

Abdalmuttaleb M. A. Musleh Al-Sartawi  
Abdulnaser Ibrahim Nour  
Islam Abdeljawad *Editors*

# Business Resilience and Business Innovation for Sustainability

The Double-Edged Role of Artificial  
Intelligence and Other Disruptive  
Technologies

# **Studies in Systems, Decision and Control**

**Volume 587**

## **Series Editor**

Janusz Kacprzyk , Systems Research Institute, Polish Academy of Sciences, Warsaw, Poland

## **Editorial Board**

Dmitry A. Novikov, Institute of Control Sciences (Director), Russian Academy of Sciences, Moscow, Russia

Peng Shi, School of Electrical and Mechanical Engineering, University of Adelaide, Adelaide, SA, Australia

Jinde Cao, School of Mathematics, Southeast University, Nanjing, China

Marios Polycarpou, KIOS Research Center, University of Cyprus, Nicosia, Cyprus

Witold Pedrycz , Department of Electrical and Computer Engineering, University of Alberta, Edmonton, AB, Canada

The series “Studies in Systems, Decision and Control” (SSDC) covers both new developments and advances, as well as the state of the art, in the various areas of broadly perceived systems, decision making and control—quickly, up to date and with a high quality. The intent is to cover the theory, applications, and perspectives on the state of the art and future developments relevant to systems, decision making, control, complex processes and related areas, as embedded in the fields of engineering, computer science, physics, economics, social and life sciences, as well as the paradigms and methodologies behind them. The series contains monographs, textbooks, lecture notes and edited volumes in systems, decision making and control spanning the areas of Cyber-Physical Systems, Autonomous Systems, Sensor Networks, Control Systems, Energy Systems, Automotive Systems, Biological Systems, Vehicular Networking and Connected Vehicles, Aerospace Systems, Automation, Manufacturing, Smart Grids, Nonlinear Systems, Power Systems, Robotics, Social Systems, Economic Systems and other. Of particular value to both the contributors and the readership are the short publication timeframe and the worldwide distribution and exposure which enable both a wide and rapid dissemination of research output.

Indexed by SCOPUS, DBLP, WTI Frankfurt eG, zbMATH, SCImago.

All books published in the series are submitted for consideration in Web of Science.

Abdalmuttaleb M. A. Musleh Al-Sartawi ·  
Abdulnaser Ibrahim Nour · Islam Abdeljawad  
Editors

# Business Resilience and Business Innovation for Sustainability

The Double-Edged Role of Artificial  
Intelligence and Other Disruptive  
Technologies

*Editors*

Abdalmuttaleb M. A. Musleh Al-Sartawi  
College of Business and Finance  
Ahlia University  
Manama, Bahrain

Islam Abdeljawad  
An-Najah National University  
Nablus, Palestine, State of

Abdulnaser Ibrahim Nour  
Department of Accounting  
College of Business and Communication  
An-Najah National University  
Nablus, Palestine, State of

ISSN 2198-4182

ISSN 2198-4190 (electronic)

Studies in Systems, Decision and Control

ISBN 978-3-031-87583-0

ISBN 978-3-031-87584-7 (eBook)

<https://doi.org/10.1007/978-3-031-87584-7>

© The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Switzerland AG 2025

This work is subject to copyright. All rights are solely and exclusively licensed by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Switzerland AG  
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

If disposing of this product, please recycle the paper.

# Preface

Scholars, practitioners, and professionals consider business innovation as a necessity to minimize business risk. Through technological innovation, businesses can adapt to societal changes and reduce the impact of both internal and external threats and risks. Business resilience is the ability to deal with challenging conditions by ensuring the existence and prosperity of the organization. In today's rapidly evolving global landscape, businesses face unprecedented challenges and opportunities. The twin imperatives of building resilience against disruptions and driving innovation for sustainable growth have become paramount for long-term success. This book delves into the complex and often paradoxical role of artificial intelligence (AI) and other disruptive technologies in navigating this intricate terrain.

While AI and related technologies offer transformative potential for enhancing business resilience—from predictive analytics for risk mitigation to automated systems for operational continuity—they also present significant challenges. Ethical considerations, potential biases in algorithms, job displacement concerns, and the environmental impact of technology development all demand careful consideration. This double-edged sword requires a nuanced understanding to harness the benefits while mitigating the risks.

This book aims to provide a comprehensive exploration of this dynamic interplay between technology, resilience, and sustainability. It is targeted towards a diverse audience, including academics, students, researchers, business practitioners, policy-makers, and anyone interested in the intersection of technology, business strategy, and sustainable development.

We explore a range of critical topics, including but not limited to technological innovation and inclusivity, sustainable educational planning and integrating technology into educational development strategies, the impact of data analytics on business intelligence, financial technology and inventory management efficiency, augmented reality and digital marketing, and many more.

This work is intended to inspire critical thinking, foster collaboration, and contribute to a more informed and responsible approach to harnessing the power of technology for the benefit of both businesses and society.

Our hope is that this book will serve as a valuable resource for navigating the complex challenges and opportunities presented by AI and other disruptive technologies in the pursuit of sustainable business excellence.

Nablus, Palestine, State of

Dr. Abdulnaser Ibrahim Nour  
Dr. Islam Abdeljawad

# Contents

<b>Accounting Harmonization Dynamics in the Arab Middle Eastern Countries: A Comparative Analysis .....</b>	1
Muiz Abu Alia, Aladdin Dwekat, Mohammad Yaaqbeh, Bashar Fattouh, and Dana Hodali	
<b>AI at the Heart of Development: Revolutionizing Accounting Processes for Comprehensive Progress .....</b>	15
Bader AlTamimi, Nader AlTamimi, and Mohammad Abdallah	
<b>Artificial Intelligence in the Banking Industry: A Bibliometric and Directions Ahead .....</b>	23
Islam Abdeljawad, Muiz Abu Alia, Shorouq Flaifel, and Sanaa Zeidan	
<b>The Impact of Data Analytics on the Business Intelligence Technology .....</b>	37
Tamara Adel Al-maaithah, Dirar Abdelaziz Almaaithah, Al smadi Khalid, Tariq Khairo Issa Al Daabseh, Al'a Mohammed Fadel Al-junaidi, and Nour Abdulwahab Qatawneh	
<b>Does Implementing Lean Management Have the Potential to Affect the Performance of an Organization? .....</b>	51
Lama Ahmad Alsmadi, Khalid W. Wazani, and Qais Hammouri	
<b>The Moderating Role of Firm Size on the Relationship Between Intellectual Capital and Firm Performance Among Industrial Companies Listed on Palestine Exchange (PEX) and Amman Stock Exchange (ASE) for the Period 2016 to 2022 .....</b>	65
Ghassan Daas and Abeer Yahya	
<b>The Impact of Integrated Marketing Communications on the Purchasing Behavior of Telecommunications Customers .....</b>	83
Iyad A. A. Khanfar and Mohammad Musa	

<b>The Effect of Deferred Tax Assets and Tax Planning on Earnings Management: Evidence from a Stock Exchange .....</b>	99
Munia O. Abu Hammad and Mohammad H. Abu-Nassar	
<b>The Impact of Financial Technology on Inventory Management Efficiency .....</b>	113
Nader AlTamimi, Bader AlTamimi, and Mohammad Abdallah	
<b>The Effect of Changing Murabaha Rates on the Financial Performance of the Islamic Banks Listed on a Stock Exchange .....</b>	123
Nidal Mahmoud Al-Ramahi, Tareq Hammad Almubaydeen, and Mohammad Zyad Alasad	
<b>The Possibility of Islamic Banks Dealing with Tawarruq Disciplined by the Sharia Standard .....</b>	137
Suhail Al-Ahmad, Odeh Abdullah, Alaa Sartawi, and Khaled Alzeaideen	
<b>Determinants of Cash Holdings: Evidence from High Uncertainty Environment .....</b>	145
Islam Abdeljawad, Aya Abdelhaq, and Ezeya Shareef	
<b>The Effect of Corporate Governance and Tax Avoidance on Firm Value of Industrial and Service Companies .....</b>	159
Mohammad H. Abu-Nassar and Waed Mansour Qoqazeh	
<b>Board of Directors' Attributes and Quality of Sustainability Reports Among Industrial Companies and Banks Listed on a Stock Exchange .....</b>	177
Abdulnaser I. Nour, Areen Ahmad Dagher, Sara Basem Douglas, and Kamel Jebreen	
<b>Driving Customer Satisfaction: Exploring the Impact of Digital Banking Transformation in Banks .....</b>	199
Belal Yousef Aqel, Shoruq Flaifel, Sanaa Zeidan, and Mofeed Thaher	
<b>Examining the Relationship Between Hiring People with Disabilities and Customer Perspectives: Moderator Role of Physical Disability .....</b>	213
Mohammad Abuhashesh, Alaa Adnan Awad, Ra'ed Masa'deh, and Shafiq Al-haddad	
<b>The Effect of Brand on Consumer's Purchase Decision: Mobile Phones as a Case Study .....</b>	231
Iyad A. A. Khanfar and Ahmed Khozaimyah	
<b>Integration of Artificial Intelligence Along with AR and VR Ensure Prosperous Future in Digital Marketing .....</b>	253
Mai Mohammad Zakaria, Mohamed Doheir, and Norfaridatul Akmaliah Othman	

<b>Business Intelligence in Construction Companies as a Competitive Advantage: Insights from a Literature Review</b> .....	267
Qais I. Tanbour	
<b>Banks Profitability Determinants: Empirical Evidence from Developing Countries</b> .....	279
Muath Asmar, Hasan Farhood, and Safaa Jerab	
<b>Fintech and Financial Inclusion: A Bibliometric Analysis and Insights</b> .....	297
Islam Abdeljawad, Bilal Aqel, and Muiz Abu Alia	
<b>The Effect of Human Capital Disclosure in Integrated and Sustainable Reports on the Financial Performance of Companies Listed in a Stock Exchange</b> .....	311
Abdulnaser I. Nour, Taimaa Kharoub, and Aya Yahya	
<b>Improving Marketing Mix Elements with Artificial Intelligence: A Comprehensive Review</b> .....	327
Hanady Al-Zagheer, Qais Hammouri, Ayad Fadhil Altememi, and Ibrhim Abu Nahleh	
<b>Examining How the Quality of E-Government Services Influences Beneficiary Satisfaction: SANAD Application as a Case Study</b> .....	339
Zakaria Azzam and Ayser Abu Ghazaleh	
<b>Navigating Digital Banking Transformations: Insights from a Systematic Literature Review</b> .....	359
Belal Yousef Aqel and Rani Shahwan	
<b>The Impact of Individual's Characteristics and Access to the Telecommunication Infrastructure on Digital Financial Inclusion</b> .....	373
Duha Farouq Tanbour	
<b>Examining the Determinants of Postgraduate Students' Behavioral Intentions in Utilizing MOOCs for Advanced Learning</b> .....	383
Qais Hammouri, Mohamad Ahmad Saleem Khasawneh, Hanady Al-Zagheer, and Ibrahim Lewis Mukattash	
<b>The Impact of Marketing Mix Elements on the Purchase Decision: Flower Consumers as a Case Study</b> .....	391
Iyad A. A. Khanfar and Osama Muhammad Ibrahim	
<b>Enhancing Profitability Through Sustainability: Unveiling the ESG-Financial Performance Nexus in European Firms</b> .....	409
Aladdin Dwekat, Mohammad N. Yaaqbeh, and Zeena Mardawi	

