleviating the crisis (vulnerability) and extending the organization's capability and speed in managing the crisis effectively (adaptability capacity) (Byoun, 2021). Resilience is a gradually developed concept in which experience and learning provide the ability to tackle issues and stress (Byoun, 2021). In the dynamic view, resilience capacity is the capacity that constantly confronts challenges and spots unrivalled opportunities. Therefore, resilient organizations perform more efficiently than their rivals. Emerging new patterns alters previous ones. These changes provide new perceptions and ideas for improving life (Pires and Trez, 2018). Therefore, resilient organizations are more compatible, perform better, and acquire better reputations. Competition is an indispensable part of today's business, and companies try to surpass their rivals and elevate to higher positions (Xiaoman, Tongying and Xiaolong, 2018). Resilience is among the requirements in this competition. Resilience received considerable attention following the replete shocks and malfunctions in the global economy. It is a multi-facet concept with various and numerous definitions (Feil et al., 2019). For instance, resilience indicates the business's ability to adapt to and recover from compulsory changes (Byoun, 2021). Resilience is the system's capacity to absorb malfunctions and maintain performance and structure (Herbane, 2016). Some perceive resilience as the organization's flexibility (Bhamra, Dani and Burnard,2011; Lee, Vargo and Seville, 2013; Marchese et al., 2018). Resilience aids business units in expanding their capacities, being more dynamic, enhancing their efficiency and performance by focusing on the organization's dynamic processes, and creating a flexible system. Resilience is perceived as the system's working feature to enhance the firm's performance during a crisis. Since organizations' resilience is based on improving flexibility during a crisis, the more resilient business units have higher performance and reputation (Roostaie, Nawari and Kibert, 2019).

Corporate reputation refers to the interested parties perceptions of the firm, including its performance, behaviors, and operations (Lombardi et al., 2020). Corporate sustainability promotes resilience. Resilience constitutes

sustainability, and in the literature, sustainability can be used to describe resilience (Feil et al., 2019; Roostaie, Nawari and Kibert, 2019; Herbane, 2019). Studies in this realm are as follows:

Feng et al. (2021) observed a significant positive relationship between corporate sustainability and a firm's social responsibility. Therefore, sustainability reinforces CR. Hence we conclude that resilience can increase reputation, and other studies (Feil et al., 2019; Roostaie, Nawari and Kibert, 2019; Herbane, 2019) have confirmed this. Flexible organizations have accurately perceived the concept of resilience and its determinants (Byoun, 2021).

3. Research method: This study is Causal-comparative research or ex-post-facto. Methodologically it is a Quasi-experimental design in the positive accounting field and conducted with real data. This study is a causal correlational survey and applied research. Applied studies aim at developing a specific realm of knowledge.

3-1. Statistical Society: The Statistical population includes all the Listed companies (of Iran, Kuwait, Iraq, Saudi Arabia, United Arab Emirates, and Bahrain) on the Stock Exchange from 2014 to 2019. For sampling, a systematic elimination method is used and finally, the statistical sample of the research is selected after applying the following conditions:

1. The selected companies must be listed on the Stock Exchange by the end of 2014.
2. The companies have provided complete financial information during the research period.
3. Not to be part of investment companies, banks, insurance, and financial intermediation companies.

By the end of 2019, the conducted information for each company is as follows (six Muslim Countries in 6 years):

Bahrain (8 companies), UAE (9), Iraq (34), Saudi Arabia (46), Kuwait (33), and Iran (146).

3-2. Data collection method: The required information will be collected from different sources depending on their type. Library sources such as Persian and Latin books, publications, and websites will collect information on research literature and theoretical topics. Company information (balance sheet and profit and loss statement) has been used as a research

instrument. Raw information and necessary data to test the research hypotheses were collected from Each country's Stock Exchange database.

