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The Impact of Natural Disaster Risks on Financial Technology in Jordanian Commercial Banks from the Viewpoint of their Employees

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Abstract

The study aimed to investigate the impact of natural disaster risks on financial technology, represented by banking operating systems, mobile banking services, and information security, in Jordanian commercial banks from the perspective of their employees. The researcher used a descriptive and analytical method to conduct the study, with the study population being Jordanian commercial banks. The researcher used a survey tool to collect data, and the study sample consisted of 349 bank employees. One of the most significant findings of the study is the statistically significant impact of natural disaster risks on financial technology in Jordanian commercial banks from the perspective of their employees. The analysis of the sub-hypotheses revealed the impact of natural disaster risks on the dimensions of banking operating systems, mobile banking services, and information security. Among the recommendations is the need to improve the business environment and digital infrastructure of commercial banks and address some weaknesses related to service providers to avoid the complete cessation of services in the event of natural disasters.

Introduction

Information is one of the most important production elements and plays a vital role within different systems, especially financial ones. It contributes significantly to improving the performance of these organizations. Financial technology utilizes information to provide appropriate information, services, and guidance to decision-makers in relevant authorities and departments to make sound decisions. Information systems have evolved from manual to electronic systems because of the development that has occurred in information technology. Information systems and databases have become the mainstay of organizations where it is important to maintain the security and safety of information and its main components. However, there are many potential risks and disasters that may surround and

face financial technology, which is a product of the development of information technology, and which can lead to significant losses if ignored.

Enhancing information protection is the means to provide safety measures for information from potential risks and natural disasters that threaten or attack it. This is achieved through a set of preventive measures used both in the technical and protective fields to preserve information, devices, and software, in addition to procedures related to safeguarding those working in this field.

Given the world's recent experience with the COVID-19 pandemic and earthquakes in several countries, which had a tangible impact on the business environment and its nature, it is difficult to predict the scope or extent of the impact on information safety in all its elements. Therefore, the circumstances and challenges faced by these organizations may differ. This study aims to examine the extent of the impact of these uncontrollable risks on financial technology practiced in a vital sector of the Jordanian economy, namely the banking sector, from the perspective of its employees.

Problem of the Study

Despite the advantages of data automation and its operation in terms of accuracy and speed, the technological advancement in financial systems may carry many risks, especially external variables that may pose a significant threat if not adequately prepared for. Considering the recent natural disasters that have had a significant impact on the business environment in the region, there is a need to review these developments and work to ensure the smooth operation of financial technology in organizations considering these disasters and ways to develop their protection to maintain workflow. The review process should be an applicable method for preparedness and development of these systems. To address the problem of the study, the following main question must be answered:

What is the extent of the impact of natural disaster risks on financial technology in Jordanian commercial banks from the perspective of their employees?

The main question leads to the following sub-questions:

1. What is the extent of the impact of natural disasters on banking operating systems in Jordanian commercial banks from the perspective of their employees?
2. What is the extent of the impact of natural disasters on mobile banking services in Jordanian commercial banks from the perspective of their employees?
3. What is the extent of the impact of natural disasters on the security and safety of financial information in Jordanian commercial banks from the perspective of their employees?

Study Objectives

The study aims to achieve several objectives as follows:

- To identify the impact of natural disaster risks on financial technology in Jordanian commercial banks from the perspective of their employees.
- To demonstrate the importance of identifying natural disaster risks surrounding financial technology as a diagnostic step for identifying strengths and weaknesses in these systems.
- To determine the direct impact on banking operating systems, mobile banking services, and the security and safety of financial information in the financial systems of the Jordanian commercial banking sector.

Importance of the Study

The importance of the current study lies in the nature of the topic which addresses fundamental issues related to natural disaster risks and financial technology. These topics are relatively contemporary, and therefore, the importance of the current study can be stated as follows:

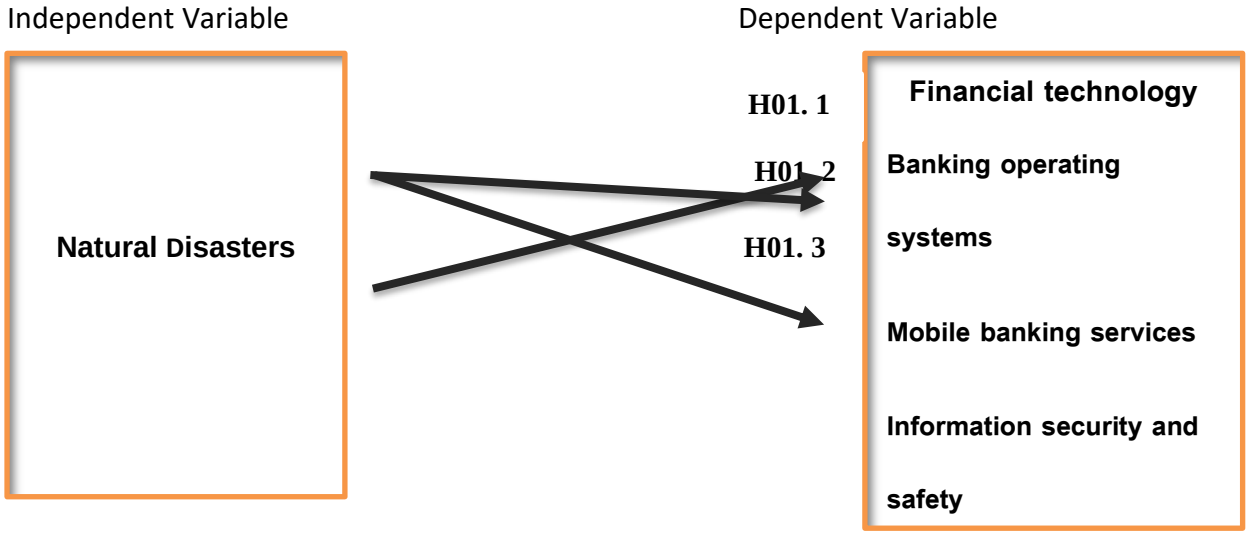
Firstly: Scientific Importance

The study derives its significance from the importance of its subject, place, and time. The importance of this study is evident in shedding light on the impact of natural disaster risks on financial technology in Jordanian commercial banks from the perspective of their employees. The current study is one of the few local studies that investigate the impact of these natural risks, highlighting the importance of conducting such a study. Therefore, it represents an enrichment of studies on these risks and their relationship with some variables.

Secondly: Practical Importance

The study aims to assist decision-makers and officials in Jordanian banks to identify the strengths and weaknesses of financial systems in the face of potential natural disaster risks. To demonstrate the current level of performance of these financial systems in the face of such risks.

Study Model



Prepared by the researcher: Based on a study of each of the following references: (Lattarsh, 2023), (Bank Negara Malaysia, 2020), (Abu Aleim, 2022).

Study Hypotheses:

Considering the subject and problem of the study, and in response to the requirements of achieving its objectives, the researcher formulated the following hypotheses:

Main Hypothesis: There is no statistically significant effect at a significance level of ($\alpha \leq 0.05$) for natural disaster risks on financial technology in Jordanian commercial banks from the perspective of their employees.

This main hypothesis branches into three sub-hypotheses:

Sub-hypothesis One: There is no statistically significant effect at a significance level of ($\alpha \leq 0.05$) for natural disasters on banking operating systems in Jordanian commercial banks from the perspective of their employees.

Sub-hypothesis Two: There is no statistically significant effect at a significance level of ($\alpha \leq 0.05$) for natural disasters on mobile banking services in Jordanian commercial banks from the perspective of their employees.

Sub-hypothesis Three: There is no statistically significant effect at a significance level of ($\alpha \leq 0.05$) for natural disasters on the security and safety of financial information in Jordanian commercial banks from the perspective of their employees.

Study Terminology

Natural disasters: A sudden tragic disruption in the life of a community. It can occur with or without warning and can threaten people's lives, cause serious injuries, or displace a large number of individuals from the affected community beyond the capacity and capabilities of emergency services (Belmadani, 2013).

Financial technology: An emerging industry that uses technologies and innovations to compete with traditional financial methods in providing financial services. Its aim is to improve finance activities by reducing time, cost, and complexity (Lattarsh, 2023).

Theoretical Framework

Risks of natural disasters: Can be defined as risks that could occur due to environmental factors such as earthquakes, floods, hurricanes, pandemics, and others. These factors could threaten human lives, cause power outages, fires, building collapses, and other damages. Natural disasters are just phenomena like any other natural occurrences that flow within the depths and surface of the earth's crust and maintain their power, which takes an unexpected form and has significant negative impacts. They are nothing but changes to the environmental system that we previously knew whether positively or negatively. They have also been defined as "a sudden, unexpected change in normal life due to natural or human-induced phenomena that cause numerous injuries, deaths, or financial losses" (Abdullah, 2017).

There are common disasters that either start with human actions and then nature plays a major role in increasing their size and impact, such as village fires, which start with human error, and then wind plays a significant role in exacerbating their effects. Or disasters that start with natural causes, and then human actions lead to increasing the size of losses, such as stampedes resulting from earthquakes. On the other hand, these disasters can also affect the functioning of financial and accounting information systems in the banking sector, leading to the disruption and prolonged downtime of electronic information systems' security and safety (Ali, 2021).

Financial technology faces many risks within organizations. Before delving into the list of risks, it is necessary to clarify some of the terms used in this field. The term "threat" refers to a deliberate hostile event or any possibility of its impact. In other words, it refers to the financial loss due to threats. The term "likelihood" is likely to refer to the strong possibility of threats from an information technology perspective. Here, we will shed light on the most significant risks that threaten the security and safety of the information system, which may affect the most important activities of the information technology environment, thus impacting the security and safety of information. Given that the use of complex financial technology in automated accounting has led to the emergence of so-called "financial technology risks" (Ahmad, 2021).

Through the development of information technology, linking it through electronic transfers and the internet, information system security has become a product of development, implementation, and maintenance of systems, which are part of the costs of completing

business activities. Protecting those systems is the most critical issue for organizations currently. Many of these organizations have realized the benefits of increasing and automating information through electronic transfers (Ali, 2021).

Financial technology (Fintech) is closely related to information and communication technology. It represents one of the primary processes used by organizations through telecommunications technology to secure and distribute financial services efficiently and with the least possible time and effort (Ben Alaqma, 2019).