<b>Application of Artificial Intelligence in Insurance Companies: A Bibliometric Review and Content Analysis .....</b>	423
Muath Asmar and Mohammad Jaradat	
<b>Does Internal Auditing Impact the Achievement of Sustainable Development in the Banking Industry? .....</b>	437
Kayed M. Tanbour and Abdulsader I. Nour	
<b>Unveiling the Dynamics of Business Intelligence: Definition, Components, Tools, and Data Mining .....</b>	457
Asmaa Jameel Al-Nawaiseh and Mahmoud Barakat Alnawaiseh	
<b>Mobile Payment Adoption: Challenges and Opportunities .....</b>	473
Islam Abdeljawad, Muiz Abu Alia, Na’el Musa, Alaa Jarrar, and Lina Yousef Wishahi	
<b>The Impact of a Company’s Accounting Income and Capital Structure on the Economic and Financial Sustainability—An Empirical Study on Industrial Companies Listed on the Palestine and Amman’s Stock Exchange During for the Period 2016–2022 .....</b>	487
Ghassan Daas and Maram Mashaqi	
<b>The Mechanism of Issuing Bonds and Financial Certificates and the Parties Involved in the Process .....</b>	509
Ahmad Habes Theyab AL-Mjali	
<b>The Effect of E-Performance Evaluation on Talent Management: A Conceptual Model .....</b>	523
Hanady Al-Zagheer, Qais Kilani, Qais Hammouri, and Ayad Fadhil Altememi	
<b>Enhancing Financial Integrity: The Role of Accounting Information Systems in Mitigating Creative Accounting Practices Among Industrial Companies Listed on a Stock Exchange .....</b>	533
Ziad Abdul Haleem Altheeb and Braa Adel Alqaise	
<b>Attracting Consumer Attention by Exploring the Effects of Sales Promotion Tools: A Case Study on Carrefour Customers .....</b>	543
Mustafa S. Al-Shaikh and Hadeel Mohammad Ahmad Shaza	
<b>The Impact of Digital Marketing Techniques on Purchasing Decisions of Services: Telecommunications Customers as a Case Study .....</b>	559
Iyad A. A. Khanfar and Rawaah Bassem Ahmed Al-Qaisi	

<b>The Determinants of Banks' Efficiency: A Comparative Study of Islamic and Conventional Banks Using Data Envelopment Analysis</b> .....	573
Islam Abdeljawad, Shatha Qamhieh Hashem, and Muna Ghaleb Mahmoud Nairat	
<b>Marketing Factors Influencing Customers' Purchasing Decisions: Pharmaceutical Products as a Case Study</b> .....	587
Zakaria Azzam and Dana Ali Joodeh	
<b>The Impact of Accounting Conservatism on the Profits of Insurance Companies Listed on a Stock Exchange During the COVID-19 Pandemic</b> .....	607
Ola Khresat and Khaldoun Omar Ali Al Khalayla	
<b>The Impact of Green Accounting Disclosure on the Financial Performance of European Industrial Companies During the Period 2010–2022</b> .....	621
Ghassan Daas and Nour Abu Ridi	
<b>Does Board Diversity Matter on Financial Performance?</b> .....	645
Abdulnaser I. Nour, Mohammad Talalweh, and Abdul-Hakeem Obeid	
<b>Utilizing Artificial Intelligence Techniques to Strengthen Marketing Campaign Resilience: A Proposed Model</b> .....	659
Hanady Al-Zagheer, Qais Hammouri, Hamza Ali ALShawabkeh, and Ibrhim Abu Nahleh	
<b>The Impact of Savings on Economic Growth: A Case Study</b> .....	671
Nidal Ali Abbas	
<b>The Impact of Digital Marketing on Customer Satisfaction in Tourism Companies: The Mediating Role of Perceived Value</b> .....	683
Iyad A. A. Khanfar and Qusay Khalaf Muhammad Al-Khawaldeh	
<b>The Relationship Between Internal Marketing Elements and Customer Satisfaction in Islamic Banks: The International Arab Islamic Bank as a Case Study</b> .....	705
Zakaria Azzam and Sameer Alissa	
<b>The Role of Administrative Communication in Achieving the Effectiveness of Administrative Decisions in Private Sector Institutions</b> .....	727
Jiries Abu Ghannam, Rawan Wael Siaj, and Khaled Alzeaideen	
<b>The Extent of Application of IFRS to SMEs: A Case Study of a Dairy Company</b> .....	737
Nidal Mahmoud Al-Ramahi, Alaa Ahmad Al-Mbaideen, and Tareq Hammad Almubaydeen	

<b>The Greening of Finance: Including Sustainability in the Banking Environment .....</b>	749
Islam Abdeljawad, Muiz Abu Alia, Aladdin Dwekat, and Samah Mohammed Herzallah	
<b>The Role of Service Marketing Mix Elements in Achieving Healthcare Service Quality: Hospitals Patients as a Case Study .....</b>	763
Zakaria Azzam and Manahil AlMaaytah	
<b>The Reality of Field Training for Social Work Students at University .....</b>	781
Wajde Omar Hassan Aljafari and Mahmoud Odeh	
<b>The Role of Language as Soft Power in International Relations: Analyzing Diplomatic Discourse and Public Communication Strategies .....</b>	791
Aref A. Murshed, Aladdin Tarawneh, and Mohammed Al-Badawi	
<b>The Impact of Internal Marketing Dimensions on Hotel Service Quality: A Field Study on Five-Star Hotels .....</b>	803
Iyad A. A. Khanfar and Adnan Owais	
<b>The Importance of Quality of Work Life (QWL) in Improving Job Performance Levels Among Employees in Government Institutions .....</b>	817
Jiries Abu Ghannam and Khaled Alzeaideen	
<b>Skilled Migration from Arab Countries .....</b>	827
Saqer Sulaiman and Ala Eddin Sadeq	
<b>The Presumptive Validity of Virtual Attorney Between Islamic Jurisprudence and Law .....</b>	837
Somoud Z. A. Abualhwar, Suhail Al-Ahmad, and Omar Al-Makhzoumi	
<b>The Impact of AI on Customer Service and Financial Decision-Making: The Perceptions of Bank Clients .....</b>	845
Islam Abdeljawad, Muiz Abu Alia, Taimaa Kharoub, and Sireen Abulrub	
<b>The Reality of Customer Satisfaction Regarding the Level of Services Provided by Retail Stores .....</b>	863
Jiries Abu Ghannam, Farah Qafisheh, and Mohammad Omar Sabri	
<b>Real Estate Zakat and Its Jurisprudential Rulings .....</b>	873
Fatima Al-Aroj, Suhail Al-Ahmad, and Anas Mohammad Awad Alkalaileh	

<b>The Impact of Unforeseen Circumstances on the Murabaha Contract for the Purchaser .....</b>	881
Ward Barmil, Suhail Al-Ahmad, and Tareq Hammad Almubaydeen	
<b>The Role of Language in Constructing and Reinforcing Political Identities .....</b>	889
Aref A. Murshed and Alalddin Al-Tarawneh	
<b>Impact of Transformational Leadership on Organizational Creativity Case Study of a Food and Drug Administration .....</b>	899
Amer Alsaraireh and Ahmed Mohamed Awad	
<b>The Impact of Service Quality Provided by Civil Society Organizations on Beneficiary Satisfaction: The Jordanian Hashemite Fund for Human Development as a Case Study .....</b>	911
Zakaria Azzam and Thuraiya Alkhuzam	
<b>The Reality of Human Resource Management Practices and Their Relationship with Employee Performance in Private Institutions .....</b>	931
Jiries Abu Ghannam and Khaled Alzeaideen	
<b>The Impact of Direct Marketing Tools on Purchasing Decision of Service (A Field Study of a Telecommunications Company's Customers) .....</b>	941
Iyad A. A. Khanfar and Amal Nedal Jawabreh	
<b>Technological Enhancements in the Criminal Protection of Patents .....</b>	959
Lubna Ahmed Kreishan	
<b>Technological Impact on the Evolution of Sentencing Practices in the Criminal Justice System: A Critical Analysis of Recent Legal Changes .....</b>	973
S. EI-Manaseer, Omar Almakhzoumi, Ali Awwad Aljabrah, and Jalal Hussein Hamdan Alkayid	
<b>World Trade Organization in the Era of Digital Transformation: A Comparative Study of Applying Core Principles in the Digital Context .....</b>	985
Omar Al Makhzoumi and Naif Abdullah Al-Amadi	
<b>The Intersection of Technology and Stock Redemption: Legal Frameworks and Practices .....</b>	1001
Yasar Alhiniti and Dina Aljabari	
<b>Reconciliation Provisions in Customs Crimes: A Comparative Study with Technological Integration .....</b>	1015
Mohammad Hussain Al-Ahmad and Suhayb Emad Al-Maaytah	

<b>The Role of Technology in Validating Arbitration Awards and Enhancing Commercial Security .....</b>	1027
Mohammad Mahmoud AlDaoud, S. El-Manaseer, Dema Matruk Aloun, Mohammad Basheer Arabyat, and Mohammad Ali Alsarhed	
<b>The Impact of Technology-Enhanced Governance Standards on Senior Employee Satisfaction in Banks .....</b>	1039
Khaled Jumah	
<b>The Future of Digitizing Manuscripts: Technological Visions and Trends .....</b>	1051
Alalddin Al-Tarawneh and Ali AlRahamneh	
<b>Enhancing Social Identity Through Technology-Enhanced National Education Programs .....</b>	1061
Adnan Saraerah	
<b>The Principle of Publicity in Criminal Trials: Legal Perspectives and Technological Integration .....</b>	1075
Lubna Ahmed Kreishan	
<b>The Impact of Job Benefits on Employee Performance: An Empirical Study .....</b>	1087
Khaled Alzeaideen and Mohammed Nayef Ahmed Al-Zawahreh	
<b>The Legal Frameworks for Patent Protection in the Digital Technology Era: An Analytical Study in Light of International Agreements .....</b>	1103
Omar Al Makhzoumi and Jaber Al-Ghayathin	
<b>Technological Innovations in Automated Fund Garnishment and Distribution Procedures .....</b>	1119
Ahmed Awad Al-bnian	
<b>The Role of Gamification Technology in Enhancing Cognitive Development in Educational Settings .....</b>	1131
Adnan Hassan Alsarayreh	
<b>Legal and Administrative Analysis of the Role of Foreign Technology Companies in Supporting Economic Development Through Digital Transformation .....</b>	1141
Yasar Alhiniti and Khalif Saleh Dhiab Amoush	
<b>The Difference Between Motion Verbs Behavior in English and Arabic .....</b>	1157
Wafa Abu Hatab, Wala'a Abuzir, and Mohammed Al-Badawi	

