

**Arab American University
Faculty of Graduate Studies
Department of Natural, Engineering
and Technology Science
Master Program in Data Science and Business
Analytics**



“Blockchain Technology for Mitigating Tax Fraud in Palestine”

Rema Rafat Mohammad Odeh

202012313

Supervision Committee:

Dr. Mahmoud Saleh Mahmoud Obaid

Dr. Rami Mohammad Awad Hadrob

Dr. Ahmad Ewais

Dr. Dr. Firas Murar

**This Thesis Was Submitted in Partial Fulfillment of
the Requirements for the Master Degree in
Data Science and Business Analytics**

Palestine, February / 2025

©Arab American University. All rights reserved.

Arab American University
Faculty of Graduate Studies
Department of Natural, Engineering
and Technology Science
Master Program in Data Science and Business
Analytics



Thesis Approval





“Blockchain Technology for Mitigating Tax Fraud in Palestine”

Rema Rafat Mohammad Odeh

202012313

This thesis was defended successfully on 13.2.2025 and approved by:

Thesis Committee Members:

Name	Title	Signature
1. Dr.Mahmoud Obaid	Main Supervisor	
2. Dr. Rami Hadrob	Co- Supervisor	
3. Dr. Ahmad Ewais	Member of Supervision Committee	
4. Dr. Firas Murar	Member of Supervision Committee	

Palestine, February/ 2025

Declaration

I declare that, except where explicit reference is made to the contribution of others, this thesis is substantially my own work and has not been submitted for any other at the Arab American University or any other institution.

Student Name: Rema Rafat Mohammad Odeh

Student ID: 202012313

Signature: Rema Odeh

Date of Submitting the Final Version of the Thesis: 20.7.2025

Dedication

I would like to dedicate this thesis to the greatest love of my life, to the woman who will always be my idol, my GREAT MOTHER.

To my loving brothers, and wonderful sister, I dedicate this achievement to you with a special and great feeling of gratitude. Thank you for your encouragement and for always being there for me.

To all my friends, thank you is not enough....

Rema Rafat Mohammad Odeh

Acknowledgments

My deepest gratitude and respect to my supervisors, Dr. Mahmoud Obaid, and Dr. Rami Hadrob, for their time, patience, efforts, guidance, support, and encouragement during the thesis preparation, and for their expertise and for greatly contributing to the development of this thesis.

Also, convey my Thanks to my Examiners, Dr. Firas Murrar, and Dr. Ahmad Owais, for their invaluable comments to introduce the thesis in a Proper way.

Rema Rafat Mohammad Odeh

Blockchain Technology for Mitigating Tax Fraud in Palestine

Rema Rafat Mohammad Odeh

Supervision Committee:

Dr. Mahmoud Saleh Mahmoud Obaid

Dr. Rami Mohammad Awad Hadrob

Dr. Ahmad Ewais

Dr. Firas Murar

Abstract

Frustration with the attempts of tax fraud in a conventional way during this time with the technological revolution will result in results that may not be satisfactory, believable, or doubtable due to declining VAT collection, delays in the payment of owed taxes, inefficiencies, and fictitious invoices. Therefore, reach for reasonable of reliability and accuracy percent in turnover of revenues from tax shall be real income for public treasury. Mitigating the tax fraud affects which considering the most critical concerns for whom responsible about decision making of tax collection in Ministry of Finance in Palestine, for its essential factor to provide well life for the citizens and contribute in desired level of improvement in the public services. monitoring the phenomenon of tax fraud aligning with the emerging technology through one of the current trend is blockchain a core technology in taxation, through approaches qualitative and quantitative consisting of data collection, interviewee selection, interviews, data collection and financial reports, documentary review, built questionnaire sections, sample design, data reliability, validity and analysis, processing, exploring, visualizing utilized SPSS, Microsoft Excel, to describe the current situation of tax collection under the conventional revenue management system (RMS) and propose Tax Payment Model (PBTP) for Ministry of Finance in Palestine based on blockchain technology. the result of this study indicate that can be deployed (PBTP) in tax administration regrading due to its significant features related to decentralized, immutability, consensus mechanism, smart contracts and will be raising the level of impose constraints in order to ensure compliance at taxation and to achieve benefits for our national revenue.

keywords: Blockchain, Decentralized, Distributed ledger, Fraud, Taxation.

Table of Contents

#	Title	Page
	Declaration.....	I
	Dedication.....	II
	Acknowledgments	III
	Abstract.....	IV
	List of Tables	X
	List of Figures.....	XII
	List of Appendices	XIV
	List of Definitions of Abbreviations.....	XV
	Chapter One: Introduction	1
1.1	The Research Problem.....	2
1.2	Research Questions.....	2
	Chapter Two: Theoretical Framework Blockchain Technology and Tax Administration Models	3
2.1	Significance of the Study.....	3
2.2	Objective of this Study	3
2.3	Research Methodology	3
2.4	Research Approach	4
2.5	Data Reliability.....	4
2.6	Data Collection	4
2.7	Sample Design.....	5
2.8	Validity	5

2.9 Data Analysis	5
2.10 Proposed Tax Administration System Models Based on Blockchain	5
2.11 Literature Review	6
2.11.1 Blockchains in Tax Administration: Case Studies Around the World	7
2.12 Blockchain and Distributed Ledger Technology	14
2.12.1 Impact of Blockchain on Business Models.....	19
2.12.2 Tax Administration in Palestine	24
Chapter Three: Methodology.....	25
3.1 Research Methodology and Proposed Model	25
3.2 Research Approach	25
3.3 Data Collection	27
3.3.1 Interviewees Selection	28
3.3.2 Interviews.....	28
3.4 Sample Design	29
3.5 Data Reliability	33
3.6 Validity	36
3.6.1 Dimension #1: Demographic	37
3.6.2 Dimension #2: Current Understanding and Usage of Blockchain.....	37
3.6.3 Dimension #3: Perception of Blockchain in Tax Fraud Mitigation.....	37
3.6.4 Dimension #4: Potential Challenges and Barriers	38
3.6.5 Dimension #5: Implementation and future outlook.....	38
3.7 Chi-Square Test of Independence.....	39
3.7.1 Chi-Square Test of the Relationship Between Profession and the Cost of Adopting Blockchain Technology	39

3.7.2 Chi-Square Test of the Relationship Between Profession and the Necessity of Pilot Projects.....	40
3.7.3 Chi-Square Test Between Profession and Significant Reduction of Tax Fraud....	40
3.7.4 Chi-Square Test Examining the Relationship Between Profession and the Perceived Impact of Blockchain on Long-Term Tax Fraud.....	41
3.7.5 Chi-Square Test of Job Role and Age	41
3.7.6 Chi-Square Test of Age and the Decentralization Feature of Blockchain Technology	42
3.7.7 Chi-Square Test of Age and Regulatory Issues in Adopting Blockchain Technology	42
3.7.8 Chi-Square Test of Experience and the Decentralization Feature of Blockchain Technology	43
3.7.9 Chi-Square Test Examining the Relationship Between Familiarity with Blockchain Technology and Profession.....	43
3.7.10 Chi-Square Test on the Familiarity with Blockchain Technology in the Supply Chain Domain	43
3.7.11 Chi-Square Test on Familiarity with Blockchain Technology in the Finance Domain.....	44
3.7.12 Chi-Square Test Examines the Effectiveness of Blockchain Technology in Combating and Mitigating Tax Fraud, as Well as the Familiarity with Blockchain Technology.	44
3.7.13 Chi-Square Test on the Relationship Between Familiarity with Blockchain Technology and Its Transparency Feature.....	45
3.7.14 Chi-Square Test on the Relationship Between Familiarity with Blockchain Technology and Its Feature of Immutability	45