According to Latrach (2023), financial technology is "a set of financial innovations using technology that can create new business products or services that have a tangible impact on financial markets and institutions and on the provision of financial services." The Financial Stability Board defines it as "financial innovations based on technology that have the ability to provide and create new products and applications that affect financial markets and institutions" (Jamaa, 2021).

Goujil and Taibah (2022) define Fintech as a group of companies or units that integrate financial processes or services with innovative technologies as a basis for offering products and services based on the internet and applications, with the aim of attracting customers through ease of use, effectiveness, and transparency of performance.

According to the Financial Stability Board (2017), Fintech is an emerging industry that uses technologies and innovations to compete with traditional financial methods in providing financial services with the aim of improving activities in the finance sector by reducing time, cost, and complexity.

Lagarde (2019) emphasizes that Fintech applications, such as artificial intelligence, big data, vital statistics, and distributed digital accounting technologies such as blockchain, can affect financial services. While encouraging innovation, it is essential to ensure that new technologies can face surrounding risks without threatening financial stability. Although such activities cannot be predicted, there are steps that can be taken today to prepare for and address those risks.

Factors for the success of banking technology include providing efficient and transparent cross-border payment mechanisms, which offer higher efficiency and profitability compared to traditional banks or money transfer companies that rely on correspondent banking relationships. This can mitigate the challenges imposed by the discontinuation of banking relationships in some countries (Munasira, 2022).

Electronic banking transactions have provided enormous benefits for banks and customers, both in terms of transaction cost and efficiency in providing services through electronic channels. Banks that wish to provide these services must obtain a license from the relevant authorities. To obtain a license, banks must ensure compliance with certain procedures, including verifying the general policy for providing electronic banking services, technical and regulatory options, legal issues related to providing the service, and procedures for information storage (Kafi, 2020).

Key factors for the success of these services include having a network that includes all relevant parties, ensuring security in designing this network, preparing a plan for training human resources, establishing standard regulations that allow for linking between different parties and the world, and creating an administrative organization that coordinates between contracting parties (Boukharri, 2021).

The researcher believes that one of the most important factors for the success of banking technology is the need to rely on experts, engineers, and specialists to obtain the latest

electronic services and avoid any technical errors that may occur during the use of such technology.

Electronic banking services

Electronic banking services are primarily based on remote interaction through the internet and similar means. They are directly linked to qualified human resources that provide these services, as well as the rapid development of e-commerce and the level of trust that society has in financial institutions that offer their services (Al-Mukbati, 2018). These services include:

- Electronic check: a message that includes mandatory data concerning the parties involved in the transaction and carries signatures, through which the due amount is transferred to the beneficiaries via the internet.
- Electronic bank transfer: a process by which the bank records an amount on the debit side of the order's account (the first party) that issues an electronic written order with a matching signature, while also recording the same amount on the credit side of another account (the second party), whether both parties are customers of the same bank or not.
- Electronic bank card: an electronic card issued by a bank or other financial institution, which allows the holder to make purchases on credit from the issuer and obtain a loan or perform a specific number of transactions without having to physically visit the bank (Febriana, 2022).
- Electronic document authentication: a technology that allows account holders to deal with documents via email, such as submitting electronic files while completing the transaction electronically (Chen, 2022).
- Smartphones: most banks around the world offer smartphone services, a new banking strategy that allows smartphone users to access their accounts through the bank's application they are dealing with at any time and perform various banking transactions quickly, efficiently, and at a low cost. Users can access the bank's application through their internet-connected smartphone at any time and from any location they choose (Ghanem, 2018).

Previous studies

A study by **Latrach (2023)** titled "An Analytical Study of the Opportunities and Risks of Financial Technology on Financial Stability" aimed to highlight the most significant impacts of financial technology, which is one of the latest financial innovations worldwide, on financial stability. This was done by analyzing the most important opportunities and risks associated with it. The study found that financial technology holds many opportunities that enhance financial stability by contributing to financial inclusion, enhancing liquidity and payment systems, financing commercial operations, and providing digital financial solutions and innovations that meet customer needs. However, in the absence of appropriate regulatory frameworks, it poses a risk to financial stability by affecting the performance and effectiveness of monetary and fiscal policies, increasing risks of money laundering, cyber threats, decentralized finance, environmental risks, cryptocurrency value fluctuations, and changing the banking intermediation chain.

A study by **Goujil and Taibah (2022)** titled "Financial Technology Risks and Management in the Banking Sector" aimed to highlight the various risks arising from the use of financial technology with its multiple techniques in the banking sector. This was done by examining a

set of regulatory and precautionary measures in the field, such as those taken by the Malaysia-based Niyara Bank, the World Bank, and the New York Department of Financial Services (NYDFS). This diversity in institutions provides more accurate and comprehensive concepts of the different types of risks associated with financial technology. The study then presented the precautionary and regulatory solutions imposed or recommended by these institutions, which agreed that all regulatory guidelines and directives fall within the scope of developing complex strategies and auditing different financial processes using FinTech techniques, as well as periodically updating and performing performance tests related to these systems, among other precautionary measures.