<b>Technological Influences on Radicalization and Strategies for Mitigating Violence .....</b>	1175
Aladdin Tarawneh and Alhareth Alhalalmeh	
<b>The Role of Intellectual Capital in Achieving Competitive Advantage: An Empirical Study of Pharmaceutical Manufacturing Companies .....</b>	1185
Majid Abdul-Mahdi Masadeh, Marah Masadeh, and Farah Masadeh	
<b>Modern Technology as a Tool for Copyright Protection: Evaluating the Effectiveness of Digital Solutions in the Electronic Environment .....</b>	1205
Omar Al Makhzoumi and Jaber Al-Ghayathin	
<b>Technology Transfer Contracts: From Definition to Legal Nature .....</b>	1219
Yasar Alhiniti and Ali Awda Allah Mohammed Al-Khazaleh	
<b>The Impact of Organizational Justice on Job Engagement Among Employees .....</b>	1235
Khaled Alzeaideen, Maan Hussein Mansour, and Munther Mohammed Al-Khalaydeh	
<b>The Impact of Implementing Tax Awareness Policies on Tax Payholders' Compliance: An Analytical Study .....</b>	1249
Mohyedin Hamza, Majed Almarie, Nasri Alwekhyan, Khaled Jbair, and Ahmad Obeid	
<b>Enhancing Accuracy in Digital Fingerprint Analysis: AI Comparative Study .....</b>	1259
Drishti Rajesh Kumar Sachan, Hemraj Shobharam Lamkuche, Kothrikalan Sehore, Maram Y. Al-Safarini, and Asma Sbair	
<b>Technological Advances in the Legal Framework for Continuous Crimes .....</b>	1271
Lubna Ahmed Kreishan	
<b>A Cross-Linguistic Investigation of Consonant and Vowel Distinctive Features: A Comparative Analysis between English and Arabic Sounds .....</b>	1283
Wafa Abu Hatab, Wala'a Abuzir, and Mohammed Al-Badawi	
<b>Distinguishing Between Treasury Stock and Redeemable Shares in Technology Firms: A Legal and Legislative Analysis .....</b>	1297
Yasar Alhiniti and Dina Aljabari	
<b>The Impact of Learning Platforms Technologies on Student Motivation and Engagement: A Psychological Perspective .....</b>	1311
Adnan Hassan Alsarayreh	

<b>Protection of Geographical Indications in the Digital Transformation Era: A Comparative Legal Study of International Legislation .....</b>	1323
Omar Al Makhzoumi and Salma Fathy Abdel Qader Abdel Halim	
<b>Integrating Technology in Arabic Language Instruction: Enhancing Learner Engagement and Proficiency .....</b>	1341
Mohammed Saleem Ismail Al-Mallahma	
<b>Key Motivational Factors Driving the Adoption of Buy Now, Pay Later (BNPL) .....</b>	1355
Ibha Rani, C. Nagadeepa, K. P. Jaheer Mukthar, and Hayel Khafajeh	
<b>Decentralized KYC: Enhancing Identity Verification with Blockchain Technology .....</b>	1363
Akshay Chouke, Hemraj S. Lamkuche, Faeyz Abuamria, Mousa Ajouz, Maram Y. Al-Safarini, and Sadi Irziqat	
<b>Revolutionizing Cardiovascular Disease Prediction with Advanced Retinal Imaging and AI-Driven Approaches .....</b>	1379
Hemraj Shobharam Lamkuche, Mohammad Kouali, and Mysara Rumman	
<b>The Impact of Foreign Technology Companies on the National Economy in the Age of Digital Transformation: An Analysis of Financial, Insurance, and Construction Sectors .....</b>	1395
Yasar Alhiniti and Khalif Saleh Dhiab Amoush	
<b>The Impact of Digital Transformation on Employee Creativity .....</b>	1405
Khaled Alzeaideen, Maan Hussein Mansour, and Fares Abdel Halim Nassar Al-Farawraa	
<b>The Legal Frameworks' Response to Technological Developments: Protecting Intellectual Property Rights in the Age of Digital Innovation .....</b>	1419
Omar Al Makhzoumi and Naif Abdullah Al-Amadi	
<b>The Influence of Hate Speech and Technology on Society .....</b>	1433
Aref A. Murshed and Alalddin Al-Tarawneh	
<b>Politeness in Courtroom Language from a Linguistic Perspective .....</b>	1445
Wafa Abu Hatab, Sarah Al-Refai, and Mohammed Al-Badawi	
<b>DEU: Data Encryption Utility Using Fully Homomorphic Scheme .....</b>	1457
Varun Verma, Manish Kumar Shukla, Aviral Yadav, Ala'a Al Sherideh, Hemraj Shobharam Lamkuche, Soumya Gaur, and Hanan Abu-Mariah	

<b>The Influence of Artificial Intelligence on Personalized Learning: Psychological Implications for Students .....</b>	1463
Adnan Hassan Alsarayreh	
<b>The Role of Technology in Enforcing Financial Penalties: Assessing Validity and Effectiveness .....</b>	1475
Ahmed Awad Al-Bnian	
<b>A Survey on Mobile Malware Detection Using Dynamic Techniques .....</b>	1487
Chanchal Sharma, Hemraj Shobharam Lamkuche, Emma Qumsiyeh, and Ala'a Al Sherideh	
<b>An Essay on Enhancing KYC Efficiency Through Distributed Ledger Technology and Decentralized Finance .....</b>	1501
Joan Merin Saji, K. P. Jaheer Mukthar, and Hayel Khafajeh	
<b>Bringing Together Machine Learning Techniques for Effective Phishing Email Detection .....</b>	1525
Prachi Sharma, Sajjad Ahmed, Hemraj Shobharam Lamkuche, Mutaz Rasmi Abu Sara, and Ala'a Al Sherideh	
<b>Legislation on Information Protection and Cybersecurity: Evaluating the Effectiveness of Policies in Addressing Cybercrime .....</b>	1535
Omar Al Makhzoumi and Abeer Zohair Said Saada	
<b>Semantic Ambiguity in BBC and CNN News Papers Headline .....</b>	1549
Wafa Abu Hatab, Sarah Al-Refai, and Mohammed Al-Badawi	
<b>The Role of International Arbitration in Settling Disputes Involving Foreign Technology Companies .....</b>	1563
Yasar Alhiniti and Khalif Saleh Dhiab Amoush	
<b>Beyond Password's: Context Aware Behavioral Biometrics for Continuous Authentication .....</b>	1579
M. Pon Dinesh Kumar, Subhash Chandra Patel, Hemraj Shobharam Lamkuche, Jamil Itmazi, and Ala'a Al Sherideh	
<b>MediBuddy: A Groundbreaking Approach to Patient-Centric Healthcare Through Decentralized Electronic Health Records and AI .....</b>	1601
Divij Katyal, Vishal Srivastava, Hemraj Shobharam Lamkuche, Ala'a Al Sherideh, and Muntaser S. Ahamd	
<b>CBS—Coolie Booking System: An AI Integrated System .....</b>	1613
Ojas Sachin Labhe, Aradhana Dada Mote, Indrayani Umesh Verulkar, Ala'a Al Sherideh, Garvit Mathur, Asma Sbaih, Hemraj Shobharam Lamkuche, and Rajneesh Kumar Patel	

<b>Teacher–Student Interactions in Online Classrooms: A Psychological Analysis of Technology-Mediated Communication .....</b>	1623
Adnan Hassan Alsarayreh	
<b>The Right of Public Servants to Strike .....</b>	1639
S. El-Manaseer, Waleed Mustafa Ali Altarawneh, Abdelaziz Alkhawatreh, and Jalal Hussein Hamdan Alkayid	
<b>Analysis of the Role of Geographical Indications in Enhancing Product Quality, Protection, and Digital Traceability: A Legal and Technological Study .....</b>	1651
Omar Al Makhzoumi and Salma Fathy Abdel Qader Abdel Halim	
<b>Evaluation of Legislation and Procedures for Foreign Technology Companies: A Comparative Analysis with Emphasis on Digital Transformation .....</b>	1663
Yasar Alhiniti and Khalif Saleh Dhiab Amoush	
<b>BEDVS—Biometric Enabled Digital Voting System .....</b>	1679
Akaash Sharma, Rishav Ranjan, Pavan Kunte, Raed Alazaidah, Abhishek Gupta, Yash Raj Singh, Hemraj Shobharam Lamkuche, and Mutaz Rasmi Abu Sara	
<b>Phablet Hashing Algorithm .....</b>	1693
Nihal Awasthi, Hemraj Shobharam Lamkuche, Raed Alazaidah, and Mutaz Rasmi Abu Sara	
<b>Sustainable Eating: Green Labeling on Grocery Purchasing Decisions .....</b>	1705
C. Nagadeepa, K. P. Jaheer Mukthar, and Hayel Khafajeh	
<b>The Impact of Interrogation-Friendly Questioning on Eyewitness Testimony in the Courtroom .....</b>	1715
Wafa Abu Hatab, Sara Raed Sowan, and Mohammed Al-Badawi	
<b>Blockchain-Based Knowledge Repository for Training Artificial Intelligence Models: Bridging AIML with Decentralized Data .....</b>	1723
Sumon Nath, H. Azath, Subhash Chandra Patel, Maram Y. Al-Safarini, Hemraj Shobharam Lamkuche, and Sadi Irziqat	
<b>Cybercrime Threats to Economic and Social Security: An Analytical Study .....</b>	1735
Omar Al Makhzoumi and Abeer Zohair Said Saada	
<b>Network Architecture Report for DVWA Testing Environment on Azure .....</b>	1749
Subhodeep Mukherjee, Hemraj Shobharam Lamkuche, Asma Sbahi, and Raed Alazaidah	

<b>Legal and Digital Regulations for Share Repurchase in Private Joint-Stock Companies: A Comparative Study with Emphasis on Technology Impact .....</b>	1763
Yasar Alhiniti and Dina Aljabari	
<b>The Impact of Green Human Resources on the Promotion of Social Responsibility Among Employees .....</b>	1777
Khaled Alzeaideen, Maan Hussein Mansour, Kafa Jalal Salman Hussein, and Odai Abd Alwahab Helal Alhamaideh	
<b>Assessing the Psychological Barriers to Technology Adoption in Education: Strategies for Overcoming Resistance .....</b>	1791
Adnan Hassan Alsarayreh	
<b>Digital Tools for Teaching Arabic: A Comparative Study of Traditional and Modern Approaches .....</b>	1807
Mohammed Saleem Ismail Al-Mallahma	
<b>Criminal and Digital Protection of Patent Rights: A Comparative Legal Analysis .....</b>	1819
Omar Al Makhzoumi and Mohammed Taher Mohammed Saleh	
<b>Enhancing IoT Security: A Machine Learning Approach for Intrusion Detection in the MQTT Protocol .....</b>	1831
Alisha Verma, Hemraj Shobharam Lamkuche, Emma Qumsiyeh, and Raed Alazaideh	
<b>Behavioral Profiling of Android Malwares: A Dynamic Analysis Approach .....</b>	1851
Sreshtha Bhushan, Soma Saha, Hemraj Shobharam Lamkuche, Ghassan Samara, and Jamil Itmazi	
<b>CCSAR—Cloud Computing Security Architecture and Risks .....</b>	1873
Prakhar Arora, Hemraj Shobharam Lamkuche, Hanan Abu-Mariah, and Ghassan Samara	
<b>Contrastive Analysis of Arabic-English Translation of Legal Texts .....</b>	1889
Wafa Abu Hatab, Malek Batran, and Mohammed Al-Badawi	
<b>Legal Regulations for Registering Foreign Technology Companies and Their Impact on the Investment Environment .....</b>	1903
Yasar Alhiniti and Khalif Saleh Dhiab Amoush	
<b>The Legal Dimensions of the Author's Electronic Copyright in the Era of Digital Transformation: Between Criminal Protection and Prevention .....</b>	1915
Omar Al Makhzoumi and Jaber Al-Ghayathin	