3.7.15 Chi-Square Test on the Relationship Between Familiarity with Blockchain Technology and Its Feature of Traceability	46
3.8 Open- Ended Questions Analysis Utilized Microsoft Excel	46
3.8.1 Main Concerns Regarding the Use of Blockchain Technology for Mitigating Tax Fraud	47
3.8.2 Suggestions for Use Cases: How Blockchain Technology Can Effectively Prevent Tax Fraud.....	50
3.8.3 Thoughts on Transforming Tax Administration Through Blockchain Technology	52
3.9 Data Analysis.....	54
3.10 Proposed Tax Administration System Models Based on Blockchain	56
3.10.1 Digitizing the Records of Pakistan's Taxation System Using Blockchain Technology	56
3.10.1.1 Proposed Framework for Digitizing the Records of Pakistan's Taxation System Using Blockchain Technology.....	57
3.10.2 Tax Invoice Serial Number (TISN) in Indonesia.....	58
Chapter Four: Findings and Result	59
4.1 Findings and Results from the Analysis for Tax Revenue the Ministry of Finance from 2013 to 2022	59
4.1.1 Fluency of Total Tax Revenue and Total Public Budget Revenue.....	59
Table 4.2: Total Revenue versus Total Revenue of Taxes During	60
4.1.2 Total Revenue Percentage Change and Implications for Increasing Tax Revenue.....	61
4.1.3 Tax Evasion and VAT Revenue as Proportion of Total Tax Revenue the last Decade	62
4.1.4 Risky Role of Tax Evasion on VAT Revenue and Public Budget (2013–2022)...	63

4.2 Findings and Results from Data Analysis Based on Interview with DGT Staff at the MOF.....	64
4.2.1: Key Responsibilities for General Directorate of Value Added Tax in MOF in Palestine.....	64
4.2.2: Evaluation of VAT Tax Collection in Palestine.....	64
4.2.3: Implementation of VAT Tax Collection in Palestine.....	64
4.2.4: Risks of VAT Tax Collection in Palestine.....	65
4.2.5 Information Technology for Enhancing the Stability of VAT Tax Collection in Palestine.....	65
4.2.6 Blockchain Technology for Enhancing VAT Tax Collection in Palestine.....	65
4.3 Implementation of blockchain technology in streamlining VAT transactions, highlighting its potential to improve revenue management and reduce tax fraud.....	65
4.4 Palestinian Blockchain Tax Payment Model (PBTP).....	67
4.5 Developing a best practice framework for the digital transformation of tax based on Blockchain Technology consists of the following:.....	70
4.6 Recommendations.....	72
References.....	73
Appendices.....	79
الملخص.....	148

List of Tables

Table #	Title of Table	Page
Table 3.1:	Interviewees Selection Criteria.....	28
Table 3.2:	Interview Mechanisms.....	29
Table 3.3.:	Defined Variables in SPSS.....	29
Table 3.4	Profession of Respondents.....	30
Table 3.5:	Experiences of Respondents.....	32
Table 3.6:	Education Level of Respondents.....	33
Table 3.7:	Measuring the familiarity of respondents with Blockchain technology.....	33
Table 3.8:	Examining the Reliability of Likert Scale Statements Used Cronbach’s Alpha	34
Table 3.9	Testing Validation “r” for Dimension#1.....	37
Table 3.10	Testing Validation “r” for Dimension#2.....	37
Table 3.11	Testing Validation “r” for Dimension#3.....	38
Table 3.12	Testing Validation “r” for Dimension#4.....	38
Table 3.13	Testing Validation “r” for Dimension#5.....	38
Table 3.14:	Testing Chi- Square for profession and cost of adopting the blockchain technology.....	39
Table 3.15:	Testing Chi- Square for Profession and the necessity of pilot projects.....	40
Table 3.16:	Testing Chi- Square for Profession and Significantly Reduce of Tax Fraud	40
Table 3.17:	Testing Chi- Square for Profession and No Impact of Blockchain on Tax Fraud in the Long Term.....	41
Table 3.18:	Testing Chi- Square for Job Role and Age.....	41
Table 3.19:	Testing Chi- Square for Age and Decentralization of Blockchain Technology.....	42
Table 3.20:	Testing Chi- Square for Age and Regulatory Issues in Adopting Blockchain Technology.....	42
Table 3.21:	Testing the Chi- Square for Experience and Decentralization Feature of Blockchain Technology.....	43
Table 3.22:	Testing Chi- Square to Assess Familiarity and Professional Knowledge of Blockchain Technology.....	43

Table 3.23: Testing the Chi- Square Analysis of Familiarity with Blockchain technology in the Supply chain domain	44
Table 3.24: Testing the Chi- Square analysis of Familiarity with Blockchain technology in the Finance domain.....	44
Table 3.25: Testing the Chi- Square Between the Effectiveness of Blockchain Technology in Combating and Mitigating Tax Fraud and Familiarity with Blockchain Technology	45
Table 3.26: Testing the Chi- Square Relationship Between Familiarity with Blockchain Technology and Its Transparency feature.....	45
Table 3.27: Testing the Chi- Square Relationship Between Familiarity with Blockchain Technology and Its Feature of Immutability	45
Table 3.28: Testing the Chi- Square Between Familiarity with Blockchain Technology and Its Feature of Traceability	46
Table 3.29: Open- Ended questions	46
Table 3.30: Concerns Regarding the Use of Blockchain Technology for Mitigating Tax Fraud	47
Table 3.31: Suggestion for Use Cases of Blockchain Technology to Effectively Prevent Tax Fraud.....	51
Table 3.32: Thoughts on transforming Tax Administration Through Blockchain Technology to Effectively Prevent Tax Fraud.....	52
Table 4.1: Total Revenue versus Total Revenue of Taxes (2021-2022)	60
Table 4.2: Total Revenue versus Total Revenue of Taxes During (2013-2020).....	91
Table 4.3: Percent Implications of Taxes Revenue During (2013-2022)	61
Table 4.4: Percent VAT Revenue Indicate in Total Revenue with Reasons	63
Table 4.5: Red Flags and RMS	66