3-3. Data analysis method: The multivariate Linear Regression method has been used to test the research hypotheses. Descriptive and inferential statistical methods have been used to analyze the collected data. Thus, to describe the data, the frequency distribution table is used. The F-Limer, Hausman, and Multiple Linear Regression tests are used at the inferential level to test the research hypotheses.

3-4. Research model: The following model is applied to test the research hypothesis.

Model (1)

$$\text{Corporate\_reputation}_{it} = \beta_0 + \beta_1 \text{ Financial Resilience}_{it} + \beta_2 \text{ FD}_{it} + \beta_3 \text{ Growth}_{it} + \beta_4 \text{ INST}_{it} + \beta_5 \text{ b\_ind}_{it} + \beta_6 \text{ M/B}_{it} + \beta_7 \text{ Loss}_{it} + \beta_8 \text{ Benkr}_{it} + \beta_9 \text{ b\_outside}_{it} + \beta_{10} \text{ industry}_{it} + \beta_{11} \text{ year}_{it} + €_{it}$$

3-5. Measuring variables

3-5-1. Dependent variable Corporate Reputation (CR): Different countries use the list of the top companies annually published by the following reputed journals and magazines. FORTUNE magazine in the U.S., MACL in Turkey, MERCO in Spain, and other journals. Muslim countries apply the same approach in identifying valued companies and measuring their reputation.

3-5-2. Independent variable: Financial resilience (FR): This study applies the Exploratory Factor Analysis (EFA) (Principal Component Analysis approach) to calculate resilience. EFA is a multivariate statistical technique to classify and identify data structures. This technique is applied for two reasons. First: it enables researchers to combine a vast set of variables concerning corporate features. Previous studies either addressed a limited set of corporate features or ignored the multi-linearity issue (the presence of several variables as controlling and independent variables in the empirical models). Second: EFA specifies a value for each variable based on the correlational Matrix output. This technique assumes the same impact for each variable.

The information for 24 factors affecting the corporate features and managers' incentives in creating resilience are collected for each firm year to calculate resilience. Then the correlational matrix of the 24 variables is analyzed according to year. Finally, the EFA is performed, and each variable weight is determined.

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Table (1): The FR is measured through EFA of the following 24 indexes

Column	Index	Explanation
1	Age	The period since the company was founded.
2	Foreign export	If the business unit imports during the mentioned year, it equals one and otherwise zero.
3	SEG	If the company has a segment, it equals one and otherwise zero.
4	The ownership type	The institutional ownership percentage (the company's stock owned by insurance companies, investment firms, and other government entities.)
5	Size	Natural log of firms assets
6	Research and development expenditure kind of cost	The total cost of research and development to the firms' total assets.
7	Employee	The natural log of employees number in the year under review.
8	Board educational degree	If the board members have a BA degree or higher than an MA degree, it equals one or zero.
9	Sales	The company sales to its total assets
10	Board financial specialization	If one of the board members studied a financial major (accounting, finance, and economics), it equals one and otherwise, zero
11	Profitability	If the firm generated profit during the mentioned year, it equals one and otherwise zero.
12	ROA (Return on Assets)	Net income to total assets
13	LEV	Total debts to total assets
14	Operating expenses	This year's operating expenses minus last year's expenses.
15	Intangible assets	Firm's total intangible assets to its total assets
16	FCON	Herfindahl index $HHI_{it} = \sum_{i=1}^{k} (\frac{Sales_{it}}{Sales_{jt}})^2$
17	Risk	The company's profit and standard loss deviation for the last three years.
18	Going concern	-
19	Independent auditor opinion	If the auditor's opinion is unmodified, it equals one and, otherwise, zero.
20	Retained earnings	The retained earnings to total assets
21	Lack of internal control weakness	If internal controls lack any weakness, it equals one and otherwise zero.
22	Positive cash flows	-
23	Bad debt expenses	-
24	Sales return reversal	-

3-5-3. Control variables: Financial Distress (FD): Altman's model is applied in predicting bankruptcy with the ratios of cash flow management,

asset return, profitability, debt management, and asset management. If the company is distressed, this variable equal one and zero. Altman's model is used to determine Financial Distress (FD). After assessing the model's fitness and calculating its parameters, the existence of FD is determined.