<b>Deep Dive into Malware Analysis and Their Behavior Patterns: A Systematic Technical Review</b> .....	1931
Srishti Singh, Hemraj Shobharam Lamkuche, Devraj Vishnu, Ghassan Samara, H. Azath, and Emma Qumsiyeh	
<b>Securing the Cloud Environment: A Defense Mechanism Against DDoS Attack</b> .....	1945
Khushbu Dadhe, Hemraj Shobharam Lamkuche, Emma Qumsiyeh, and Ghassan Samara	
<b>The Role of Virtual Reality in Promoting Psychological Well-Being in Educational Environments</b> .....	1961
Adnan Hassan Alsarayreh	
<b>Deep Learning Based Analysis of the Key Scheduling Algorithm of AES Cipher</b> .....	1973
Narendra Kumar Patel, Praveen Lalwani, Hemraj Shobharam Lamkuche, Ghassan Samara, and Hanan Abu-Mariah	
<b>Legal Responsibility of Service Providers in Cybercrime: A Legal Analysis and Recommendations for Improving Legislation and Mechanisms</b> .....	1987
Omar Al Makhzoumi and Abeer Zohair Said Saada	
<b>Anomaly Detection Technique for Network Intrusion Detection Using Ensemble Algorithm</b> .....	2001
Saniya Gouri, Devraj Vishnu, Rizwan ur-Rehman, Ghassan Samara, Hemraj Shobharam Lamkuche, and Sameh Taqatqa	
<b>Navigating the Digital Wealth Landscape: Opportunities and Challenges in WealthTech Adoption</b> .....	2011
Joan Merin Saji, K. P. Jaheer Mukthar, and Hayel Khafajeh	
<b>The Impact of Soft Skills on Organizational Citizenship Behavior</b> .....	2029
Khaled Alzeaideen, Maan Hussein Mansour, and Manal Ahmad Al-Khatib	
<b>Strategies for Regulatory Oversight of Foreign Technology Companies: A Comparative Study of International Experiences</b> .....	2045
Yasar Alhiniti and Khalif Saleh Dhiab Amoush	
<b>Forensic Framework for Deleted Media of WhatsApp on Windows</b> .....	2059
Shraddha Pandey, Rizwan Ur Rahman, Ajay Kumar Phulre, Ghassan Samara, Hemraj Shobharam Lamkuche, and Asma Sbair	

<b>Witness and Eyewitness Memory: Factors Influencing Testimony Accuracy</b> .....	2077
Wafa Abu Hatab, Bashar Jawdat Sawalmeh, and Mohammed Al-Badawi	
<b>Patent Protection in the Age of Technology: An Analytical Study of Original and Ancillary Penalties</b> .....	2085
Omar Al Makhzoumi and Jaber Al-Ghayathin	
<b>Screen Time and Cognitive Development: Understanding the Psychological Impact on Children in the Digital Age</b> .....	2099
Adnan Hassan Alsarayreh	
<b>Brain Tumor Identification Using MRI Images</b> .....	2111
Sidra Bano, Hemraj Shobharam Lamkuche, Mohammad Kouali, Raed Alazaidah, and Muntaser S. Ahmad	
<b>Intrusion Detection System Using Machine Learning Models</b> .....	2125
S. Mukil, N. D. Patel, Hemraj S. Lamkuche, Raed Alazaidah, and Sameh Taqatqa	
<b>Optimizing Cybersecurity Posture: Effective Risk Assessment and Improvement Strategies</b> .....	2141
Tanish Bhandwalkar, Hemraj Shobharam Lamkuche, Jamil Itmazi, and Ala'a Al Sherideh	
<b>The Types of Technology Transfer Contracts: A Comparison between Simple and Complex Contracts in the International Context</b> .....	2157
Yasar Alhiniti and Ali Awda Allah Mohammed Al-Khazaleh	
<b>Transformative Asset Management Strategies: Insights from NIST CSF</b> .....	2173
Shreeganesh D. Jadhav, Hemraj Shobharam Lamkuche, Mohammad Temeiza, and Ghassan Samara	
<b>Differences Between Geographical Indications and Trademarks: An Analytical Study of Practical Applications, Legal Protection, and Digital Transformation</b> .....	2189
Omar Al Makhzoumi and Salma Fathy Abdel Qader Abdel Halim	
<b>Digital Twin Application and Facilitation in the AEC Industry's Operation and Maintenance Stage</b> .....	2205
Sudhanshu Ranjan, Shahana Gajala Qureshi, S. Harihara Sitaraman, Ala'a Al Sherideh, Hemraj Shobharam Lamkuche, and Mahmoud Shakarna	
<b>Exploring the Use of AI-Powered Applications in Arabic Language Teaching and Assessment</b> .....	2217
Mohammed Saleem Ismail Al-Mallahma	

<b>Forensic Linguistics in the Courtroom: Analyzing Judge's Questions in DNA Test Disputes .....</b>	2229
Wafa Abu Hatab, Maram Issa, and Mohammed Al-Badawi	
<b>The Impact of Transformational Leadership and Technology on Job Satisfaction Within Work Premises .....</b>	2239
Khaled Alzeaideen, Nabil Saad Aldeen Baker Aljriri Alhusan, and Waed Jamil A. Al Rawashdeh	
<b>Blockchain-Enabled Solar Energy Trading: Enhancing Efficiency and Transparency .....</b>	2255
Matrupriya Dibyanshu Panda, Hemraj Shobharam Lamkuche, Mohammad Temeiza, and Maram Y. Al-Safarini	
<b>The Ethics of AI in Education: A Psychological Perspective on Bias and Fairness .....</b>	2267
Adnan Hassan Alsarayreh	
<b>Criminal Liability of Partners in Cybercrimes: An Analytical Study of Legislation, Legal Challenges, and Technological Developments .....</b>	2281
Omar Al Makhzoumi and Abeer Zohair Said Saada	
<b>Revolutionizing Space Exploration and Satellite Communication with Blockchain Technology .....</b>	2297
Ravi Shankar, Hemraj Shobharam Lamkuche, Mohammad Temeiza, and Maram Y. Al-Safarini	
<b>Legal Oversight of Foreign Technology Companies: Effectiveness and Challenges .....</b>	2307
Yasar Alhiniti and Khalif Saleh Dhiab Amoush	
<b>A Novel Model for Crop Disease Detection Using CNN .....</b>	2321
G. Komarasamy, R. Ganeshan, Murad Zeer, and Maram Y. Al-Safarini	
<b>Influence of Behavioral Biases on Women Investor's Portfolio Performance .....</b>	2335
Mamatha S. Updayay, C. Nagadeepa, K. P. Jaheer Mukthar, and Hayel Khafajeh	
<b>Consumer Protection in E-Commerce: A Study of the Deceptive Advertising and Electronic Fulfillment of Contracts .....</b>	2345
Yasar Alhiniti, Walaa Ahmed Muhammad Ali Al-Masry, and Abeer Mazen Alamatayreh	
<b>An Efficient Healthcare Monitoring System Using IoT .....</b>	2357
G. Komarasamy, R. Ganeshan, Ahmed Abdou, Maram Y. Al-Safarini, and Mohammad Kouali	

<b>Socio-Technical Systems in Social Security: Balancing Automation and Human Interaction for Beneficiary Services</b> .....	2369
Ali Alrahamneh, Aref A. Murshed, and Al-Hareth Alhalalmeh	
<b>Digital Transformation in the Banking Sector and Its Impact on Borrowers' Rights Protection: An Analytical Study</b> .....	2383
Yasar Alhiniti and Muhammad Nader Doshan Al-Madi	
<b>The Role of Technology in Preserving Indigenous Cultures and Languages</b> .....	2399
Aref A. Murshed, Ali alrahamneh, Al-Hareth Alhalalmeh, and Mohammed Al-Badawi	
<b>The Influence of Automated Content Generation on Decision-Making Processes in Digital Media</b> .....	2411
Ali Alrahamneh, Aref A. Murshed, and Al-Hareth Alhalalmeh	
<b>Psychological Well-Being in the Age of Connectivity: Examining the Influence of Social Media and Digital Interaction</b> .....	2423
Saed Salah Alfraih	
<b>Analysis of the Legal Framework for Electronic Contracts: Challenges and Opportunities</b> .....	2437
Yasar Alhiniti and Walaa Ahmed Muhammad Ali Al-Masry	
<b>Sustainable Educational Planning: Integrating Technology into Educational Development Strategies</b> .....	2451
Safeyah Tawil and Alalddin Al-Tarawneh	
<b>An Efficient Method for Biometric Based Music Experiences Using Machine Learning</b> .....	2465
G. Komarasamy, R. Ganeshan, Murad Zeer, and Maram Y. Al-Safarini	
<b>Blended Learning in Arabic Language Classrooms: Opportunities and Challenges</b> .....	2483
Mohammed Saleem Ismail Al-Mallahma	
<b>Language, Technology, and Human Agency: Exploring the Impact of AI on Autonomous Decision-Making</b> .....	2497
Ali alrahamneh, Aref A. Murshed, Al-Hareth Alhalalmeh, and Mohammed Al-Badawi	
<b>Digitization and Laws Related to Loans: A Comparative Study Between Bank Loans, Mortgage Loans, and Syndicated Loans</b> .....	2507
Yasar Alhiniti, Muhammad Nader Doshan Al-Madi, and Abeer Mazen Alamayreh	
<b>Development and Design of Training Programs: The Role of Technology in Enhancing Implementation and Evaluation</b> .....	2519
Safeyah Tawil and Alalddin Al-Tarawneh	