List of Figures

Figure #	Title of Figure	Page
Figure 3.1:(Milla Sepliana Setyowati, 2022):	Comparison Between Conventional System and Blockchain System.	25
Figure 3.2(Prepared by the researcher):	Work Frame for Proposed Model base on Blockchain to mitigate of Tax Fraud in Palestine.....	27
Figure 3.3:	Job Role of Respondents.	31
Figure 3.4:	Respondents Profession in Private Sector	31
Figure 3.5:	Interval Age of Respondents	32
Figure 3.6 :	The Main Concerns Regarding the Use of Blockchain Technology for Mitigating Tax Fraud.....	50
Figure 3.7:	Use Cases for Effectively Utilizing Blockchain Technology to Prevent Tax Fraud	52
Figure 3.8:	Thoughts to Transforming the Tax Administration Utilizing Blockchain Technology.....	53
Figure 3.9: (Milla Sepliana Setyowati, 2022):	Scheme for Data Analysis to Adopt Blockchain in Tax Collection at the Ministry of Finance.....	54
Figure 3.10: (Selina Demi, 2022):	Cycle of Key Activities with Success Factors and Challenges in Applying Blockchain in DGT.....	55
Figure 3.11: (Daniel Mago Vistro1, 2021):	Key Features of Blockchain Ecosystem for preventing Tax Fraud	56
Figure 3.12:	Proposed Framework for a Tax Management System in Pakistan.....	57
Figure 3.13 (Milla Sepliana Setyowati, 2023):	Scheme of Indonesian Vat System.....	58
Figure 3.14 (Milla Sepliana Setyowati, 2022):	Business Logic of TISN Based on Blockchain.....	58
Figure 4.1:	Streamline of Total Revenue Compare with Total of Taxes in the Last 10 Years	59
Figure 4.2:	Streamline of Total Revenue in the Last 10 years.....	60
Figure 4.3:	Streamline of Tax Revenue in the Last 10 years	60
Figure 4.4:	Percent indicate of Taxes Revenue Indicate in the Total Revenue During 2013-2022.....	61

Figure 4.5: Percent of VAT Revenue in Total Amount of taxes revenue in Magnitude (Million) in the last 10 years	62
Figure 4.6: VAT Tailored Revenue in Magnitude (Million) in the Last 10 years	63
Figure 4.7: Revenue Management System (RMS) of MOF	66
Figure 4.8: Palestinian Blockchain Tax Payment Model (PBTP)	68
Figure 4.9 Deloitte2017, (Rodríguez, 2022-2023): The System of tax based on blockchain technology	69
Figure 4.10 Deloitte2017, (Rodríguez, 2022-2023): VAT payment based on (PBTP)Model.	69
Figure 4.11 (Saha, 2020): Verified VAT tax amount in proposed PBTP Model	70

List of Appendices

Appendix #	Title of Appendix	Page
Appendix 1	Interview Questions	81
Appendix 2	Questionnaire	89
Appendix 3	Variables-definition	101
Appendix 4	Descriptive Statistic-Frequency	103
Appendix 5	Chi-Square Correlation	113

List of Definitions of Abbreviations

Abbreviations	Title
VAT	Value Added Tax.
DGT	Directorate General of Taxation
PCBS	The Palestinian Central Bureau of Statistics.
RMS	Revenue Management System
MOF	Ministry of Finance.
TISN	Tax Invoice Serial Number
SSI	Self-Sovereign Identity
FDII	Foreign-derived intangible income
MTIC	Missing Trader Intra-community
EU	European Union.
VIES	The VAT Information Exchange System
DICE	Digital Invoice Customs Interchange
IRS	Internal Revenue Service
AI	Artificial Intelligence
NBR	National Board of Revenue
DeFi	Financial inclusion through Decentralized Finance
DLTs	Distributed ledger technologies
PBFT	Practical Byzantine Fault Tolerance
POW	Proof of Work

Chapter One: Introduction

Tax fraud is the deliberate underpayment of taxes owed, accompanied by the intent to evade a tax that is known or believed to be due.(L.Walker, 2021)

The expanded definition of tax fraud includes behaviors intended to secure an unlawful tax advantage or to create an unlawful tax loss. As a result, there are potential costs associated with tax fraud, making it essential to conduct a thorough assessment to comprehend the complexities of this issue and to implement appropriate measures, leveraging modern capabilities to combat it. Emerging blockchain technology is poised to play a significant role in mitigating the adverse effects of tax fraud on the public budget.(Feria, 2020)

Taxation plays a crucial role in the economies of developing countries and is regarded as the primary source of revenue for the Palestinian government. There is a plan to enhance this system by combating tax evasion and broadening the tax base without imposing additional financial burdens on citizens who are already paying taxes. (Trust, 2022)

According to the monthly report published by the Palestinian Ministry of Finance (MOF) in September 2023, fiscal operations generated a total net revenue of 13,706.6 million NIS. Domestic tax revenue amounted to 3,313.9 million NIS, which is roughly 24% of the total. Value-added tax (VAT) contributed 1,108.3 million NIS, accounting for approximately 34% of the net tax revenues.

This highlights the significant impact of VAT tax revenues compared to other taxes that fund public expenditures, which totaled 14,690.96 million NIS, aimed at promoting growth and development in public services.

The rapid advancement of technology and digitization, coupled with the prevalence of fraudulent business practices, has necessitated the transformation and adaptation of taxation systems. Blockchain technology, particularly in e-invoicing for value-added tax (VAT), has yet to be widely implemented to enhance tax collection in the public financial sector, particularly by the Directorate General of Taxation (DGT). This technology holds the potential to improve transparency and mitigate fraud, ultimately contributing to the betterment of Palestine. (Milla Sepliana Setyowati, 2022) (Mahmoona Khalil, 2021) (Chunchi Liu, 2018)

The Palestinian Central Bureau of Statistics (PCBS) published in 2021 cases of economic crimes in Palestine, categorized according to the legal charges. One of these is tax evasion and customs, in addition to forging tax invoices and bank documents. There have been

several attempts to provide a typology of fraud, focusing on the distinction between types common to all taxes and those specific to VAT. Some studies have concentrated on differences between types of perpetrators or chronological aspects. Due to the constant mutations in behavioral patterns, providing a definitive typology of VAT fraud is inherently difficult. However, it is argued that the main distinction, which also applies to tax fraud more generally, is between evasion and organized fraud. (Feria, 2020)

Tax administration typically presents an estimated level of tax fraud, given its inherently difficult nature to measure. Furthermore, the methods used to estimate the level of tax fraud are rarely made public, vary widely, and are often unsuitable. Despite this, there is little doubt over its significance, even though it cannot be taken to be fully accurate. Some countries do publish official aggregate estimates of non-compliance, often referred to as the tax gap, which represents the estimated revenue lost to fraud. However, it's important to note that the tax gap is a measure of non-compliance in general rather than specifically targeting revenue loss due to fraud and evasion. (Feria, 2020)

1.1 The Research Problem

The declining VAT collection, inefficiencies in the VAT administration system, and the ease of generating fictitious invoices have prompted the search for innovative strategies to improve transparency, accuracy, and security. Blockchain technology, with its immutable nature and integration of smart contracts, distributed storage, consensus processes, and data encryption, presents a promising solution. By empowering authorized public users and implementing a controlled distributed ledger, blockchain can establish a secure digital environment, eliminating ambiguity in taxation procedures and aiding in the identification and prosecution of non-compliant taxpayers. Thus, it helps prevent tax evasion and fraud. (Nikhil Sontakke1, 2023) (Alexander, 2022). one main research question guiding this study is: **How can blockchain technology mitigate tax fraud?**

1.2 Research Questions

The following questions were addressed by this study:

Main question: How can blockchain technology mitigate tax fraud?

Sub questions:

1. How can blockchain technology identify suspicious patterns of tax fraud?
2. How can blockchain technology investigate tax evasion?
3. How can blockchain increase the detection of fraudulent activities in taxation?