$Z = \beta 1\ X1 + \beta 1\ X2 + \beta 1\ X3 + \beta 1\ X4 + \beta 1\ X5 + + \varepsilon i$

Where:

X1: Working Capital/Total Assets, X2: Retained Earnings/Total Assets, X3: Earnings before interest and taxes/Total Assets, X4: Market value of equity/Book Value of Total Liabilities, X5: Sales/Total Assets.

The higher z score levels indicate higher levels of financial distress. According to Altman (1968), if the z score is less than 1/23, the firm is recognized as distressed.

Growth: change in the firm's sales ratio in the current year.

Institutional ownership: this variable shows the company's stock owned by insurance companies, investment firms, and other government entities. It is calculated by dividing the institutional ownership shares by the total general shares for the beginning of the period.

Board-size/Independence (B-SIND): the number of board members (Boone et al., 2007; Harris and Raviv, 2006).

Investment opportunities (Market to book value M/B): are calculated by dividing the market value by book value.

Loss: If the firm earned profit the last year but is in a loss in the current year, this variable equal one, and if the firm was and is in a loss in the prior and current year or gained profit in the current year, the variable equals zero (Srivastava, Sunde and Tse, 2015).

Bankruptcy: is a dummy variable that equals one if the firm's accumulated loss exceeds 50% of its recorded capital (Ahmad and Azari, 2021).

Board independence: if the CEO is a responsible member, this equals one and otherwise zero.

Industry: this variable shows the firm's industry

Year: a dummy variable of the year

4. Data analysis:

4-1. **Descriptive Statistics:** Table 2 shows the descriptive statistics for each variable.

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Table (2): The Descriptive statistics variables

variable	Mean	Median	Maximum	Minimum	Standard deviation	Skewness	kurtosis
Corp. rep.	Qualitative variable						
FR	0.460	0.456	0.930	-0.573	0.266	0.318	2.537
Financial Crisis	Qualitative variable						
Growth rate	0.221	0.162	4.334	-0.931	0.389	2.017	15.858
Institutional owners	0.619	0.520	0.998	0.120	0.208	-0.409	2.398
Board size	5.697	5	15	4	1.616	2.388	8.381
Investment opportunity	3.495	1.936	33.024	0.223	3.920	2.742	12.462
Loss	Qualitative variable						
Financial distress	Qualitative variable						
Board independence	0.640	0.600	1	0.200	0.174	-0.076	2.864

Mean is the most important measure of central tendency measures. It indicates the frequency of the distribution and the data's centrality. The mean growth rate equals 0/221, indicating that the data are mostly distributed around this point. Scattering parameters are measures of showing scatter ratios compared to the mean ratios. Standard deviation is among the essential scattering ratios. This parameter for the investment opportunities equals 3.920 (the highest value) and 0.174 (the lowest value) for board independence.

4-2. Qualitative variables descriptive statistics: Some variables measurement scales are nominal and ordinal. Typically, these variables are Dichotomous and or multi-valued. They are described by mode and frequency percentages. The frequency for the Dichotomous variable shows what percentages of the data have the code 1 and 0.

Table (3): The CR frequency

Name	Frequency	Frequency percentage
0	1598	84.06
1	303	15.94
Total	1901	100

Table (4): The financial crisis frequency

Name	Frequency	Frequency percentage
0	1049	55.18
1	852	44.82
Total	1901	100

Table (5): The loss frequency

Name	Frequency	Frequency percentage
0	1683	88.53
1	218	11.47
Total	1901	100

Table (6): The financial distress frequency

Name	Frequency	Frequency percentage
0	1583	83.27
1	318	16.73
Total	1901	100

The above Tables show the frequency of the qualitative variables. According to Table 6, 16% of the companies are financially distressed.