<b>Human-Technology Interaction: Exploring the Psychological Implications of AI and Automation in the Workplace .....</b>	2533
Saed Salah Alfraih	
<b>Advanced Fire Detection Using Machine Learning .....</b>	2545
G. Komarasamy, R. Ganeshan, Ayushi Singh, Maram Y. Al-Safarini, and Ahmed Abdou	
<b>The Impact of Technological Advancements on Human Social Structures: An Anthropological Analysis .....</b>	2563
Aref A. Murshed, Ali alrahamneh, Al-Hareth Alhalalmeh, and Mohammed Al-Badawi	
<b>Legal Analysis of E-Commerce Stores: Definitions, Characteristics, and Challenges in Light of Global Legislation .....</b>	2575
Yasar Alhiniti and Walaa Ahmed Muhammad Ali Al-Masry	
<b>Bank Interest Rates: Exploring Legal Foundations and Digital Transformations .....</b>	2589
Yasar Alhiniti and Muhammad Nader Doshan Al-Madi	
<b>Cybersecurity in Social Security Systems: Addressing the Risks of Digitalization .....</b>	2601
Ali Alrahamneh, Aref A. Murshed, and Al-Hareth Alhalalmeh	
<b>The Impact of Virtual Reality on Human Perception and Cognition: A Psychological Analysis .....</b>	2613
Saed Salah Alfraih	
<b>The Impact of Linguistic Framing on Decision-Making in AI Systems .....</b>	2625
Ali Alrahamneh, Aref A. Murshed, Al-Hareth Alhalalmeh, and Mohammed Al-Badawi	
<b>An Efficient Method for Soil Content Detection .....</b>	2637
G. Komarasamy, R. Ganeshan, Nilay Rawal, Maram Y. Al-Safarini, and Mahmoud Shakarna	
<b>E-Commerce and Legal Practices: An Examination of Legislation and Challenges Related to Digital Activities .....</b>	2649
Yasar Alhiniti and Walaa Ahmed Muhammad Ali Al-Masry	
<b>Educational Training and Its Policies in Saudi Arabia: Enhancing Technical Skills and Implementing Technology in Training Program Development .....</b>	2665
Safeyah Tawil and Alalddin Al-Tarawneh	

<b>Digital Divide and Social Inequality: An Anthropological Perspective on Technology Access .....</b>	2679
Aref A. Murshed, Ali Alrahamneh, Al-Hareth Alhalalmeh, and Mohammed Al-Badawi	
<b>JFO-HMSA RPL: A Hybrid Energy Efficient Routing Protocol for IoT using the Jellyfish Optimization Algorithm .....</b>	2689
Kannan Shanmugam, Xavier Suresh, R. Ganeshan, Ashraf Shaqadan, and Ahmed Abdou	
<b>Digital Transformation and its Impact on Sustainable Development: An Analytical Study .....</b>	2707
Amer Alsaraireh and Haya Riad Jaradat	
<b>Study of the Impact of Interest Rates on Inflation, Savings, and Economic Growth: A Technical and Statistical Analysis .....</b>	2721
Yasar Alhiniti and Muhammad Nader Doshan Al-Madi	
<b>Impact of Multilingual AI on Decision-Making .....</b>	2733
Ali Alrahamneh, Aref A. Murshed, Al-Hareth Alhalalmeh, and Mohammed Al-Badawi	
<b>Integrating Technology into Education: How Technology Makes a Difference in Classrooms .....</b>	2747
Safeyah Tawil and Aladdin Tarawneh	
<b>Law and E-Commerce: Understanding the Legal Classifications of Electronic Stores .....</b>	2761
Yasar Alhiniti and Walaa Ahmed Muhammad Ali Al-Masry	
<b>Digital Anthropology: Navigating Human Behavior in Virtual Environments .....</b>	2777
Aref A. Murshed, Ali Alrahamneh, Al-Hareth Alhalalmeh, and Mohammed Al-Badawi	
<b>Psychological Resilience in the Digital Age: Coping Strategies for Navigating Technological Stressors .....</b>	2787
Saed Salah Alfraih	
<b>Intelligent Computing in Artificial Intelligence Based on Neural Inspiration .....</b>	2797
G. Komarasamy, R. Ganeshan, Suraj Raghuvanshi, Ashraf Shaqadan, and Khaled Sabarna	
<b>A Comparative Analysis of Cyber Vulnerabilities Across Relational, Document, and Cloud Databases .....</b>	2809
Shibam Karmakar, Hemraj Shobharam Lamkuche, R. Ganeshan, Ashraf Shaqadan, and Sameh Taqatqa	

<b>Adjustments in Interest Rates and Their Impact on Overall Economic Performance: A Technical and Legal Analysis .....</b>	2825
Yasar Alhiniti and Muhammad Nader Doshan Al-Madi	
<b>The Impact of Multilingual Conversational AI Tools on Shaping User's Choices and Preferences .....</b>	2841
Ali Alrahamneh, Aref A. Murshed, Al-Hareth Alhalalmeh, and Mohammed Al-Badawi	
<b>Technological Advancements in Arabic Language Pedagogy: Bridging the Gap Between Tradition and Innovation .....</b>	2855
Mohammed Saleem Ismail Al-Mallahma	
<b>Post Quantum Cryptography: Preparing for the Quantum Era .....</b>	2869
Agnibha Chakraborty, Mohammad Kouali, and Ashraf Shaqadan	
<b>Consumer Protection and E-Commerce Stores in the Digital Age: A Legal Perspective .....</b>	2885
Yasar Alhiniti and Walaa Ahmed Muhammad Ali Al-Masry	
<b>The Ethics of AI in Mental Health: A Psychological Examination of Digital Therapeutic Interventions .....</b>	2899
Saed Salah Alfraih	
<b>Digital Transformation in Social Security Institutions: Enhancing Efficiency and Accessibility Through Technology .....</b>	2911
Ali Alrahamneh, Aref A. Murshed, Al-Hareth Alhalalmeh, and Mohammed Al-Badawi	
<b>Technology and Rituals: The Transformation of Traditional Practices in the Digital Age .....</b>	2925
Aref A. Murshed, Ali Alrahamneh, Al-Hareth Alhalalmeh, and Mohammed Al-Badawi	
<b>Sentiment Analysis in Social Media Texts Using NLP .....</b>	2937
G. Komarasamy, R. Ganeshan, Murad Zeer, and Ashraf Shaqadan	
<b>Educational and Administrative Planning in the Digital Age: Integrating Technology to Improve Academic and Administrative Performance .....</b>	2949
Safeyah Tawil and Alalddin Al-Tarawneh	
<b>Technological Innovation and Inclusivity: Ensuring Equitable Access to Social Security Services in the Digital Age .....</b>	2963
Ali Alrahamneh, Aref A. Murshed, and Al-Hareth Alhalalmeh	
<b>Legal Frameworks for Protecting Consumer Rights in E-Commerce: A Digital Age Perspective .....</b>	2975
Yasar Alhiniti and Walaa Ahmed Muhammad Ali Al-Masry	

<b>Fertility Support of PCOS with Machine Learning .....</b>	<b>2991</b>
M. Xavier Suresh, R. Ganeshan, Aditi Babar, Ashraf Shaqadan, and Khaled Sabarna	
<b>The Role of Artificial Intelligence in Modernizing Social Security Systems: Implications for Data Security and Privacy .....</b>	<b>3005</b>
Ali Alrahamneh, Aref A. Murshed, and Al-Hareth Alhalalmeh	
<b>A Study: Future Perspectives of Artificial Intelligence in Complex Health Monitoring .....</b>	<b>3017</b>
Kannan Shanmugam, S. Gomathi, R. Roopa Chandrika, Ashraf Shaqadan, R. Ganeshan, and Khaled Sabarna	

# Banks Profitability Determinants: Empirical Evidence from Developing Countries



Muath Asmar , Hasan Farhood , and Safaa Jerab 

**Abstract** This paper examines the profitability bank determinants in developing countries. Using balanced panel data from 22 operational commercial banks in Palestine and Jordan between 2011 and 2021, a linear model between the theoretically stated characteristics of commercial banks and their profitability is computed. The study reveals that the non-debt tax shield, tangibles, inflation, capital sufficiency, and leverage of commercial banks in Palestine and Jordan have a negative impact on their return on asset. By delivering actual evidence from a developing nation environment, the paper contributes to the body of knowledge and provides guidance to bank managers and policymakers on how to improve financial performance in emerging markets. The findings highlight how crucial it is to keep up strict regulatory frameworks and responsible management techniques in order to guarantee the stability and financial success of banks in these countries.

**Keywords** Banks' profitability · Developing countries

## 1 Introduction

A bank functions as a pivotal institution dedicated to managing financial and monetary activities, encompassing deposits, loans, investments, and currency exchange. Its multifaceted roles are integral to the economy, encompassing the provision of essential financial services, fostering economic expansion, optimizing resource allocation, minimizing transaction expenses, fostering liquidity, facilitating investment economies of scale and reducing financial risks. Given the critical significance of this sector, ensuring its sustained effectiveness is imperative.

---

M. Asmar 

Department of Finance, Faculty of Business and Communication, An-Najah National University, Nablus, Palestine  
e-mail: [asmar@najah.edu](mailto:asmar@najah.edu)

H. Farhood · S. Jerab

Master of Finance, Faculty of Graduate Studies, An-Najah National University, Nablus, Palestine

Optimal financial performance not only enhances the market value of a particular organization but also fosters industry-wide growth, thereby contributing to the overall economic success. By driving efficiencies, fostering innovation, and enhancing competitiveness, superior financial performance plays a pivotal role in advancing not just individual firms but the collective prosperity of entire economies [1, 2].

Bank performance has been a significant concern for several decades because of its strong connection to the economy [3]. As a form of financial middleman, banks are absolutely necessary for the continued growth and development of an economy [4]. Banks constitute a cornerstone of any country's financial system and actively participate in its financial markets. In an era marked by globalization, the repercussions of a significant bank failure transcend national borders. As the global financial crisis of 2008 demonstrated, the consequences of such failures can spread quickly and widely across international borders in addition to impeding development and economic growth inside the afflicted nation [5].

Several studies that attempted to investigate profitability of bank determinants in developing countries [e.g., 6–9]. Although these studies focused on the bank's profitability determinants in emerging countries, however determinants of bank profitability in developing countries of Palestine and Jordan receive less attentions. Palestine has particular political and economic circumstances [10–12] in addition to high rates of unemployment [13]. Jordan has tremendous difficulties and economic problems due to a variety of causes, including as high unemployment, strain on natural resources, and regional instability [14]. Furthermore the banking sector is considering as the largest financial intermediaries and play an important role in the economic cycle in these countries [15].

This paper has the potential to greatly assist decision-makers in improving financial and managerial effectiveness as well as preventing underperformance. Through figuring out what the main variables affecting banks' profitability are, this study can furnish valuable insights for strategic decision-making aimed at enhancing overall bank performance. Moreover, the findings of this research can serve as a comparative framework for other scholars, facilitating cross-country comparisons between the variables affecting bank profitability in Jordan, Palestine, and other nations.

The rest of this paper is structured as flowing: the next section shows a background and literature review. Section 3 delineates our chosen variables and research methodology, elucidating the framework within which our analysis is conducted. In Sect. 4, we present the findings derived from our empirical analysis, shedding light on the factors that significantly impact bank profitability. These findings are then synthesized and interpreted to draw meaningful conclusions in Sect. 5. Additionally, we offer actionable suggestions based on our findings, providing practical recommendations for stakeholders in the banking industry to optimize performance and foster sustainable growth.