Chapter Two: Theoretical Framework Blockchain Technology and Tax Administration Models

2.1 Significance of the Study

Cooperation among the Directorate General of Taxation (DGT), taxpayers, and commercial entities has been shown to significantly reduce the cost of reviewing tax invoices by up to 52%. (Nikhil Sontakke1, 2023). Enhancing the tax payment can also promote higher level of tax compliance. the significant characteristics of an e-invoice system by adopting blockchain technology to expedite tax collection and mitigate tax evasion in Palestine. This highlights the challenges faced by the Directorate General of Taxation DGT in utilizing conventional systems, which are often seen as less efficient compared to blockchain-based systems. (Milla Sepliana Setyowati, 2022) (Curran, 2023) (Yayman, 2021).

2.2 Objective of this Study

The objective of this study is to evaluate the potential benefits of adopting blockchain technology in Palestine and utilizing DGT to increase tax compliance and widen the tax base involves determining the characteristics of blockchain technology that will significantly accelerate tax collection and enhance the performance of tax administration in Palestine.

By identifying and detecting fraudulent activities, blockchain can mitigate the negative effects of tax evasion on revenue and economic growth. It also addresses the key challenges facing the Ministry of Finance by comparing the current state of taxation with an ideal system supported by blockchain technology. (Kavoya, 2018)

2.3 Research Methodology

This study presents the methods incorporated in qualitative and quantitative consisting of data collection, interviewee selection, interviews, data collection, documentary review, building questionnaire sections, sample design, data reliability, and analysis, to describe and compare the current situation of tax collection under the conventional tax administration revenue management system RMS, conducted in the General Directorate of taxation at MOF in Palestine and the proposed tax administration system model based on blockchain technology and smart contracts as.

The model will be highlighted at the turn of invoice management in the whole of the tax administration during the verification process of each taxpayer due to blockchain features and the difference will make it in the level of production and operations to mitigate the impact of tax fraud on public revenues.

2.4 Research Approach

This research adopts a descriptive analytical approach to examine the potential of the blockchain technology model that can be applied within the VAT system in Palestine. consider that blockchain technology is emerging technology and may not be trend and massively implemented in Palestine. Therefore, this thesis aims to contribute to the MOF's understanding regarding the role of blockchain technology in a tax system to mitigate fraud. (Milla Sepliana Setyowati, 2022) (Girardin, 2024).

2.5 Data Reliability

To obtain reliable assertions regarding the opinions of the interviewees, the questionnaire was constructed and consisted of sections estimating the reliability of its variables using Cronbach Alpha, the total number of variables is 35 variables defined in SPSS as numeric with ordinal measurement levels, and responses were recorded using Likert scale, ranging from strongly agree, agree, neither, strongly disagree, disagree.

2.6 Data Collection

This study involves an intensive review of several case studies related to tax fraud, tax administration, and recent publications by the Ministry of Finance (MOF) concerning totals of revenues. In addition, relevant legislative documents were analyzed to emphasize the empirical role of emerging technology in taxation, besides in-depth interviews were conducted with (DGT) staff, particularly higher management of tax revenues in MOF, to gather supporting data through immersive and thorough discussions on this thesis with relevant parties. The interviewees had experience, skills, and competencies in public sector revenues. (Milla Sepliana Setyowati, 2022).

2.7 Sample Design

A quantitative approach was employed through an instrument questionnaire distributed using Google form during the period of July to August 2024. The total sample size reached (103) respondents. Based on the obtained demographic information of respondents the data displayed that the professional percentage of the public sector was approximately 68.9%, and the private sector with 31.1%.

2.8 Validity

To assess the validity and correlation of survey variables, appropriate statistical methods were applied based on measurement scales. The Pearson correlation coefficient, the Chi-Square testing to determine the relationship between independent and dependent variables to ensure robust analysis of data collected.

2.9 Data Analysis

This thesis employed a data analysis approach that relied on primary data collection and qualitative and quantitative analysis techniques. The qualitative component involved the data analysis of interviews with informants of DGT in MOF, notes made during field studies, and a literature study of data in the form of documents related to blockchain technology, tax administration, and VAT systems. The selection of data that was more focused and relevant to the research issue was performed by linking selected data to the research problems by further in-depth analysis of the data.(Milla Sepliana Setyowati, 2022)

Throughout the analysis process, particular emphasis was placed on identifying blockchain categories of implementation in Tax administration in MOF consisting of: Key activities, challenges, and critical success factors. This structured approach to achieve the closest accurate percentage of the public revenue by mitigating tax fraud and improving the efficiency of revenue collection. (Selina Demi, 2022).

2.10 Proposed Tax Administration System Models Based on Blockchain

This Thesis proposes two models developed based on an analysis of international experiences and best practices in domain of tax administration and blockchain technology. These models are designed to be applicable to the Directorate General of Taxation (DGT) in Palestine with the aim of mitigating tax fraud and improving system transparency and efficiency.

The first model draws on the digitizing of the records of Taxation System of Pakistan through blockchain technology. The second model is tax invoice Serial Number (TISN) in Indonesia.

2.11 Literature Review

This study aims to clarify, characterize, and evaluate the potential consequences of implementing specific blockchain solutions while considering relevant tax collection jurisdictions. The ultimate goal is to enhance tax administration efficiency, promote taxpayer compliance, and improve the ability to obtain tax-sensitive data to facilitate tax examination. by demonstrating how blockchain can contribute to fraud reduction and increased revenue by improving the operational capabilities of tax authorities. (Forum, 2020).

Propelling blockchains in tax collection and illustrating the advantages and potential benefits in to tax collection. The implementation of blockchain has the capacity to address long-standing inefficiencies in tax administration, enhance transparency, and improve revenue collection mechanisms for governments.

Strengthening revenue collection and optimizing government finance the primary and most reliable of funding, initiating the income collection process is crucial for the normal operation of governments. By utilizing blockchain technology, governments can collect taxes more effectively and efficiently, preventing unnecessary expenses and inefficiencies, and ensuring that tax administrations receive payments when they are due. This could transform the payment system, which is often unpopular with the public, thereby altering how governments raise and spend tax revenue.

Charges are essential for empowering individuals and fostering economic growth, as they cover the costs of tax administration services provided to citizens. Despite this, most governments fail to collect a significant portion of the taxes owed to them, leading to financial shortages and debt. These issues can result in long-term financial stagnation and a decline in the quality of tax administration services. Consequently, the primary financial objective of governments should be the collection of taxes. (Nemade, Kadam, Choudhary, Fegade, & Agarwal, 2019)

Self-Sovereign Identity (SSI) the Pillar of transformative potential, one way that relationships between various actors in society are changing is through the application of blockchain technology to taxes.

People, businesses, governments, investors, traders, marketers, and researchers are all becoming increasingly interested in the possibilities presented by this emerging technology.

Consequently, the concepts of smart contracts and self-sovereign identification (SSI) facilitate the use of virtual currencies that are independent of governments, banks, or centralized businesses. (Andrea Peláez-Repiso, 2021)

The blockchain realm represents a significant departure from the conventional approach to digital identity, providing tax authorities with complete control over who can access taxpayers' data, as well as when and how that access is granted or revoked.

It also ensures that data remains inviolable and resistant to tampering, thereby providing a robust foundation for the protection through the SSI model. (Byrd, 2023).

Blockchain and the prospect of Legal Regulations, and improving tax legislation, currently marked by contradictory trends in the active implementation of blockchain, poses challenges for applying blockchain in financial asset transactions.