A study by **Menasria (2022)** titled "Financial Technology Opportunities and Challenges in the Face of the Coronavirus Pandemic" aimed to identify the opportunities and challenges facing the financial technology sector in the face of the pandemic. The study also aimed to clarify the role of the pandemic in reshaping the future of financial services. The study found that the pandemic was a golden opportunity for the recovery of the financial technology sector, especially through the increased number of users of financial applications, the development of new products for financial technology, and the promotion of the idea of sovereign digital currencies. However, despite the opportunities, the financial technology sector still faces several challenges, including cybersecurity and combating electronic fraud.

A study by **Al-Rabadi (2021)** titled "The Impact of Information Technology Risks on Information Systems Security" aimed to measure the impact of information technology risks on information systems security using Structural Equation Modeling (SEM) as an analytical study. The study community consisted of 7 telecommunications companies operating in Yemen, and data was collected from 356 participants using a questionnaire as a data collection tool. The study received 281 valid questionnaires for analysis, and the data was processed using Partial Least Squares (PLS) method. The study found that information technology risks have a negative impact on information systems security.

A study by **Febriana (2022)** aimed to investigate the impact of financial technology development using financial technology services adopted by banks and the growth of financial technology companies on banking risk-taking. The study used a balanced panel of 37 traditional commercial banks in Indonesia for the period from 2017 to 2021. By estimating the impact of the constant and random effects using models, the study found that the financial technology services adopted by banks and the growth of financial technology companies reduce risk-taking behavior and therefore increase the stability of banks. These results suggest a complementary relationship between financial technology development and traditional banking services.

A study by **Milena (2020)** aimed to identify the impact of financial technology on the emergence of systemic risks. The study consisted of a series of working papers published by the Asian Development Bank Institute, which highlighted various financial technology techniques used, such as blockchain technology and cryptocurrencies. The study then conducted a standardized study on a sample of financial technology companies in the United States and Europe, consisting of 39 American and 53 European companies, studying the change in size from 2010 to 2017. The study found that it is unlikely that financial technology has a significant impact on the occurrence of systemic risks. It contributed very minimally, not exceeding 5% in Europe and 3% in the United States.

A study by **Chen (2022)** aimed to investigate the potential risks that financial technology brings to commercial banks in China. The data was collected from 19 important systemically important banks from 2011 to 2020 to analyze the impact of financial technology on the

development of financial risks for commercial banks in order to achieve sustainable development in the financial sector. Using Z value and the non-performing loan ratio as standard variables in this study, it was found that the impact of financial technology on financial risks for systemically important banks is significant and follows a U-shaped pattern, with an initial increase in financial risks followed by a decrease while continuing to develop financial technology. The results also showed that commercial banks' responses to the development of financial technology were relatively slow.

Methodology

The researcher used the descriptive-analytical methodology, which relies on studying the phenomenon as it is in reality and describing it accurately, then analyzing the correlational relationships that exist between the independent variable representing natural disaster risks and the dependent variable represented by financial technology in an attempt to identify the impact of the independent variable on the dependent variable, in order to arrive at conclusions that contribute to the development and improvement of reality.

Study population

The study population consists of all employees in the Jordanian commercial banking sector, represented by senior and middle management. The number of banks included in the study is 13 banks operating in Jordan.

Table (3-1): Number of Employees in Commercial Banks

Bank Name	Total Employees in All Branches	Male	Female
1. Arab Bank	3844	2049	1299
2. Housing Bank for Trade and Finance	2859	1834	1025
3. Cairo Amman Bank	2234	1414	820
4. Jordan Bank	1497	867	630
5. Jordan Kuwait Bank	1407	880	527
6. Union Bank	1259	694	565
7. Jordan Commercial Bank	1084	672	412
8. Arab Jordan Investment Bank	774	271	503
9. Capital Bank	704	448	256
10. ABC Bank	509	265	244
11. Investment Bank	433	207	226
12. Societe Generale Bank	313	203	110
Total	17,805		

Source: Amman Stock Exchange: https://www.ase.com.jo/ar

Study Sample

The researcher relied on the size of the study population, which is 17,805 employees distributed among the general departments of banks. According to the table by Sekaran and Uma (2006), the appropriate and representative sample for the population should consist of 400 employees. The questionnaires were distributed to employees in the commercial banks operating in Jordan, and an electronic model was designed to facilitate the distribution process. The researcher collected 349 valid responses that were suitable for statistical analysis.

Data Collection Sources

The researcher relied on two main sources to collect the necessary information and data for the study:

Primary sources: For the purpose of obtaining the necessary data to reach the desired results of the study, a questionnaire related to the study topic was developed based on the theoretical framework of this study and previous studies that were presented earlier. The questionnaire consisted of three parts, and the first part included personal and job-related information about the study sample, such as gender, age, educational qualification, years of experience, and job title.

Secondary sources: These sources included a collection of books and journals related to the study topic, in addition to the information available on the relevant websites on the internet. The second part of the questionnaire consisted of 21 items that reflect the evaluation of the study sample, which consists of a range of sub-dimensions.