## 2 Literature Review

Academic scholars have focused a lot of emphasis on bank profitability determinants since the 1970s. Several studies focused on the bank specific factors [4, 9] while other studies seeks to examine the macroeconomic determinants of bank performance [16, 17]. A research by Kanapiyanova, Faizulayev [18] intends to investigate the factors that influence banking stability in emerging nations, with a particular emphasis on social and governmental responsibility factors. Ren et al. [19] have considered the effects of digital transformation on bank profit efficiency, while Djalilov and Piesse [6] Analyze the variables that affect bank profitability in the early transition countries of Central and Eastern Europe (CEE) and the late transition countries of the former USSR. The majority of these studies were conducted on private conventional banks. Recent studies have focused on Islamic banks [20, 21]. Other studies have focused on the public sector banks [22].

The factors influencing banks' profitability hold significant theoretical and practical relevance. Despite this, limited research has delved into unraveling the precise determinants of profitability within the banking sector. Moreover, existing studies present a mosaic of findings, lacking consistency. This study aims to scrutinize key factors highlighted in previous research [2, 23–26]. Previous studies have mostly focused on internal variables like size, liquidity, leverage, and that are under management's authority. Furthermore, the effects of outside factors on the profitability of banks have been examined, such as inflation and GDP growth. The non-debt tax shield, tangibility, and bank capital adequacy are also included in this analysis as potential contributing factors.

### 2.1 Non-debt Tax Shield (NDTS)

The use of non-debt financing as a tax shield is a fundamental concept in finance theory. Essentially, when a company takes on debt, it incurs interest payments which are tax- deductible expenses. This implies that the business can lessen its tax burden by reducing its taxable revenue by deducting the interest it has paid on its loan [27].

The non-debt tax shield (NDTS) refers to the tax benefits that companies, including banks, can obtain without increasing their debt level. By utilizing various provision and deductions available in the tax laws, companies can reduce their taxable income and increase their after-tax profits. The profitability of banks may benefit from the non-debt tax shield [27].

Based on Feld, Heckemeyer [27] in this paper the authors investigate the factors that influence corporate tax avoidance specifically within the banking sector. Through empirical analysis, the authors examine various determinants such as bank size, profitability, leverage, regulatory environment, financial structure, and international operation to understand the dynamics of tax planning strategies employed by banks. The study sheds light on how banking regulations, tax low, and financial structures

impact tax avoidance behavior, providing valuable insights into the complexities of tax management within the banking industry. For instance, Graham et al. [28] proposes analyzing the conservatism of debt policies by evaluating if loss carryover, investment tax credits, and depreciation are included in non-debt tax shields.

It is crucial to remember that the effect of non-debt tax shields on bank profitability can differ based on a number of variables, including the bank's size, the applicable tax jurisdiction, and the particular tax laws. Additionally, tax laws and regulations are subject to change, requiring banks to adopt their strategies accordingly to optimize their tax positions and profitability.

Overall, non-debt tax shields provide opportunities for banks to reduce their tax burdens and increase their after-tax profits. By effectively utilizing these tax benefits and implementing sound tax planning strategies, banks can enhance their profitability in a tax efficient manner [29]. Thus, the following hypothesis is formulated:

$H_1$ : Bank profitability in Palestine and Jordan has a relationship with Non-Debt tax shield.

## 2.2 *Tangibility*

Previous research has repeatedly demonstrated a favorable correlation between profitability of a company and the assets tangibility. Ahmeti and Iseni [30] found that their findings validated the theory regarding the connection between physical assets and the performance of insurance businesses in Kosovo. The positive tangible asset coefficient, which shows a positive link between tangible assets and the success of insurance enterprises, lends credence to their theory. However, it is noteworthy that this relationship deemed statistically insignificant [28]. Additionally, Dhiab's [29] analysis revealed a favorable connection between profitability and tangibility in the Saudi insurance market. Isayas [2] recognized a positive association between tangibility and profitability in banks within the Ethiopian context.

Numerous studies have revealed a negative association between tangibility and business profitability. For instance Yadav et al. [31] shown that in the Asia-Pacific markets, tangibility and profitability had a negative connection. Furthermore, Gharaibeh and Khaled [32] determined that, particularly in the Jordanian context, elements that negatively affect profitability include debt to assets, company risk, and tangible assets. As a result, the second hypothesis is:

$H_2$ : Bank profitability in Palestine and Jordan has a relationship with tangibility.

## 2.3 *Capital Adequacy*

Of the numerous research projects examining the connection between capital sufficiency and organizational profitability, Weersainghe and Perera [33] revealed a negative relationship between profitability and capital adequacy. Also Serwadda and Isah [34] found that there was a negative correlation between profitability and capital

sufficiency. On other hand Căpraru and Ihnatov [24] show that in a selected Central and Eastern European nations, capital adequacy and profitability were positively correlated [24]. Also Menicucci and Paolucci [25] found that the European banking industry's capital adequacy and profitability were positively correlated. Farkasdi et al. [35] found that profitability and capital adequacy from Germany were positively correlated. Accordingly, the third hypothesis follows:

H<sub>3</sub>: Bank profitability in Palestine and Jordan has a relationship with Capital adequacy.

## 2.4 *Size*

Of the numerous research examining the connection between corporation profitability and size, Derbali [36] carried a research that showed a strong correlation between Moroccan banks' size and profitability. Koroleva et al. [37] found that there was a favorable correlation between Chinese enterprises' profitability and size. Saif-Alyousfi [5] found that, in 47 Asian nations, there was a favorable relationship between the size and businesses profitability. In addition, Neupane [38] indicate that the size and profitability of Nepalese commercial banks were positively correlated in their research. On other hand Vera-Gilces et al. [39] revealed that their research, carried out in a developing nation that has adopted the dollar, showed a negative relationship between size and profitability. Thus, the fourth hypothesis states that:

H<sub>4</sub>: Bank profitability in Palestine and Jordan has a relationship with size.

## 2.5 *Liquidity*

Isayas [2] revealed that there is a positive correlation between profitability and liquidity in Ethiopian banks, which is in line with the other studies that have investigated the relation between corporate profitability and liquidity. In their Bangladeshi study. Rahman et al. [40] found a favorable correlation between profitability and liquidity. In their Zimbabwean study, Sanderson and Le Roux [41] revealed a favorable relationship between profitability and liquidity. Furthermore, in their study carried out in Malawi, Lipunga and Accounting [42] found a favorable association between profitability and liquidity. However, Almaqtari et al. [43] found that there was a negative correlation between profitability and liquidity in Indian commercial banks. Petria et al. [26] found that there was a negative relationship between profitability and liquidity in the banking systems of the member states of the European Union.

H<sub>5</sub>: Bank profitability in Palestine and Jordan has a relationship with liquidity.

## 2.6 Leverage

Among the myriad of research investigating the connection between corporate profitability and leverage, Isayas (2022) revealed a positive connection between leverage and profitability in Ethiopia [2]. Also Saber Said Al-Delawi and Change [44] discovered a positive connection between leverage and profitability among Iraqi Private Commercial Banks in their research. On other hand Farooq et al. [45] identified a negative connection between leverage and profitability in Pakistan. Alarussi and Gao [23] reported a negative connection between leverage and profitability in China. Nguyen and Nguyen [46] documented a negative connection between leverage and profitability using data from Vietnam. The sixth hypothesis is:

$H_6$ : Bank profitability in Palestine and Jordan has a relationship with leverage.

## 2.7 External Factors

The inflation and gross domestic product (GDP) are two examples of external variables that impact bank profitability [2].

### Gross domestic product

Isayas [2] revealed a positive association between GDP and profitability in Ethiopia. Furthermore, in their cross-country research, Le and Ngo [47] revealed a positive relationship between GDP and profitability. From 47 Asian nations. Saif-Alyousfi [5] discovered a positive relationship between GDP and profitability. A positive connection between GDP and bank profitability was also discovered by Athari [1]. The following is the seventh hypothesis:

$H_7$ : Bank profitability in Palestine and Jordan has a relationship with gross domestic product.

### Inflation

Athari [1] discovered a positive connection between inflation and bank profitability in Ukraine, which is consistent with the other research investigating the connection between business profitability and inflation. Furthermore, Saif-Alyousfi [5] discovered a positive connection between 47 Asian nations' inflation and profitability. However, in their cross-country research, Le and Ngo [47] found a negative connection between inflation and profitability. Furthermore, Isayas [2] discovered a negative connection between Ethiopian profitability and inflation. The last supposition is:

$H_8$ : Bank profitability in Palestine and Jordan has a relationship with inflation.

### 3 Research Methodology

The collection of data, sampling strategy, research model, measurement of variable, and analysis are the main topics of this section.

#### 3.1 Data

Data is gathered from banks' annual reports, which include an income statement and statement of financial situation, and are available on the websites of the Jordan Stock Exchange and the Palestine Stock Exchange between 2011 and 2021. Based on the data that was available, twenty-two banks were considered appropriate for the research. A balanced panel data set with 234 observations makes up the final data set.

#### 3.2 Measurement of Variables

This paper components were measured using previous literature as a guide. The independent and dependent variables are shown in Table 1.

**Table 1** Measurement of variables

Type of variable	Variables	Variable Measurement
Dependent	Profitability measured by (ROA)	Net income divided by total assets
	Profitability measured by (ROE)	Net income divided by total equity
Independent variables	Non-debt tax shield (NDTS)	Annual depreciation expense divided by total assets
	Tangibility (TAN)	Fixed tangible assets divided by total assets
	Capital adequacy (CA)	Total equity divided by total asset
	Size	Total asset natural log
	Liquidity (LIQ)	Current assets divided by Current liabilities
	Leverage (LEV)	Total debt divided by total assets
	Gross domestic product (GDP)	Growth of the economy for a country. World Bank indicators
	Inflation (INF)	Annual change in the consumer price index. World Bank indicators
	Country dummy (CD)	1 if the company located in Jordan, 0 otherwise

The research's hypotheses are examined by the estimate of the subsequent linear model.

$$\begin{aligned} \text{profitability} = & B_0 + B_1 \text{NDTS} + B_3 \text{TAN} + B_4 \text{CA} + B_5 \text{size} \\ & + B_6 \text{LIQ} + B_7 \text{LEV} + B_8 \text{GDP} + B_9 \text{INF} \\ & + B_{10} \text{CD} + \epsilon \end{aligned} \quad (1)$$

where

- e: error term
- NDTS: Non-Debt tax shield
- TAN: Tangibility
- CA: Capital adequacy
- Size: size of banks
- LIQ: Liquidity
- LEV: leverage
- GDP: Gross domestic product
- INF: Inflation rate
- CD: Country dummy.

In this study, we employed a conventional ordinary least square framework (OLS) to estimate the results using random effect or fixed effect based on the Hausman Test results.

## 4 Finding

This section contains the study's conclusions. The findings of correlation analysis and descriptive statistics are first shown, and then the topic of model estimation is covered.

### 4.1 Correlation Analysis

Table 2 displays correlation coefficients that shed light on the relationships between several sets of data. According to the table, Return on Assets (ROA) exhibits a positive correlation with Capital Adequacy, Liquidity, GDP, and Inflation, while displaying a negative correlation with Non-Debt Tax Shield, Tangible Assets, Size, and Leverage. Moreover, the relationships among the independent variables generally demonstrate low magnitudes, suggesting the absence of multicollinearity issues in subsequent regression analyses.