Addressing these issues will impact the development of legal regulations that assess tax implications related to blockchain technology. Therefore, blockchain should be formally recognized as a category within tax law. (Olga I. Lyutova, 2021)

2.11.1 Blockchains in Tax Administration: Case Studies Around the World

This section aims to illustrate and evaluate global experiences with advanced blockchain technology in tax administration, specifically within the public sector. Its features play a critical role in addressing gaps in tax collection and funding for public spending. Some take a pessimistic view, seeing blockchain as just another digital technology, while others view it optimistically as a highly promising tool for long-term sustainable solutions.

The EU Commission and Blockchain- Distributed Ledger Technology Solves VAT Fraud, At the World Economic Forum, over 800 businessmen and technology specialists were questioned on when a government would use blockchain technology to collect taxes. The majority of respondents 73% agreed that the tipping point would be reached by 2025, and they estimated that the date was 2023. (Ainsworth Richard T, 2016)

EU VAT will be the adopter of blockchain technology to bring substantial efficiencies to VAT collection, reduce costs, and build trusted critical relationships within the government. for immediately ending revenue losses well in excess of €50 to €60 billion per year in Missing Trader Intra-community fraud (MTIC).

In response to member state demands, the EU Commission is keen to embrace new technologies and develop a comprehensive legislative proposal and action plan addressing intra-EU cross-border trade through a “definitive VAT system”, built on blockchain technology.

In order to prevent and detect fraud, new models that share data more quickly and are more adept at locating and taking down fraudulent networks will be crucial, and advanced artificial intelligence (AI) programs will receive significant funding.

The VAT Information Exchange System (VIES) is a database solution for cross-border VAT fraud and uses old technology. It employs multiple centralized data centers; the largest concern has been missing trader intra-community (MTIC) fraud.

Annually, MTIC costs the EU €50 billion in goods-based frauds and possibly another €50 billion in services-based frauds.

Brazil and Blockchain Application in Tax Administration, the system back on blockchain implemented by the federal tax administration in Brazil BCPF; for sharing data from the registry of taxpayers, among tax and regulatory institutions of the three levels of government (federal, state, and municipal). (Collosa, 2021)

Argentina and Blockchain Application in Tax Administration, The Federal Register of Argentina RUT; has put in place a tax simplification mechanism that enables gross income tax taxpayers to comply with formal requirements of tax registration and declaration of all modifications of data, cessation of jurisdictions, partial and total cessation of activities or transfers of goodwill, mergers, and spin-offs through a similar channel.

Sweden and Blockchain Application in Tax Administration, blockchain is being tested to digitalize receipts, non-resident income tax, and customs duties.

Estonia and Blockchain Application in Tax Administration, banking, health, and business record services of the government based on blockchain.

China and Blockchain Application in Tax Administration, electronic invoicing using blockchain, implemented in Beijing, provides more transparency to taxpayers, reduces operating costs, saves social resources, increases consumer convenience in saving invoices, and creates a healthy and fair tax environment.

Russia and blockchain technology in Tax Law Theory and Tax Administration, Blockchain technology is one of the digital tools traditionally regarded by tax researchers as a promising means for enhancing tax administration and automating business processes. The undeniable value lies in the legal regulation of tax relations that arise,

change, and terminate due to the transition of taxation to a new stage of digital development and digital maturity.

The importance of improving Russia's tax legislation is evident at the stage of active implementation of blockchain technology, which proves the value of legal regulation of tax relations using blockchain.

The practical implication involves highlighting the need to develop legal frameworks for applying blockchain technology when creating a system of transactional (automatic) taxation and levying the so-called "smart taxes" while fulfilling tax obligations in the context of introducing a goods traceability mechanism. This will also contribute to minimizing tax reporting. (Olga I. Lyutova, 2021)

Tax compliance in the Digital Era utilizes AI and Blockchain Technology in the U.S, ushering by the digital era the incorporation of AI and blockchain for transformative changes in tax administration like the Internal Revenue Service IRS and strengthening enforcement mechanisms and amplifying the capabilities of tax systems, including e-tax systems such as e-registration, e-filing, and e-payment, these cutting-edge technologies are reshaping the realm of tax compliance through underscoring tax administration's potential for enhancing transparency and efficiency in tax collection and compliance rates and reducing instances of tax evasion, for blockchain's immutable nature provides a robust framework for recording transactions and bolstering the integrity of tax systems. Therefore, it has emerged as a key innovation in securing tax data for its effective impact on taxpayer compliance by resolving noncooperative behavior and reducing the tax gap. (Odunayo Adewunmi Adelekan1, 2024)

Furthermore, the transformative ability of AI in tax administration to analyze large volumes of tax data is a more effective risk assessment, aiding in proactive tax evasion prevention. Challenges for tax authorities to make significant investments in infrastructure and training concerns regarding data privacy and the security of taxpayer information, the tax authority must navigate to ensure the successful adoption of these technologies.

Bangladesh and Automated Tax Return Verification with Blockchain Technology, a vast country with a small population, only a small percentage of eligible taxpayers file taxes. This is a significant problem with the laborious manual tax filing and the human interaction-intensive income tax verification process. Therefore, the National Board of Revenue (NBR) is the central authority for the formulation, implementation, and tax administration of tax policy through the departments of income tax, value-added tax, and

customs department. The current system is a basic website from which taxpayers can only download tax forms, and its manual contains an insecure level of data. (Safayet Hossain1, 2020)

The private blockchain network that underpins the suggested tax return concept uses a consensus method. There is no information transfer; the tax verification is fully automated, devoid of human involvement, and stores customer-related data there and only there.

Because of this, there is little chance of error resulting from the transfer of data between institutions. Individuals' NIDs are the only way for NBR to access that information, resulting in far fewer nodes participating, faster performance, improved scalability, and compliance. (Safayet Hossain1, 2020)

Fraud Prevention in the Taxation System of Pakistan Using Blockchain Technology, in Pakistan, the Taxation department is the authorized department of the government to collect, maintain, and manage the taxation that is applied by the government on goods, services, companies, professionals, buildings, and businesses, for economic development. There are two categories of tax percentage, major categories include firms, goods, societies, and individuals, only 5% of Pakistani people pay indirect taxes, and 95% of them do not show their income or make good relations with any senior tax officer or practitioner to keep avoiding paying these taxes. Due to the unprofessional behavior of tax officers and insincerity with their job and country, indirect Tax collection has been the most challenging task to be done in Pakistan in recent years, there are not many aware of the tax system and trustless in the government whether their tax money is going towards development of Pakistan or not.

The taxation department has poor management of keeping tax records. there are copies being maintained in the copy registers. Traceability of change in registers and maintaining immutability is quite challenging.

Shifting from registers to distributed ledgers based on blockchain to prevent fraud with the main features of immutability, privacy, and full-proof security, blockchain will make each tax safe, money safe, and traceability will gain trust, and hence the best scenario is the blockchain. (Daniel Mago Vistro1, 2021)

Saudi Arabia and a Blockchain – Base Value Added Tax (VAT) System, VAT is imposed in Saudi Arabia at a regular rate of five percent, and is applied to goods and services such as medical care and treatment, medication and equipment, clothing imports and exports, fuel, food, gasoline, diesel, utility bills, and lodging. VAT is gathered from individual

consumers, remitted to the government, and generates income from law-abiding taxpayers; improper tax payment results in noncompliance, decreased tax liabilities, tax fraud, and an audit that takes a significant amount of time and resources. To determine the tax gap. It is impossible to ignore the challenges brought on by the tax collection procedure's manual implementation. The General Authority of Zakat and Tax of Saudi Arabia may choose to impose suitable penalties for taxpayers who fail to pay VAT and for breaking legal or regulatory requirements. (Alkhodre Ahmad, 2019)

Trust in companies to conduct business via the Internet with confidence, to offer centralized business models with mature and standard solutions, and to handle numerous issues that lead to server bottlenecks and necessitate the involvement of reliable third parties.