4-3. Inferential statistics

4-3-1. Unit root test (the Stationary of variables): Unit root test must be performed before the model's Fit assessment. Non-stationary (the changing status of the variables' time series) leads to a Spurious Regression assessment. False inferences are made if the time series variables are non-stationary, but no conceptual relationship exists between variables.

Table (7): The variables stationery (Hadri) test

variable	Test statistic	significance	Result
Corp. Reputation	Qualitative variable		
FR	23.570	0.000	Stationary
Financial distress	Qualitative variable		
Growth rate	20.471	0.000	Stationary
Institutional owners	26.488	0.000	Stationary
Board size	18.658	0.000	Stationary
Investment opportunities	29.202	0.000	Stationary
loss	Qualitative variable		
Financial distress	Qualitative variable		
Board independence	24.511	0.000	Stationary

Table 7 indicates that all the variables are statistically less than 5% and are stationary.

4-3-2. Normality distribution test: For analyzing the relationship between variables first, data distribution is required. Data distribution reveals the data variability. Jarque-Bera test is applied to test whether sample data have the skewness and kurtosis matching a normal distribution. If the significance level in this test is lower than 5%, variables do not have a normal distribution.

Table (8): The Normality distribution test results

variable	Test statistic	Significance	Result
Corp. Reputation	Qualitative variable		
FR	490.534	0.000	No normal distribution
Financial distress	Qualitative variable		
Growth rate	143.848	0.000	No normal distribution
Institutional owners	816.979	0.000	No normal distribution
Board size	410.157	0.000	No normal distribution
Investment opportunities	947.612	0.000	No normal distribution
loss	Qualitative variable		
Financial distress	Qualitative variable		
Board independence	331.076	0.191	Normally distributed

Variables normality: Results reveal that all the variables (except the board independence) have a significance level lower than 5% and are not normally distributed. According to the central limit theorem, the normality assumption is not required because the observations are more than 30.

4-3-3. Hypothesis testing- Logistic regression

H0: No significant relationship exists between the company's FR and reputation.

H1: There is a significant relationship between the company's FR and reputation.

Table (9): The final estimation of the regression model

variable	Coefficients	Standard deviation values	z-statistic	Significance level
FR	0.365	0.032	11.321	0.000
Financial crisis	-0.256	0.029	-8.653	0.000
Growth rate	0.207	0.021	9.787	0.000
Institutional owners	-0.571	0.320	-1.786	0.074
Board size	0.191	0.035	5.371	0.000
Investment opportunities	0.027	0.016	1.663	0.096
loss	0.715	0.231	3.087	0.002
Financial distress	-0.329	0.218	-1.507	0.131
Board independence	0.904	0.374	2.414	0.015
intercept	-3.261	0.449	-7.256	0.000
McFadden's pseudo-R-squared value		0.698		
Logistic Regression and its significance level	59.421			0.000
Hosmer–Lemeshow test and its significance level	2.529 (0.960)			
Andres test and its significance level		3.099 (0.979)		
The correctness of the model's prediction		84.11%		

Since the significant level of FR is lower than 5% and is a positive value, there is a positive and significant relationship between FR and CR.

McFadden's coefficient shows that explaining variables can explain 69% of the dependent variables' changes. Logistic Regression's significant level is lower than 5% and is significant and acceptable. The significance level of the Hosmer-Lemeshow Test is higher than 5%, indicating that the explaining variables have well explained the changes of the dependent variable. Therefore, the model's prediction correctness is higher than 80%.

4.3.4. Hypothesis test results (case study in Iran): Logistic regression Fit for the research hypothesis of Iranian firms is provided.