**Table 2** Pairwise correlations

	ROA	ROE	NDT	TAN	CA	SIZE	LIQ	LEV	GDP	INF	COUNT
ROA	1										
ROE	0.526	1									
NDT	— 0.104	— 0.286	1								
TAN	— 0.193	— 0.310	0.962	1							
CA	0.034	— 0.574	0.523	0.505	1						
SIZE	— 0.028	0.314	— 0.730	— 0.727	— 0.500	1					
LIQ	0.430	— 0.214	0.569	0.444	0.639	— 0.602	1				
LEV	— 0.053	0.569	— 0.344	— 0.345	— 0.873	0.399	— 0.474	1			
GDP	0.115	0.174	0.039	0.099	0.029	— 0.144	— 0.067	— 0.071	1		
INF	0.032	0.092	— 0.082	— 0.076	— 0.026	0.058	— 0.117	— 0.079	0.428	1	
COUNT	0.043	0.064	— 0.345	— 0.422	— 0.144	0.531	— 0.238	— 0.026	— 0.098	0.289	1

## 4.2 Descriptive Statistics

For the return on assets (ROA) and return on equity (ROE) which are dependent variables, Table 3 presents descriptive statistical measures such as standard deviation, mean, maximum, median, and minimum. It also includes several independent variables, such as non-debt tax shield, tangibility, capital adequacy, bank size, liquidity, leverage, GDP growth, and inflation.

The ROA range for commercial banks in Palestine and Jordan is  $-0.074$  to  $0.082$  at the highest, while the ROE runs from  $-0.085$  to  $0.082$  at the minimum during the observed period. The mean ROE is  $6.8\%$ , whereas the mean ROA is  $1\%$ . Furthermore, the average leverage is around  $5.681$  and the average capital adequacy is  $25.3\%$ . These descriptive data shed important light on the financial makeup and operations of the commercial banks that are the subject of the investigation.

**Table 3** Descriptive Statistical variables of the study

	Mean	Median	Maximum	Minimum	Std. Dev	Observations
ROA	0.010	0.011	0.082	– 0.074	0.011	234
ROE	0.068	0.077	0.164	– 0.085	0.047	234
NDT	0.003	0.002	0.032	0.001	0.004	234
TAN	0.057	0.023	0.962	0.005	0.127	234
CA	0.253	0.141	0.910	0.075	0.252	234
SIZE	21.092	21.295	24.042	16.246	1.439	234
LIQ	2.329	1.188	33.754	0.671	3.887	234
LEV	5.681	6.073	12.401	0.099	3.143	234
GDP	0.054	0.047	0.166	– 0.093	0.049	234
INF	0.019	0.016	0.048	– 0.009	0.019	234
COUNT	0.658	1	1	0	0.475	234

### 4.3 Estimation Results

Table 4 shows regression results from different model of the study, with four variants outlined. Models 1 and 3 employed Panel Least Squares, while Models 2 and 4 utilized Cross-section random effects.

The R-squared values indicate that the models account for approximately 27.4 to 48.9% of the total variability in both Return on Assets (ROA) and Return on Equity (ROE). These findings suggest that the selected independent variables collectively contribute to explaining a substantial portion of the variation observed in the dependent variables across the Palestinian and Jordanian commercial banks studied.

The observed positive relationship between bank size and Return on Equity (ROE) align with prior research findings by Derbali [36] and Koroleva et al. [37]. These scholars attribute this relationship to factors influencing profitability within the banking sector. Similarly, the negative relationship between Capital Adequacy and profitability resonates with the findings of Lanka [33] and Serwadda [34], who offer explanations rooted in profitability determinants.

Furthermore, the negative and significant relationship between leverage and ROE echoes the conclusions drawn by Khan [45] and Alarussi [23]. Conversely, the lack of significance for Non-Debt Tax Shield, Tangibility, and inflation in their negative impact on profitability relationship with the findings of Yadav et al. [31] and Le [47].

Moreover, the positive and significant relationship between liquidity, Gross Domestic Product (GDP), and profitability are in line with the research outcomes of Isayas [2], Abdeljawad and Bahlaq [48] and Rahman et al. [40], highlighting the consistent influence of these factors on enhancing profitability within the banking industry. Use random effect for model 2 and model 4 because prop is Correlated Random Effects—Hausman Test 1.000 as presented in Table 5.

**Table 4** Estimation results

Model	(ROA) model 1	(ROA) model 2	(ROE) model 3	(ROE) model 4
Variable	Coefficient	Coefficient	Coefficient	Coefficient
NDT	− 0.669	− 1.080	1.107	− 1.549
	(0.643)	(− 0.945)	(0.400)	(− 0.497)
TAN	− 0.009	− 0.002	− 0.033	0.023
	(0.021)	(− 0.045)	(− 0.368)	(0.270)
CA	− 0.022***	− 0.017**	− 0.094***	− 0.084
	(0.006)	(− 2.130)	(− 3.879)	(− 1.676)
SIZE	0.001	0.001	0.008***	0.007
	(0.001)	(0.874)	(2.773)	(0.851)
LIQ	0.003***	0.003***	0.004***	0.004***
	(0.000)	(3.699)	(3.965)	(3.048)
LEV	− 0.001*	0.000	0.003**	0.003
	(0.000)	(− 0.814)	(1.905)	(0.917)
GDP	0.051***	0.050***	0.242***	0.223**
	(0.013)	(2.752)	(4.447)	(2.479)
INF	− 0.016	− 0.015	0.067	0.054
	(0.034)	(− 0.520)	(0.460)	(0.387)
COUNT	0.000	0.001	− 0.004	0.003
	(0.002)	(0.604)	(− 0.537)	(0.185)
C	− 0.007	− 0.004	− 0.125**	− 0.102
	(0.014)	(− 0.253)	(− 2.023)	(− 0.579)
Observations	234.000	234.000	234.000	234.000
R-squared	0.468	0.489	0.462	0.274
Adjusted R-squared	0.447	0.469	0.440	0.245
Durbin-Watson stat	1.654	1.813	0.660	1.003
F-statistic	21.903	23.822	21.346	9.417
Prob (F-statistic)	0	0	0	0
Cross-section random effects	No	Yes	No	Yes

ROA is the dependent variable. Robust standard errors in parentheses

\*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1

**Table 5** The Hausman Test for model 2 and model 4

Correlated random effects—Hausman Test (model 2 & 4)			
Equation: untitled			
Test cross-section random effects			
Test summary		Chi-Sq. Statistic	Chi-Sq. d.f
Cross-section random	0	8	1.000

Table 6 illustrates the relationships between various factors and profitability for both Palestine and Jordan separately. In Palestine, a negative and significant relationship exists between Non-Deferred Taxes (NDTs) and asset tangibility with the return on assets (ROA). Conversely, firm size, liquidity, and GDP exhibit a positive and significant relationship with both ROA and return on equity (ROE).

In Jordan, leverage and current assets (CA) demonstrate a negative and significant relationship with both ROA and ROE. On the other hand, GDP shows a positive and significant relationship with overall profitability.

## 5 Conclusions

This study delved into the determinants shaping the profitability decisions of commercial banks in Palestine and Jordan. It found that factors such as Tangibility, Capital Adequacy, Leverage, Non-Debt Tax Shield, and inflation exhibit an inverse relationship with profitability among Palestinian and Jordanian commercial banks. Conversely, the size of banks, Liquidity, and Gross Domestic Product (GDP) demonstrate a positive relationship with profitability.

Moreover, the findings underscore the significance of information asymmetry as the primary driver influencing financing decisions within commercial banks. The study suggests that firm boards and policymakers should prioritize efforts to enhance information dissemination and foster trust in disclosed information to mitigate the impact of this asymmetry on profitability outcomes.

It is essential to recognize the limitations of the study, including its small sample size, which impedes the findings' capacity to be applied outside of Palestine and Jordan. Future research endeavors could address this limitation by broadening the scope of the study to encompass a more diverse range of countries, thereby providing a comprehensive understanding of how various variables impact the profitability of commercial banks on a global scale.

**Table 6** The sample split between Palestine and Jordan

	(ROA) model 1 Palestine		(ROA) model 2 Palestine		(ROE) model 3 Palestine		(ROE) model 4 Palestine		(ROA) model 5 Jordan		(ROE) model 6 Jordan		(ROE) model 7 Jordan		(ROE) model 8 Jordan	
Variable	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
NDT	-2.000 (-1.511)	-1.796** (-5.472)	-5.054 (-1.203)	-0.488 (-0.160)	0.820 (1.602)	0.472* (0.744)	6.040 (1.632)	3.081 (0.657)								
TAN	0.011 (0.236)	-0.088** (-5.906)	0.234 (1.559)	-0.112 (-0.877)	-0.013 (-0.247)	-0.105 (-1.434)	-0.068 (-0.178)	-0.687 (-1.248)								
CA	0.015 (0.731)	0.060 (0.868)	-0.077 (-1.206)	0.012 (0.069)	-0.011 (-1.414)	-0.008 (-0.732)	-0.186*** (-3.163)	-0.108 (-1.232)								
SIZE	-0.001 (-0.248)	0.002 (0.641)	0.023** (2.463)	0.021 (1.597)	0.000 (0.829)	0.000 (0.534)	0.004 (1.300)	0.005 (0.747)								
LIQ	0.002*** (3.751)	0.000 (0.480)	0.007*** (3.612)	0.001 (0.342)	-0.002* (-1.648)	-0.001 (-0.652)	0.006 (0.769)	0.004 (0.387)								
LEV	0.001 (1.107)	0.000 (-0.427)	0.005 (1.252)	-0.006 (-1.421)	-0.002*** (-5.187)	-0.001** (-2.497)	-0.005** (-1.916)	0.002 (0.574)								
GDP	0.055** (2.332)	0.044 (1.402)	0.185*** (2.485)	0.181*** (3.414)	0.063*** (4.150)	0.065*** (4.693)	0.503*** (4.553)	0.510*** (5.225)								
INF	-0.128 (-0.810)	-0.122 (-1.091)	0.265 (0.529)	-0.530 (-1.209)	-0.015 (-0.731)	-0.012 (-0.673)	-0.143 (-0.936)	-0.126 (-0.974)								
C	0.011 (0.195)	-0.025 (-0.330)	-0.453** (-2.551)	-0.306 (-1.176)	0.014 (1.250)	0.010 (0.571)	0.000 (0.003)	-0.038 (-0.283)								
Observations	80,000	80,000	80,000	80,000	154,000	154,000	154,000	154,000								
R-squared	0.562	0.680	0.597	0.831	0.352	0.261	0.456	0.287								

(continued)