Decentralized alternatives for future enterprises have received a great deal of interest and acceptability recently. Since many untrustworthy business stakeholders maintain their trust, such solutions are widely accepted and in demand. Hyperledger is an IBM-supported initiative that falls under the blockchain umbrella; similarly, because of its effective and pluggable design, it is becoming more and more well-liked in numerous other industries.

Designing a Value Added Tax VAT system for Saudi Arabia with blockchain refers to two things: first, it provides an untampered distributed ledger, which cannot be deceived by any party; and second, each transaction in the system cannot go unnoticed by the smart contract. Furthermore, it provides a transparent record and updates all involved parties regarding each activity performed by stakeholders.

The suggested blockchain-based system solution, which eliminates the need for middlemen, will significantly improve VAT collection in line with Saudi Arabia's Vision 2030.

According to the smart contract architecture, it will offer a transparent database of VAT transactions. Tax will also be subtracted at every point in the supply chain and saved on a peer-to-peer network through a consensus process.

Blockchain Palestine, Financial inclusion through Decentralized Finance (DeFi); utilizing blockchain in digital wallets and payment platforms will enhance Palestine's participation in the global economy and facilitate the receipt of remittances. Additionally, adopting blockchain will enable the growth of financial services without the need for third parties or bank accounts, thereby opening up a wide range of opportunities for innovation and

startup exploration among the unbanked population with limited access to traditional financial services. (AlSalqan, 2022)

The significance of blockchain technology in tax administration: blockchain can ease fraud detection and alleviate the financial burden on government coffers highlights its importance. It represents modern approach in the financial services industry, showcasing a variety of global experiences and case studies. Although drawbacks are rare, they must be considered to balance the benefits outlined in literature reviews.

This is emphasized in the article “Blockchain and Tax Administration”: A Critical Assessment, a Comparison of Blockchain Technology and Digitization for Researchers “By Eliza Mik” & “Noam Noked”, published in the Australian Tax Review in 2021.

The review of the emerging literature on blockchain technology and tax administration demonstrated that while blockchain can address storage issues and the sharing of tax information, it cannot resolve problems with incorrect tax returns stemming from reporting errors. First, identify the issues and determine whether a particular technology, such as blockchains, can resolve them or at least facilitate their management.

Additionally, the benefits of blockchain technology in tax administration, such as VAT, may arise from the digitalization of the tax process rather than from the implementation of a specific type of distributed database. Furthermore, it is not feasible to declare blockchain databases superior to other digitalized systems in tax functions, as the determination of the best type of blockchain database is contingent on technical requirements. Finally, we should explore how blockchain could potentially benefit tax administration rather than how we can modify existing problems to fit blockchain technology.

It is also crucial to identify areas where blockchain and other technologies could be employed to enhance tax administration, as well as determine the most effective technological solutions.

Tax in Palestine, The Palestinian tax system comprises direct taxes including income and property taxes, and indirect taxes are levied on consumption, production, and trade activities, and include the following:

1. Value Added Tax (VAT).
2. Purchase/Production tax.
3. Clearance tax.
4. Fuel tax (Petroleum excise).
5. Customs and excise duties.

The tax collection in Palestine is centralized by the government and represented by the Ministry of Finance (MoF), through two public departments within MoF the General Administration of Customs and VAT; and the General Directorate of Income Tax (GDIT).

A special department reports to GDIT, managing major taxpayers tax files using a 'one tax file' method which links the databases in both administrations, Sub-departments operate in individual governorates across the country. The Audit and Inspection Authority verifies tax department implementation and law compliance.

The procedures used for tax collecting:

1. The taxpayers submit their tax returns and financial documents to the tax department, which are then signed by certified accountants.
2. The tax department ensures the accuracy and technical and legal validity of returns, they pay the dues in checks or transfer deposits in bank accounts, and in case of non-approval the department may accept the offer of the taxpayer to reconcile his tax liability for less than the full owed amount; then the tax department negotiate with the taxpayer or with accountant represented him for reaching to compromise and schedule the amount of the tax due payment; and may this procedure prejudice the right of taxpayers and choose to appeal to the committee for objections or competent court.

The structure of tax revenues represented that the indirect taxes dominate with 92% of total amount of tax revenues, VAT (local and clearance); the effective collection of VAT covers most of the tax base, but the revenue collected from companies is low and not commensurate with the profits they generate, either due to tax evasion or avoidance. (Dr. Naser Abdelkarim, 2018)

The base of income tax in Palestine consists of individuals and corporations, the self-employed individuals should register as operators and open tax files in the VAT and income tax divisions.

The tax administration shall be more effective through improving the procedures of tax collection and audit function, and tax evasion.

Vulnerabilities of Tax Collection Methods, There is scanty in the modernist studies and researches that conclude about the methods of tax collection and systems vulnerabilities in Palestine, although, the VAT contributes significantly in the tax revenues of Palestine one of the most important taxes in the public budgets, similar to other countries like the OECD countries attempt to raise the VAT revenues to the public budget, and there is no apparent increase in the proportion of VAT on gross domestic product in OECD countries

(Zídková, 2019), and this is could be for growing phenomenon of VAT evasion and fraud due to the current VAT system vulnerabilities related to regressive nature of VAT and taking a higher fraction of low incomes than of high incomes, VAT evasion, particularly chain and carousel fraud, prevailing negative impact of cash flow for tax payers of VAT, impact of anti-fraud measures increasing the administrative burden on tax payers of VAT to increase their compliance, higher administrative cost to combat the tax evasion by the tax authorities.

Improving Tax Collection Utilizing Blockchain Technology, Tax collection through traditional VAT and income tax systems is often inefficient, prone to fraud, and administratively complex to enhance tax compliance and this remains a significant challenge for governments worldwide, but blockchain technology it's a promising technology for the tax administration with a potential solution by offering transparency, immutability, and decentralization, effectiveness in fraud prevention, operational efficiency, and regulatory adaptability.

The capacity of blockchain technology can transform and revolutionize investment in the public sector's processes for managing taxes. An optimized blockchain model can efficiently handle taxes and adjust to changing financial needs. Explore how blockchain can help with common government tax issues and fraud case mitigation. (Mohd Javaid a, 2022) .

This section provides a comprehensive overview of blockchain technology and its evolving application in the financial sector.

The walkthrough starting by defining the characteristics of blockchain, then exploring blockchain models, including evaluations for financial applications such as asset trading and how blockchain can be leveraged by tax authorities to monitor tax collection more effectively. (Hissu Hyv`arinen, 2017).

2.12 Blockchain and Distributed Ledger Technology

Emerging technologies are used as indicators of a field's level of maturity. For instance, blockchain was a major trend in 2018 and is still influencing how business, economics, and society are transformed. Its effect on financial services has received significant attention. Blockchain is based on the peer-to-peer ledger system that was originally introduced with Bitcoin, the groundbreaking electronic money system created by Satoshi Nakamoto in 2008.