Table (10): The final estimation of the regression model (Iran)

variable	Coefficients	Standard deviation values	z-statistic	Significance level
FR	0.203	0.034	5.880	0.000
Financial crisis	-0.332	0.041	-8.058	0.000
Growth rate	-0.154	0.252	-0.614	0.539
Institutional owners	0.170	0.032	5.326	0.000
Board size	-0.005	0.539	-0.009	0.992
Investment opportunities	0.039	0.021	1.852	0.064
loss	-0.500	0.069	-7.169	0.000
Financial distress	-0.250	0.406	-0.615	0.538
Board independence	-0.149	0.576	-0.258	0.795
intercept	-1.951	2.740	-0.712	0.476
McFadden's pseudo-R-squared value	0.420			
Logistic Regression and its significance level	55.203		0.000	
Hosmer–Lemeshow test and its significance level	(0.181) 11.363			
Andros test and its significance level	13.966 (0.173)			
The correctness of the model's prediction	87.556%			

Since the significant level of FR is a positive value and is lower than 5%, a positive and significant relationship exists between FR and CR.

McFadden's coefficient shows that explaining variables can explain 42% of the dependent variables' changes. Logistic Regression's significant level is lower than 5% and is significant and acceptable. The significance level of the Hosmer-Lemeshow test is higher than 5%, indicating that the explaining variables have well explained the changes of the dependent variable. Therefore, the model's prediction correctness is higher than 80%.

4-3-5. Case study results for Bahrain: Logistic regression Fit for the research hypothesis of Bahraini firms is provided.

Table (11): The final estimation of the regression model (Bahrain)

variable	Coefficients	Standard deviation values	z-statistic	Significance level
FR	0.105	0.020	5.258	0.000
Financial crisis	-0.233	0.030	-7.663	0.000
Growth rate	-1.224	2.402	-0.509	0.610
Institutional owners	0.328	0.037	8.666	0.000
Board size	0.204	0.030	6.754	0.000
Investment opportunities	-2.385	2.341	-1.018	0.308
loss	-1.098	2.114	-0.519	0.603
Financial distress	1.278	2.035	0.628	0.529
Board independence	-4.788	2.792	-1.715	0.086
intercept	1.438	3.628	0.396	0.691
McFadden's pseudo-R-squared value	0.452			
Logistic Regression and its significance level	45.236		0.000	
Hosmer–Lemeshow test and its significance level	7.086 (0.527)			
Andros test and its significance level	13.789 (0.182)			
The correctness of the model's prediction	87.50%			

Since the significant level of FR is a positive value and is lower than 5%, a positive and significant relationship exists between FR and CR.

McFadden's coefficient shows that explaining variables can explain 42% of the dependent variables' changes. Logistic Regression's significant level is lower than 5% and is significant and acceptable. The significance level of the Hosmer-Lemeshow Test is higher than 5%, indicating that the explaining variables have well explained the changes of the dependent variable. Therefore, the model's prediction correctness is higher than 80%.

4-3-6. Case study results for UAE: Logistic regression Fit for the research hypothesis of firms in UAE is provided.

Doi: www.doi.org/10.25130/tjaes.19.62.2.25

Table (12): The final estimation of the regression model (UAE)

variable	Coefficients	Standard deviation values	z-statistic	Significance level
FR	0.365	0.041	8.875	0.000
Financial crisis	-0.788	0.096	-8.166	0.000
Growth rate	-0.319	0.929	-0.343	0.731
Institutional owners	0.355	0.041	8.617	0.000
Board size	1.465	1.178	1.243	0.213
Investment opportunities	-0.402	1.126	-0.356	0.721
loss	-0.201	0.028	-7.039	0.000
Financial distress	1.451	1.261	1.150	0.249
Board independence	-1.649	1.147	-1.437	0.150
intercept	-1.414	2.064	-0.685	0.493
McFadden's pseudo-R-squared value	0.352			
Logistic Regression and its significance level	65.203		0.000	
Hosmer-Lemeshow test and its significance level	9.101 (0.333)			
Andros test and its significance level	12.273 (0.267)			
The correctness of the model's prediction	89.22%			

Since the significant level of FR is a positive value and is lower than 5%, a positive and significant relationship exists between FR and CR.