**Table 6** (continued)

	(ROA) model 1 Palestine	(ROA) model 2 Palestine	(ROE) model 3 Palestine	(ROE) model 4 Jordan	(ROA) model 5 Jordan	(ROE) model 6 Jordan	(ROE) model 7 Jordan	(ROE) model 8 Jordan
Variable	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Adjusted R-squared	0.512	0.605	0.551	0.791	0.317	0.220	0.426	0.248
Durbin-Watson stat	1.979	2.345	0.933	1.591	0.803	1.018	0.701	0.977
F-statistic	11.373	9.062	13.140	20.989	9.858	6.393	15.207	7.300
Prob (F-statistic)	0	0	0	0	0	0	0	0
Cross-section fixed or random or none effects	None	Fixed	None	Fixed	None	Random	None	Random

ROA and ROE are Dependent variables. Robust standard errors in parentheses  
\*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1

## References

1. Athari, S.A.: Domestic political risk, global economic policy uncertainty, and banks' profitability: evidence from Ukrainian banks. *Post Communist Econ.* **33**(4), 458–483 (2021)
2. Isayas, Y.N.: Determinants of banks' profitability: Empirical evidence from banks in Ethiopia. *Cogent Econ. Financ.* **10**(1), 2031433 (2022)
3. Veeramoothoo, S., Hammoudeh, S.: Impact of Basel III liquidity regulations on U.S. Bank performance in different conditional profitability spectrums. *N. Am. J. Econ. Financ.* **63**, 101826 (2022)
4. Asmar, M.: Effects of bank-specific factors on the net interest margin of working banks in Palestine. *J. Econ. Manag.* **33**, 5–24 (2018)
5. Saif-Alyousfi, A.Y.H.: Determinants of bank profitability: evidence from 47 Asian countries. *J. Econ. Stud.* **49**(1), 44–60 (2022)
6. Djalilov, K., Piesse, J.: Determinants of bank profitability in transition countries: what matters most? *Res. Int. Bus. Financ.* **38**, 69–82 (2016)
7. Saona, P.: Intra- and extra-bank determinants of Latin American Banks' profitability. *Int. Rev. Econ. Financ.* **45**, 197–214 (2016)
8. Ben Selma Mokni, R., Rachdi, H.: Assessing the bank profitability in the MENA region. *Int. J. Islam. Middle East. Financ. Manag.* **7**(3), 305–332 (2014)
9. Ali, M., Puah, C.H.: The internal determinants of bank profitability and stability. *Manag. Res. Rev.* **42**(1), 49–67 (2019)
10. Asmar, M., Al-Thaher, M., Shraim, O.: Ownership structure effect on the stock returns for companies listed in Palestine exchange. *Jordan J. Bus. Adm.* **20**(1) (2023)
11. Nour, A.I., Najjar, M., Al Koni, S., Abudiak, A., Noor, M.I., Shahwan, R.: The impact of corporate governance mechanisms on corporate failure: an empirical evidence from Palestine exchange. *J. Account. Emerg. Econ.* **14**(4), 771–790 (2024). <https://doi.org/10.1108/JAEE-10-2022-0283>
12. Alia, M.A., Asmar, M., Ali, F.H.: The relationship between disclosure quality and firm performance: evidence from companies listed in Palestine exchange. In: *Explore business, technology opportunities and challenges after the Covid-19 pandemic*. Springer International Publishing, Cham (2023)
13. Abed, H., Asmar, M.: E-Recruitment in Palestine: a study into applicant perceptions of an online application system. *An-Najah Univ. J. Res. B (Hum.)* **37**(6), 1205–1230 (2023)
14. Alabdullah, T.T.Y., Asmar, M.: Under COVID-19 pandemic impact: do internal mechanisms play fundamental role in corporations' outcomes. *Bus. Ethics Lead.* **6**(1), 83–91 (2022)
15. Asmar, M., Farhood, H.: Financial distress determinants: empirical evidence from insurance companies operating in Palestine and Jordan. In: Musleh Al-Sartawi, A.M.A., Nour, A.I. (eds.) *Artificial intelligence and economic sustainability in the era of industrial revolution 5.0*, pp. 619–632. Springer Nature Switzerland, Cham (2024)
16. Abaidoo, R., Anyigba, H.: Bank performance variability and strands of inflationary conditions. *Eur. J. Manag. Bus. Econ.* **29**(3), 235–253 (2020)
17. Ozili, P.K., Ndah, H.: Impact of financial development on bank profitability. *J. Econ. Adm. Sci.* **40**(2), 238–262 (2024)
18. Kanapriyanova, K., et al.: Does social and governmental responsibility matter for financial stability and bank profitability? Evidence from commercial and Islamic banks. *J. Islam. Account. Bus. Res.* **14**(3), 451–472 (2023)
19. Ren, X., et al.: Does digital transformation increase bank profit efficiency? Evidence from China. *Pac. Basin Financ. J.* **86**, 102388 (2024)
20. Alharbi, A.T.: Determinants of Islamic banks' profitability: international evidence. *Int. J. Islam. Middle East. Financ. Manag.* **10**(3), 331–350 (2017)
21. Chowdhury, M.A.F., Rasid, M.E.S.M.: Determinants of performance of Islamic banks in GCC countries: dynamic GMM approach. In: Mutum, D.S., Butt, M.M., Rashid, M. (eds.) *Advances in Islamic finance, marketing, and management*, pp. 49–80. Emerald Group Publishing Limited (2016)

22. Kantharia, N.J., Biradar, J.: What influence the performance of banks? Evidence from public sector banks in India. *J. Indian Bus. Res.* **15**(1), 23–39 (2023)
23. Hirzallah, M.R., Nour, A.I., Daas, G., Nour, M.I.: Evaluating technical efficiency of insurance firms operating in Jordan and Palestine. In: Musleh Al-Sartawi, A.M.A., Nour, A.I. (eds.) *Artificial intelligence and economic sustainability in the era of industrial revolution 5.0. Studies in systems, decision and control*, vol. 528, pp. 491–509 (2024). Springer, Cham. [https://doi.org/10.1007/978-3-031-56586-1\\_36](https://doi.org/10.1007/978-3-031-56586-1_36)
24. Căpraru, B., Ihnatov, I.: Banks' profitability in selected central and eastern European countries. *Procedia Econ. Financ.* **16**, 587–591 (2014)
25. Menicucci, E., Paolucci, G.: The determinants of bank profitability: empirical evidence from European banking sector. *J. Financ. Report. Account.* **14**(1), 86–115 (2016)
26. Petria, N., Capraru, B., Ihnatov, I.: Determinants of banks' profitability: evidence from EU 27 banking systems. *Procedia Econ. Financ.* **20**, 518–524 (2015)
27. Fares, Z., Nour, A.I.: The determinants of solvency for insurance companies listed on the Palestine exchange. In: Musleh Al-Sartawi, A.M.A., Nour, A.I. (eds.) *Artificial intelligence and economic sustainability in the era of industrial revolution 5.0. Studies in systems, decision and control*, vol. 528, pp 271–281. Springer, Cham (2024). [https://doi.org/10.1007/978-3-031-56586-1\\_21](https://doi.org/10.1007/978-3-031-56586-1_21)
28. Graham, J.R., et al.: Tax rates and corporate decision-making. *Rev. Financ. Stud.* **30**(9), 3128–3175 (2017)
29. Abualhassan, S.A., Nour, A.I., Atout, S., et al.: Does corporate governance moderate the impact of earnings management on capital structure of the listed corporations on Palestine and Amman Bourses. *Discov. Sustain.* **5**(1), 8 (2024). <https://doi.org/10.1007/s43621-024-00229-y>
30. Ahmeti, Y., Iseni, E.: Factors affecting profitability of insurance companies: evidence from Kosovo. *Acad. Int. Sci. J.* **13**(25), 122–142 (2022)
31. Yadav, I.S., Pahi, D., Gangakhedkar, R.: The nexus between firm size, growth and profitability: new panel data evidence from Asia-Pacific markets. *Eur. J. Manag. Bus. Econ.* **31**(1), 115–140 (2022)
32. Gharaibeh, O., Khaled, M.: Determinants of profitability in Jordanian services companies. *Invest. Manag. Financ. Innov.* **17**(1), 277–290 (2020)
33. Weersinghe, V.E.I.W., Perera, T.R.: Determinants of profitability of commercial banks in Sri Lanka. *Int. J. Arts Commer.* **2**(10), 141–170 (2013)
34. Serwadda, I.: Determinants of commercial banks' profitability: evidence from Hungary. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis* **66**(5), 1325–1335 (2018)
35. Farkasdi, S., Septiawan, B., Alghifari, E.S.: Determinants of commercial banks profitability: evidence from Germany. *JRAK* **13**(2), 82–88 (2021)
36. Derbali, A.: Determinants of the performance of Moroccan banks. *J. Bus. Socio Econ. Dev.* **1**(1), 102–117 (2021)
37. Koroleva, E., Jigeer, S., Miao, A., Skhvediani, A.: Determinants affecting profitability of state-owned commercial banks: case study of China. *Risks* **9**(8), 150 (2021)
38. Neupane, B.P.: Profitability determinants of Nepalese commercial banks. *Pressacademia* **12**(1), 40–45 (2020)
39. Vera-Gilces, P., et al.: A look inside banking profitability: evidence from a dollarized emerging country. *Q. Rev. Econ. Finance* **75**, 147–166 (2020)
40. Rahman, M.M., Hamid, M.K., Khan, M.A.M.: Determinants of bank profitability: empirical evidence from Bangladesh. *Int. J. Bus. Manag.* **10**(8), 135 (2015)
41. Abel, S., Le Roux, P.: Determinants of banking sector profitability in Zimbabwe. *Int. J. Econ. Financ. Issues* **6**(3), 845–854 (2016)
42. Mohammad, R., Nour, A.I., Al-Atoot, S.M.: Risk and reward: unraveling the link between credit risk, governance and financial performance in banking industry. *J. Islam. Mark.* (2024). <https://doi.org/10.1108/JIMA-11-2023-0378>
43. Almaqtari, F.A., Al-Homaidi, E.A., Tabash, M.I., Farhan, N.H.: The determinants of profitability of Indian commercial banks: A panel data approach. *Int. J. Financ. Econ.* **24**(1), 168 (2019)

44. Saber Said Al-Delawi, A.: Determinants of profitability in commercial banks: a field study in a sample of the Iraqi private commercial banks. *Int. J. Innov. Creat. Chang.* **6**(2), 266–287 (2019)
45. Farooq, M., Khan, S., Siddiqui, A.A., Khan, M.T., Khan, M.K.: Determinants of profitability: a case of commercial banks in Pakistan. *Hum. Soc. Sci. Rev.* **9**(2), 1–13 (2021)
46. Nguyen, T.N.L., Nguyen, V.C.: The determinants of profitability in listed enterprises: a study from Vietnamese stock exchange. *J. Asian Financ. Econ. Bus.* **7**(1), 47–58 (2020)
47. Le, T.D.Q., Ngo, T.: The determinants of bank profitability: a cross-country analysis. *Cent. Bank Rev.* **20**(2), 65–73 (2020)
48. Abdeljawad, I., Bahlaq, A.: Determinants of net interest margin for banks operating in Palestine. *An-Najah Univ. J. Res. B (Hum.)* **37**, 1565–1594 (2023)