Statistical Analysis and Hypothesis Testing

Personal Characteristics of the Study Sample:

To analyze the study results, the researcher in this section reviewed the demographic characteristics to analyze the study results through a detailed description of the study sample based on their answers to the questions in the questionnaire within the section of personal and general data, as follows:

Table (4-1): personal and job-related data of the study sample

Variable	Category	Frequency	Percentage
Gender	Male	204	58.5%
	Female	145	41.5%
	Total	349	100%
Age group	Less than 30 years	124	35.5%
	30 years to less than 35 years	119	34.1%
	35 years to less than 40 years	69	19.8%
	40 years or more	37	10.6%
Experience	Less than 10 years	163	46.7%
	10 years to less than 15 years	137	39.3%
	15 years to less than 20 years	49	14.0%
	20 years or more	---	---%
	Total	349	100%
Job title	Branch Manager	25	7.2%
	Department Head	72	20.6%
	Unit Head	18	5.2%
	Administrator	234	67.0%
	Total	349	100%
Educational qualification	Diploma or less	19	5.4%
	Bachelor's degree	282	80.8%
	Master's degree	37	10.6%
	Doctorate	11	3.2%
	Total	349	100%

Source: (Prepared by the researcher based on the results of statistical analysis using SPSS)

The results of Table (4-1) indicate that the majority of the sample were males, accounting for 58.5%, while the female sample was the minority, accounting for 41.5%. The researcher attributes this result to the fact that banks rely on both genders to perform tasks, activities, and operations within the banks. As for the age group, the results of Table (4-1) indicate that the majority of the sample were aged less than 30 years, accounting for 35.5%, followed by the age group of 30 years to less than 35 years, accounting for 34.1%, then the age group of 35 years to less than 40 years, accounting for 19.8%, and the last group was 40 years or more, accounting for 10.6%. The researcher attributes this to banks relying on the younger age group to carry out activities and tasks. As for experience, the results showed that the highest percentage was for those with less than 10 years of experience, accounting for 46.7%, while the lowest was for those with 15 years to less than 20 years of experience, accounting for 14.0%. The researcher attributes this to banks relying on fresh experienced individuals to carry out tasks and duties. As for job titles, the results of Table (4-1) indicate that the majority of the sample were administrative staff, accounting for 67.0%, while the lowest percentage was for unit heads, accounting for 5.2%. The results of Table (4-1) also show that the majority of the sample had a bachelor's degree, accounting for 80.8%, while the lowest percentage was for those with a doctorate, accounting for 3.2%.

The first dimension: Natural disasters.

The first dimension in the survey includes six questions formulated to suit practical reality. The obtained data was analyzed, and the statistical analysis of the respondents' answers as a whole regarding this dimension was as follows:

Table No. (4-3): Results of the community's opinion on natural disasters

Paragraph No.	First Dimension	Mean	Standard Deviation	Rank	Relative Importance
1	The risks of natural disasters such as "landslides" affect the separation of some internet lines	4.21	0.824	1	High
2	Risks of natural disasters such as earthquakes hinder financial system operations	4.05	0.889	5	High
3	There are data protection and recovery systems in case of natural disasters	4.08	0.853	3	High
4	We rely on cloud computing systems in operational processes to reduce natural disaster risks	4.03	0.929	6	High
5	We have alternative plans in case of natural disasters to operate systems and provide services	4.19	0.717	2	High
6	Natural disaster risks hinder the arrival of specialized human resources for operating systems	4.07	0.769	4	High
Total Mean		4.10	-	-	High

Source: (Prepared by the researcher based on the statistical analysis results of SPSS)
Table No. (4-3) shows a high level of agreement among the study's community regarding the sub-paragraphs of the natural disaster dimension. Paragraph No. (1), which states "The risks of natural disasters such as 'landslides' affect the separation of some internet lines," obtained the highest average of 4.21 with a standard deviation of 824. On the other hand, Paragraph No. (4), which states "We rely on cloud computing systems in operational processes to reduce natural disaster risks," obtained the lowest average of 4.03 with a standard deviation of .929, and it is within the high relative importance, indicating no significant difference between the community's opinions on the paragraphs.
Based on the sample responses, the researcher indicated that there is a high level of agreement among the sample regarding the risks of natural disasters. Table No. (4-3) shows that the community as a whole agrees on the natural disaster risk axis, with an average of 4.10, indicating the respondents' agreement that natural disasters cause a level of damage to the financial technology performance through operational capabilities, access, and data extraction.

The second dimension: Results of the community's opinion on banking operating systems.

The second dimension in the survey includes five questions formulated to suit practical reality. The obtained data was analyzed, and Table No. (4-4) shows the statistical analysis results obtained for the study's community as a whole regarding the banking operating systems dimension.

Table No. (4-4): Results of the community's opinion on banking operating systems

Number	Second Dimension	Mean	Standard Deviation	Rank	Relative Importance
7	The occurrence of natural disasters affects the ability to input data through the operating system ports	4.02	0.992	4	High
8	Bank websites remain operational in the event of natural disasters	3.83	0.954	5	High
9	Financial systems are disconnected in the event of partial power outage	4.16	0.742	3	High
10	Systems are characterized by being connected to the cloud, allowing their use from different locations away from disaster sites	4.21	0.692	1	High
11	In the event of sudden disconnection, the system performs self-checks to retrieve all data and ensure its integrity	4.17	0.754	2	High
Overall Mean		4.07	-	-	High

Source: (Prepared by the researcher based on the statistical analysis results using SPSS)
The results in Table No. (4-4) indicate that the mean of all sub-items that make up the second dimension related to the banking operating systems axis falls within a high mean range.