McFadden's coefficient shows that explaining variables can explain 35% of the dependent variables' changes. Logistic Regression's significant level is lower than 5% and is significant and acceptable. The significance level of the Hosmer-Lemeshow Test is higher than 5%, indicating that the explaining variables have well explained the changes of the dependent variable. Therefore, the model's prediction correctness is higher than 80%.

4-3-7. Case study results for Iraq: Logistic regression Fit for the research hypothesis of firms in Iraq is provided.

Doi: www.doi.org/10.25130/tjaes.19.62.2.25

Table (13): The final estimation of the regression (Iraq)

variable	Coefficients	Standard deviation values	z-statistic	Significance level
FR	0.405	0.056	7.116	0.000
Financial crisis	-0.250	0.030	-8.208	0.000
Growth rate	0.060	0.611	0.098	0.921
Institutional owners	-2.169	0.802	-2.704	0.006
Board size	0.488	0.162	3.012	0.002
Investment opportunities	-0.109	0.077	-1.414	0.157
loss	1.432	0.614	2.330	0.019
Financial distress	0.211	0.729	0.289	0.772
Board independence	2.145	1.065	2.012	0.044
Intercept	-3.639	1.442	-2.522	0.011
McFadden's pseudo-R-squared value	0.398			
Logistic Regression and its significance level	55.657		0.000	
Hosmer–Lemeshow test and its significance level	7.536 (0.480)			
Andros test and its significance level	8.776 (0.553)			
The correctness of the model's prediction	%78.43			

Since the significant level of FR is a positive value and is lower than 5%, a positive and significant relationship exists between FR and CR.

McFadden's coefficient shows that explaining variables can explain 39% of the dependent variables' changes. Logistic Regression's significant level is lower than 5% and is significant and acceptable. The significance level of the Hosmer-Lemeshow Test is higher than 5%, indicating that the explaining variables have well explained the changes of the dependent variable. Therefore, the model's prediction correctness is higher than 70%.

4-3-8. Case study results for Kuwait: Logistic regression Fit for the research hypothesis of firms in Kuwait is provided.

Table (14): The final estimation of the regression (Kuwait)

variable	Coefficients	Standard deviation values	z-statistic	Significance level
FR	0.365	0.041	8.860	0.000
Financial crisis	-0.431	0.052	-8.247	0.000
Growth rate	0.379	0.810	0.468	0.639
Institutional owners	-2.971	1.540	-1.928	0.053
Board size	0.723	0.923	0.783	0.433
Investment opportunities	-0.054	0.127	-0.429	0.667
loss	-0.612	0.981	-0.623	0.532
Financial distress	1.030	0.725	1.420	0.155
Board independence	2.146	1.674	1.282	0.199
intercept	-2.180	1.519	-1.435	0.151
McFadden's pseudo-R-squared value	0.302			
Logistic Regression and its significance level	45.203		0.000	
Hosmer–Lemeshow test and its significance level	3.903 (0.865)			
Andros test and its significance level	7.368 (0.690)			
The correctness of the model's prediction	89.34%			

Since the significant level of FR is a positive value and is lower than 5%, a positive and significant relationship exists between FR and CR.

McFadden's coefficient shows that explaining variables can explain 30% of the dependent variables' changes. Logistic Regression's significant level is lower than 5% and is significant and acceptable. The significance level of the Hosmer-Lemeshow Test is higher than 5%, indicating that the explaining variables have well explained the changes of the dependent variable. Therefore, the model's prediction correctness is higher than 80%.

4-3-9. Case study results for Saudi Arabia: Logistic regression Fit for the research hypothesis of Saudi Arabian firms is provided.