As mentioned in Nakamoto's pioneering work, this technology enables internet payments to be exchanged directly between parties without the need for intermediaries. "Bitcoin: A Peer-to-Peer Electronic Cash System." (Vida J. Morkunas, 2018)

An electronic ledger is the fundamental component of a blockchain. A blockchain, as opposed to a typical database, is made up of several linked blocks that contain data records. (Javid Hussain A1, 2022). Since these blocks are cryptographically connected (Hayes, 2023), each transaction's security, legitimacy, and authenticity are guaranteed through the use of digital signatures. Furthermore, blockchains are decentralized, which means that no single entity controls them.

Transaction processing is open to all parties, frequently through a procedure known as mining. (Psaila, 2018)

This distributed ledger system, which records transactions and maintains data with several qualities that make it extremely tamper-proof and resistant to illegal adjustments, is referred to as "blockchain". because of these features, blockchain is a useful instrument for improving security. (Mohammad Hossein Tabatabaei, 2023)

Distributed ledger technologies (DLTs) encompass a broader category, with blockchain being a specific type of DLT (Mohammad Hossein Tabatabaei, 2023).

Blockchains are essentially distributed ledgers spread across a network of computer nodes (Dutta, 2022).

Envision an internet-based trading platform utilizing blockchain technology. There would be no central authority in charge of this decentralized platform.

Thousands of individuals could participate by simply installing an application from anywhere in the world. (Gayvoronskaya, 2020). Users wouldn't need to manage administration or allocate resources for this program because everything would be distributed.

Simply put, blockchain provides all parties with access to a single, shared record of truth. Due to the consensus mechanism and decentralized ledger system, trust can be established even between individuals who wouldn't typically trust one another. (Nemitari Ajienka, 2017)

Blockchain functions as a peer-to-peer network, eliminating the need for a bank or other central authority. It is not governed by a single party, and previous transactions are immutable and irreversible. because of its immutability and ongoing monitoring by a large user base, the data is secure and reliable. (Sarmah, 2018).

Innovative research fields are stimulated by blockchain technology, especially those that aim to address its technological constraints and challenges. Its primary advantages are that it may provide tamper-proof, transparent, and secure records without requiring the involvement of a third party to oversee transactions. (Jesse Yli-Huumo, 2016)

Blockchain technology and adaptation for business models, the fundamental characteristics of blockchain consist of a peer-to-peer network and an immutable distributed ledger. This technology creates a decentralized digital record, which is updated and maintained by a network of computers. Each transaction is verified and approved before being entered into the ledger, guaranteeing its security and accuracy. With the use of this technology, parties can instantly exchange ownership of digital goods, eliminating the need for intermediaries. (Vida J. Morkunas, 2018)

Assets exchange using blockchain: there are six steps to exchange assets between two economic parties utilizing blockchain technology:

Initiation: Two parties initiate the exchange by creating a proposal transaction. This proposal includes essential details like sender, receiver, quantity of assets, type of asset, and a timestamp.

Securing the Transaction: A unique cryptographic signature is generated using a hashing function to ensure the integrity and authenticity of the proposal.

Network Validation: The proposal is broadcast to a network of computers for processing and validation.

Block Creation (may vary): Blocks are composed of validated transactions, depending on the particular blockchain. To secure a block and add it to the chain, miners, also known as validators, compete to find the solution to a challenging mathematical puzzle.

Updating the Ledger: Once a block is added, the transaction is considered final, and the digital ledger is updated to reflect the ownership transfer.

Immutable Record: Every block on the blockchain is cryptographically connected to every other block, forming an unchangeable and verifiable record of every transaction. This whole history is open to the public and makes it possible for anybody to confirm the accuracy of previous transactions.

Decentralized blockchains retain information transparently and permanently, in contrast to traditional information systems that rely on centralized databases and real-time changes. Before being added to the permanent ledger, each proposed transaction is examined and verified by validators. According to user access, there are two primary kinds of blockchains: public and private. (Vida J. Morkunas, 2018)

Public or open blockchain technologies permit communication between transacting parties using pseudonyms or anonymity, even in cases when they are total strangers. On a public blockchain, all transactions are visible to the public, hence this pseudonymity has a price. Maintaining a large-scale, decentralized ledger depends on this openness.

A large amount of processing power is needed to ensure that every node (member in the network) agrees on the legitimacy of transactions and the ledger's current state. This is accomplished in the majority of public blockchains using a consensus process known as Proof of Work (POW).

POW pits nodes against one another to solve challenging cryptography puzzles; the victor adds the subsequent block of transactions to the chain. Although it requires a lot of resources, this method ensures a high level of security.

Public blockchains include Ethereum, Bitcoin, and Litecoin. While secure transactions are the main focus of Bitcoin and Litecoin, Ethereum offers a novel feature called smart contracts. These are little pieces of self-executing code that are kept on the blockchain and have the ability to autonomously carry out the provisions of a contract between parties. (Vida J. Morkunas, 2018)

Private or closed blockchain technologies, and access to private blockchains is limited to persons or groups who have been pre-approved. These participants can enter and access data because they maintain and share the ledger. In contrast to public blockchains, private blockchains allow users to know one other's identities.

A variation of the private paradigm is a federated blockchain, sometimes referred to as a consortium blockchain. In this arrangement, users are granted authorization by a governing body that oversees the network. This makes it possible for only those with permission to sign up and carry out transactions, most of which involve sensitive financial information. Only these individuals will be able to read and interact with the ledger. (Vida J. Morkunas, 2018)

Features of Blockchain to Be Suitable in Business, and there are five key concepts to appreciate the revolutionizing business networks: having a private, permissioned network with known identities and no need for cryptocurrency, making it suitable for business. (Gupta, 2017)

Shared ledger to avoid the effort duplication found in traditional business networks and ensures immutability by recording transactions only once on the network, making it accessible to all participants with the following features: (Gupta, 2017)

- Single source of truth.

- Each participant has a duplicate copy of the ledger.
- Authorized viewing exclusively for participants.

Permissions in blockchains may operate under permission or without it. Permissioned blockchains provide each user with a distinct identity, enabling restricted access and the application of policies. This strategy benefits firms in several ways:

- **Constrained Participation:** Organizations can limit who can join the network, ensuring only relevant parties participate.
- **Increased Compliance:** Regulatory compliance becomes easier when you know the identities of all participants and have control over the data added to the ledger.
- **Data Control:** Organizations can control which transaction information is exposed to various parties on permissioned blockchains. For instance, a category might be made specifically for regulators or auditors who want access to more detailed transaction data.

Moreover, the limited access features of permissioned blockchains improve data security. The blockchain is extremely resistant to counterfeiting due to cryptographic technology and authorized digital certificates can be used to further confirm an individual's identity. Consensus, various forms of consensus or agreement, such as the following, can be used to verify and commit transactions in a business network where members are known and trusted to the ledger: (Gupta, 2017)

- **Proof of stake:** verifying transactions, and requiring validators to hold a certain percentage of the network's total value, providing increased protection against a malicious attack and reducing incentives for attack to make it very expensive to execute.
- **Multi-signature:** requiring validation of transactions by a majority of validators.
- **Practical Byzantine Fault Tolerance (PBFT):** in case different nodes are generated in a set of nodes, PBFT is an algorithm designed to settle disputes among network participants.
- **Proof of work:** a costly method of reaching consensus since it uses a lot of electricity and processing capacity; while it is helpful on a public blockchain, such as the one used for bitcoin, it is unneeded and costly on a private corporate network when everyone involved is known.