Paragraph No. (10) which states "Systems are characterized by being connected to the cloud, allowing their use from different locations away from disaster sites" obtained the highest mean of 4.21 and a standard deviation of .754, while Paragraph No. (8) obtained the lowest rank.

The mean of paragraph No. 8 was 3.83 with a standard deviation of 0.954, indicating that there is no significant difference in the opinions of the study community regarding the paragraphs. It is also evident from the sample responses that there is an impact of natural disaster risks that negatively affects activities, tasks, and operations. Additionally, some measures taken by bank management during natural disasters have been shown to reduce expected damage. Table No. (4-4) shows that the community views the banking operating systems dimension as important, with an average of 4.07%.

The third dimension: Results of the community's opinion on banking services via smartphones.

The third dimension in the survey includes five questions formulated to suit practical reality. The obtained data was analyzed, and Table No. (4-5) shows the statistical analysis results obtained for the study's community as a whole regarding the dimension of banking services via smartphones.

Table No. (4-5): Results of the community's opinion on banking services via smartphones.

Number	Third Dimension	Mean	Standard Deviation	Rank	Relative Importance
12	Banking services via smartphones are relatively affected in the event of natural disasters as they rely on cloud computing for information exchange	4.17	0.805	3	High
13	Smartphone banking services continue to provide intermittent service as they rely on various, distant communication towers	4.35	0.660	1	High
14	If electronic banking services fail, smartphone applications remain effective by relying on electronic cloud servers to provide services	4.28	0.655	2	High
15	There is an increased demand for smartphone banking services when customers cannot access bank branches	4.17	0.756	3	High
16	The safety and security of data for services provided via smartphones are not affected by any natural disasters	3.95	1.092	4	High
Overall Mean		4.18	-	-	High

Source: (Prepared by the researcher based on the results of SPSS statistical analysis)

The results in Table No. (4-5) indicate that the mean of all the sub-items comprising the third dimension related to banking services via smartphones are in the high mean range. Paragraph No. (13), which states that "smartphone banking services continue to provide intermittent

service as they rely on various, distant communication towers," received the highest mean of 4.35 and a standard deviation of 0.660. On the other hand, paragraph No. (16), which states that "the safety and security of data for services provided via smartphones are not affected by any natural disasters," received the lowest mean of 3.95 with a standard deviation of 1.092, indicating that there is no significant difference in the opinions of the study community regarding the paragraphs.

Through the sample responses, it becomes apparent that banks' management establishes support plans in the event of risks arising from natural disasters to ensure the continuity of operations by relying on electronic cloud to provide and operate services through different centers and supportive methods and processes to maintain service. Table No. (4-5) shows that the community as a whole views the dimension of banking services via smartphones as important, with an average of 4.18%.

The fourth dimension: Results of the community's opinion on information security and safety.

The fourth dimension in the survey includes five questions formulated to suit practical reality. The obtained data was analyzed, and Table No. (4-6) shows the statistical results obtained for the study community as a whole regarding the dimension of information security and safety.

Table No. (4-6): Results of the community's opinion on information security and safety

Number	Fourth Dimension	Mean	Standard Deviation	Rank	Relative Importance
17	System outputs are stored on protected servers designed to withstand high degrees of risk	4.24	0.915	1	High
18	Financial and accounting systems' outputs are raised on electronic clouds to avoid damage in case of risks and environmental disasters	3.96	1.048	5	High
19	We suffer from losing some information in case of sudden disruptions to electronic services	4.16	0.922	4	High
20	System outputs are affected in case of natural disasters as they are connected to the internet network	4.19	0.831	2	High
21	Data is extracted through several means that contribute to easy access in case of risks and natural disasters	4.18	0.819	3	High
Overall Mean		4.14	-	-	High

Source: (Prepared by the researcher based on the results of SPSS statistical analysis)

The results in Table No. (4-6) indicate that the mean of all the sub-items comprising the information security and safety dimension is in the high mean range. Paragraph No. (17), which states that "system outputs are stored on protected servers designed to withstand high degrees of risk," received the highest mean of 4.24, while paragraph No. (18), which states that "financial and accounting systems' outputs are raised on electronic clouds to avoid damage in case of risks and environmental disasters," received the lowest mean of 3.96 with

a standard deviation of 1.048, indicating that there is no significant difference in the opinions of the study community regarding the paragraphs.

The results showed a high degree of banking management practices to protect financial technology through several measures to maintain and ensure the safety of outputs. Table No. (4-6) shows that the community views the information security and safety dimension as important, with a high mean of 4.14%.

Hypothesis Testing:

• Main Hypothesis: There is no statistically significant effect at a significance level ($\alpha \leq 0.05$) of natural disaster risks on financial technology in Jordanian commercial banks from the perspective of their employees.

Table NO.(4-7):Results of simple linear regression analysis for the main hypothesis.