Table (15): The final estimation of the regression (Saudi Arabia)

variable	Coefficients	Standard deviation values	z-statistic	Significance level
FR	0.412	0.059	6.908	0.000
Financial crisis	-0.511	0.069	-7.318	0.000
Growth rate	0.301	0.481	0.625	0.531
Institutional owners	0.464	0.071	6.537	0.000
Board size	-0.130	0.097	-1.342	0.179
Investment opportunities	0.254	0.047	5.406	0.000
loss	0.168	0.661	0.254	0.798
Financial distress	-0.463	0.586	-0.789	0.429
Board independence	0.580	0.944	0.614	0.538
intercept	-1.426	1.223	-1.165	0.243
McFadden's pseudo-R-squared value	0.412			
Logistic Regression and its significance level	65.203		0.000	
Hosmer–Lemeshow test and its significance level	5.677 (0.683)			
Andros test and its significance level	9.216 (0.511)			
The correctness of the model's prediction	90.80%			

Since the significant level of FR is a positive value and is lower than 5%, a positive and significant relationship exists between FR and CR.

McFadden's coefficient shows that explaining variables can explain 41% of the dependent variables' changes. Logistic Regression's significant level is lower than 5% and is significant and acceptable. The significance level of the Hosmer-Lemeshow Test is higher than 5%, indicating that the explaining variables have well explained the changes of the dependent variable. Therefore, the model's prediction correctness is higher than 90%. The countries' ratings are calculated based on McFadden's and R-squared coefficients (a positive and significant relationship exists between FR and corp. reputation).

Table (16): The McFadden's and R-squared coefficients' ratings

Country	Determination coefficient
Bahrain	45
Iran	42
Saudi Arabia	41
Iraq	39
UAE	35
Kuwait	30

Bahraini companies have the highest relationship between FR and Corp. reputation (45%) while Kuwaiti companies have the lowest relationship.

5. **Discussion and conclusions:** In today's competitive market service environment, corporate resilience is vital for many companies. Therefore, providing a model for determining corporate resilience in Muslim countries is necessary. Recently gaining and maintaining a positive reputation has motivated companies to be more resilient. Reputation primarily reputation referred to the business brand, corporate characteristics, and other tangible objects. However, gradually it is associated closely with the external environment and business market. A resilient company attracts investors' and the public's attention and gains a higher reputation. This study found a positive and significant relationship between FR and Corp.'s reputation in Muslim Countries (the companies include Iran, Saudi Arabia, Iraq, Kuwait, UAE, and Bahrain). According to the coefficient of determinants and McFadden's coefficient, the relationship between resilience and CR in Bahrain is the highest, and Kuwait is the lowest (the scales are as follows: Bahrain, Iran, Saudi Arabia, Iraq, UAE, and Kuwait). The results are in line with the findings of Lombardi et al. (2020), Herbane (2016), Roostaie, Nawari and Kibert (2019), and Feil et al. (2019). This study and the mentioned ones found that enhancing the firm's resilience improves the interested parties' perceptions because the company's reputation is regarded among its performance, behaviors, and policies (Lombardi et al., 2020). Managers should cooperate more with their colleagues, suppliers, distributors, and customers. Therefore, they can receive support during the crisis and be more resilient. Therefore, according to the hypothesis test results, companies must pay considerable attention to resilience. Enhancing resilience bolsters the corporate's reputation and value in society.

Supplementary Materials: The following supporting information can be downloaded at: www.mdpi.com/xxx/s1, Figure S1: title; Table S1: title; Video S1: title.

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Appendix A: The appendix is an optional section that can contain details and data supplemental to the main text—for example, explanations of experimental details that would disrupt the flow of the main text but nonetheless remain crucial to understanding and reproducing the research shown; figures of replicates for experiments of which representative data is shown in the main text can be added here if brief, or as Supplementary data. Mathematical proofs of results not central to the paper can be added as an appendix.

Appendix B: All appendix sections must be cited in the main text. In the appendices, Figures, Tables, etc. should be labeled starting with "A"—e.g., Figure A1, Figure A2, etc.

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