Variables	Dependent Variable	Correlation Coefficient (R)	Coefficient of Determination (R2)	B Value	Constant B Value	BETA Value	Calculated t Value	Significance Level (Sig)
Independent Variable	Natural Disasters	0.852	0.726	1.147	0.726	0.852	11.564	0.000
Dependent Variable	Financial Technology							

Source: (Prepared by the researcher based on the results of SPSS statistical analysis)

The analysis confirmed the t-test variance analysis results and significance level (SIG) to ensure the significance of the regression. The calculated t-value (11.564) and significance level are less than ($0.05 \geq \alpha$), and the significance level of the test was compared with the adopted significance level in the study to indicate the statistical effect of the independent variable on the dependent variable. The significance level of t was (0.000), which is less than the adopted significance level in the study (0.05), and therefore, the main hypothesis is rejected and the alternative hypothesis is accepted. This means that there is a statistically significant effect of natural disaster risks on financial technology in Jordanian commercial banks from the perspective of their employees.

The correlation coefficient (R) value is 0.852, indicating a strong positive correlation between the independent variable (natural disasters) and the dependent variable (financial technology). The coefficient of determination (R2) value is 0.726, which indicates that the independent variable (natural disasters) can explain 72.6% of the variance in the dependent variable (financial technology). The B value is 0.726, indicating that a one-unit change in the independent variable (natural disasters) would result in a positive change of 0.726 in the dependent variable (financial technology).

4-5-2 Hypothesis Test for the First Sub-Hypothesis

The first sub-hypothesis: There is no statistically significant effect at the ($\alpha \leq 0.05$) significance level of natural disasters on banking operating systems in Jordanian commercial banks from the perspective of their employees.

Table NO.(4-8):Results of simple linear regression analysis for the first and sub-hypothesis.

Variables	Dependent Variable	Correlation Coefficient (R)	Coefficient of Determination (R2)	B Value	Constant B Value	BETA Value	Calculated t Value	Significance Level (Sig)
Independent Variable	Natural Disaster Risks	0.834	0.695	0.679	1.359	0.834	13.657	0.000
Dependent Variable	Banking Operating Systems							

Source: (Prepared by the researcher based on the results of SPSS statistical analysis)

The analysis confirmed that the calculated variance analysis for the t-test and significance level (SIG) were both statistically significant (with a calculated t value of 13.657 and a significance level of less than 0.05). The comparison of the significance level for the test with the level adopted in the study indicated a statistically significant effect of natural disaster risks on banking operating systems in Jordanian commercial banks, based on the perception of employees. The correlation coefficient (R) value of 0.834 indicated a strong positive relationship between the independent variable (natural disaster risks) and the dependent variable (banking operating systems), and the coefficient of determination (R2) value of 0.695 indicated that 69.5% of the variance in banking operating systems can be explained by natural disaster risks.

To determine the predictive ability of the equation, the B value was used to represent the expected change in the dependent variable in response to a change in the independent variable. The B value was found to be 0.679, indicating that a one-unit change in natural disaster risks would result in a positive change of 0.679 in banking operating systems.

The second sub-hypothesis tested whether there is a statistically significant effect of natural disaster risks on mobile banking services in Jordanian commercial banks, but the results are not provided in the text.

Table NO.(4-9) shows the results of a simple linear regression analysis for this sub-hypothesis.

Variables	Dependent Variable	Correlation Coefficient R	Coefficient of Determination R2	B Value	Constant B Value	BETA	Calculated t Value	Significance Level Sig
Independent	Natural Disaster Risks	0.692	0.479	0.567	1.757	0.692	1.757	0.000
Dependent	Mobile Banking Services							

Source: (Prepared by the researcher based on the results of statistical analysis using SPSS)

The results of the analysis confirm that the calculated t-test variance analysis value and the significance level (SIG) were checked to ensure the significance of the regression, and it was found that the calculated t-value (1.757) and the significance level are less than ($0.05 \geq \alpha$). The significance level of the test was compared with the significance level adopted in the study to demonstrate the statistical effect of the independent variable on the dependent variable. Table 4-9 shows that the significance level for t was (0.000), which is lower than the

adopted significance level in the study of (0.05), and therefore we reject the second null hypothesis and accept the alternative hypothesis that "there is a statistically significant effect at a significance level ($\alpha \leq 0.05$) of natural disasters on mobile banking services in Jordanian commercial banks from the perspective of their employees". The value of R in the table indicates the correlation between the independent variable and the dependent variable, and it shows in Table 4-9 the existence of a positive correlation between the independent variable of natural disaster risks and the dependent variable of mobile banking services, with a correlation coefficient value of 0.692, indicating a strong positive relationship.

The coefficient of determination (R2) value of 0.479 indicates the explanatory power of the independent variable of natural disaster risks on the dependent variable of mobile banking services, showing that the natural disaster risks variable can explain 47.9% of the variance in mobile banking services.

To determine the predictive power of the equation, the B value was relied upon, which represents the expected range of change in the dependent variable if there is a change in the independent variable. The table shows that the B value is (0.567), indicating that a one-unit change in the natural disaster risks variable will result in a positive change of (0.567) in mobile banking services.

4-5-4 Hypothesis Test Three

Null Hypothesis Three: There is no statistically significant effect at a significance level ($\alpha \leq 0.05$) of natural disasters on information security and safety in Jordanian commercial banks from the perspective of their employees.

Table NO.(4-10):Simple linear regression analysis results for hypothesis test three.

Variables	Dependent Variable	Correlation Coefficient R	Coefficient of Determination R2	B Value	Constant B Value	BETA	Calculated t Value	Significance Level Sig
Independent	Natural Disaster Risks	0.642	0.412	0.408	2.436	0.642	22.094	0.000
Dependent	Information Security and Safety							

Source: (Prepared by the researcher based on the results of SPSS statistical analysis)

The results of the analysis have confirmed that the calculated variance analysis value of the t-test and the significance level SIG were checked to confirm the significance of the regression. It was found that the calculated t-value (22.094) and the significance level were less than ($0.05 \geq \alpha$). The significance level for the test was compared with the significance level adopted in the study to indicate the statistical effect of the independent variable on the dependent variable. Table (4-10) shows that the significance level for t was (0.000), which is less than the significance level adopted in the study (0.05). Therefore, we reject the third sub-hypothesis and accept the alternative hypothesis, which states that "There is a statistically significant effect at a significance level of ($\alpha \leq 0.05$) of natural disasters on information security and safety in Jordanian commercial banks from the perspective of their employees". The value of R indicates the correlation between the independent and dependent variables, which is shown in Table (4-10) to have a positive strong correlation between the independent variable of natural disaster risks and the dependent variable of information security and safety, with a correlation coefficient value of 0.642. The coefficient of determination (R2) value of 0.412 represents the ability of the independent variable of natural disaster risks to explain 41.2% of the variance in information security and safety.

To understand the predictive power of the equation, the B value was relied upon, which represents the expected change in the dependent variable if there is a change in the independent variable. The table shows that the B value is (0.408), indicating that a one-unit change in natural disaster risks would result in a positive change in information security and safety (0.408).

Discussion of the results

- There is a statistically significant effect at a significance level of ($\alpha \leq 0.05$) of natural disaster risks on financial technology in Jordanian commercial banks from the perspective of their employees. The results have shown that there is an effect of natural disaster risks on financial technology in the commercial banking sector, and this effect is statistically significant. This proves the ability and impact of these risks on the banking sector and the strong relationship between the variables, which means that the effect of natural disaster risks is effective and will have an impact on Jordanian banks. The natural disaster risks have an explanatory power of 72.6%, indicating that 72.6% of the Jordanian banking sector can be explained by these risks, while the remaining proportion can be explained by other factors. The current study is consistent with the results of a study by (Lutresh, 2023), which showed the risks associated with the use of financial technology. The results are also consistent with the findings of a study by (Taibah, 2022), which showed the impact of financial technology risks and their management in the banking sector. The study is consistent with the results of a study by (Al-Anzi, 2021), which showed the impact of financial technology risks on electronic banking services. The study is also consistent with the findings of a study by (Al-Rabadi, 2021), which showed the impact of information technology risks on information system security.
- There is a statistically significant effect at a significance level of ($\alpha \leq 0.05$) of natural disasters on banking operations systems in Jordanian commercial banks from the perspective of their employees. There is a statistically significant effect of natural disaster risks, and the nature of the relationship between the variables is positive, indicating the lack of sufficient protection measures for banking operations in the event of natural disasters. Changes in the dimension of natural disaster risks contribute to changes in the dimension of banking operations. The dimension of natural disaster risks also has an explanatory power for the dimension of banking operations by 69.5%.
- There is a statistically significant effect at a significance level of ($\alpha \leq 0.05$) of natural disaster risks on mobile banking services in Jordanian commercial banks from the perspective of their employees. The statistical analysis results have shown that there is an effect of natural disaster risks on mobile banking services, and that these risks can have a relative impact on the services provided by commercial banks. The analysis of the results has also revealed a high relationship between the variables, indicating that improvements in protection measures and development methods will have a positive impact on overall performance. The results also indicate that natural disaster risks can explain 47.9% of mobile banking services, and that bank management is working to enhance the development of these systems to address these risks, but not at the required level. Despite the availability of alternative means of processing, the results have shown a clear impact of these disasters on the interruption of these operations.

- There is a statistically significant effect at a significance level of ($\alpha \leq 0.05$) of natural disaster risks on information security and safety in Jordanian commercial banks from the perspective of their employees. The statistical analysis results have shown that there is an effect of natural disaster risks on information security and safety, and that these risks can have an impact on the banking sector. The analysis of the results has also revealed a high relationship between the variables, indicating that significant improvements in information security and safety can be achieved through protective practices. The results also indicate that natural disaster risks can explain 41.2% of information security and safety, indicating a potential for achieving 41.2% of the desired level of information security and safety.

Recommendations

- Expand the use of the internet to provide electronic banking services and link them with electronic withdrawals to ensure that services remain available during disasters. Develop plans to improve the websites of commercial banks to facilitate customers' access to the required services.
- Work on improving the business environment and digital infrastructure of commercial banks and address some weaknesses related to service providers to avoid complete service interruption in the event of natural disasters.
- Connect with telecommunications companies through several wired and wireless ports to ensure that services remain operational during any natural disasters.
- Continue to conduct studies to monitor and measure the risks of financial technology and its applications and their ability to withstand natural disasters.

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