Pluggable consensus is one of the features in blockchain that makes it possible to install the consensus mechanism that is most appropriate for a certain market segment.

Smart contracts are contracts or sets of guidelines that control commercial transactions; they avoid the expenses and hold-ups associated with traditional contracts. Since they are maintained on the blockchain and automatically executed as part of a transaction, they offer security superior to that of traditional contract law. Numerous contractual clauses in a smart contract may be entirely or partially self-executing, self-enforcing, or both. For example, a smart contract may define contractual conditions for corporate bond transfers or encapsulate terms and conditions that are automatically executed in the event of any violation of the terms or conditions. (Gupta, 2017)

Participants identification and their roles in blockchain various participants are playing roles in a blockchain operation, as mentioned below: (Gupta, 2017)

- User of Business: with permission to join the blockchain network and conduct transactions with other network participants.
- Regulator: with special permissions to oversee the transactions happening within the network, or may be prohibited from conducting transactions.
- Developer: Programmer who creates the application and smart contracts to enable the users to conduct transactions on the network.
- Operator: An individual who has special permissions and authority to define, create, manage, and monitor the network for each business.
- Traditional processing platform: computer systems that may be used by the blockchain to augment processing and may need to initiate requests into the blockchain.
- Traditional data source: a data system that could supply information to shape the actions of smart contracts and help specify the means of data transmission and communication that will take place between conventional apps and the blockchain through cloud messaging akin to queue managers, API calls, or both.
- Authority certificate: issuer in charge of overseeing the various certificate kinds, such as those for users or specific transactions, that are necessary to operate a permissioned blockchain.

2.12.1 Impact of Blockchain on Business Models

Establishing and strengthening trust within an organization on a blockchain network does not preclude doing business with people you don't trust. On the contrary, when using a blockchain network, trust is not a requirement. (Gupta, 2017)

Nine key components describe how an organization develops, delivers, and captures value, providing a framework for the potential effects that blockchain may have on business models. These components address the four primary facets of a business: the offer, the infrastructure, the customers, and the profitability. When combined and appropriately aligned, these components produce and deliver value. Each part of the model can be impacted by blockchain technology and is used as a tool to define, modify, or assess a firm's business model. The nine components consist of: (Vida J. Morkunas, 2018)

- Customer segment: customer markets served by blockchain systems can be reached and access to new customer segments that you can't reach in traditional systems.
- Value proposition: The building block includes all of the firm's activities that create value for customers and verifiability, access new products and services, and faster transactions with less cost through smart contracts.
- Channels: A business uses channels like its own sales force, internet, stores, and wholesalers to connect and engage with its consumer groups and offer a value proposition. The ease of conducting business is the result. Smart contract-facilitated real estate transactions have demonstrated the potential disintermediation of middle parties. By doing away with the time and manpower required to finish a transaction or a validity check, this is accomplished. By sharing common SDK and API code, an organization can also develop new kinds of channels.
- Customer relationship: Each business uses a description of their types as building blocks to develop relationships with specific consumer segments. The goal of these partnerships is to increase sales, keep customers, or gain new ones. Relationship categories include self-service, automated services, personalized and devoted personal support, community building, and co-creation of new material. For instance, the digital ledger keeps track of the property title and every step of a real estate transaction. Bank officials and real estate agents can also access it, and it contains secure, current information that is involved continuously during the acquisition process, as opposed to only sometimes. Its goal is to increase trust and openness in interactions with the public.
- Revenue streams: Every block shows the amount of money a business makes from every group of customers. Revenue streams can be divided into four categories: transactional revenue, which comes from one-time payments; recurring revenue,

which comes from regular payments made to provide customers with post-purchase customer support or a value proposition; service revenue, which comes from fees for network activity or service level agreements for business clients; and platform fees for software. The highest revenue streams come from using cryptocurrency, such as initial coin offerings (ICOs), to raise money.

- **Key resources and activities:** are the most crucial components needed to make a business model successful: developing the value proposition, expanding into markets, preserving ties with specific clientele, and generating income. These assets could be human, financial, intellectual, or physical. Blockchain technologies influence resources and activities, even if resources and activity elements are closely related. As a result, businesses must reevaluate the essential resources that comprise their business model. The first is the chance to increase resource flexibility, enabling businesses to dispense with traditional resource ownership and merely use resources as needed. With public blockchain technologies, anyone can deal with any other participant in a peer-to-peer network, making this possibility particularly relevant. Businesses can choose not to invest in the development and upkeep of IT infrastructure.

The second way that blockchain technologies can impact resources and activities is by enabling peer-to-peer trade of these resources. Blockchain technology is used to enable resource exchange, and users supply many of the essential resources and procedures. Similar to smart contracts used in real estate deals. The transacting parties give resources like human capital, which includes their knowledge, abilities, and experience, as well as tangible capital assets.

- **Key partnerships:** an explanation of the fundamentals of important alliances that form a network of partners and suppliers to support the business model and enable peer-to-peer business partnerships that fortify and expand supply chains. To guarantee dependable supply, these collaborations can take the shape of joint ventures, strategic alliances, or buyer-supplier agreements. On the one hand, the blockchain disrupts financial institutions like credit card firms and disintermediates traditional intermediaries like banks, notaries, and currency exchanges. In addition, additional partners can be added to the blockchain, including those who maintain transactional algorithms and create software development kits (SDKs) and programming interfaces (APIs). “Centbee” developed a merchant payment system in Africa to enable retailers to quickly and easily accept bitcoin at the point of sale without requiring the installation of additional terminal hardware.”

- Cost structure: a breakdown of all expenses the company has to pay to run its business model in the last construction block. Blockchain implementations can cut transaction costs, including those associated with searching and negotiating, as well as intermediary fees. By 2022, blockchain technology is anticipated to enable \$15–20 billion in annual cost savings in the financial services sector. These savings come from lowering the cost of IT infrastructure and getting rid of manual procedures that didn't benefit the company. The authorization holds now used in credit card and banking processes, which can delay cash for many days, can be shortened by using blockchain to govern financial transfers. Consensus operation speeds can also reduce this hold to just a few minutes. On private blockchains, these holds are reduced to microseconds. Operations powered by blockchain require fewer manual steps in aggregating, amending, and sharing data or providing regulatory reporting and audit documents. Employees can, therefore, focus on generating greater revenues while consumers save time and money. Swedish citizens can save money and time during a property purchase transaction by excluding previously uninvolved parties through the use of a blockchain-powered smart contract.

Numerous organizations are searching for an all-encompassing answer to all of their urgent issues. To create smart contracts between users of trade and finance systems, they are implementing blockchain. By leveraging blockchain technology and tools for real-time tracking, security, and transparency in numerous financial services like trade finance platforms, credit reporting, clearing and settlements, and digital identity verification, this helps create new revenue streams and increase cost-effectiveness. (Mohd Javaid a, 2022) Public sector policymakers are very interested in sustainability in their business practices and in avoiding the conventional friction between systems that is often the source of disruption. Blockchain can solve this by centrally automating and sharing data across permissioned networks, freeing up the value that has been locked away in financial services provided by businesses, and restoring confidence and openness in the importance of spearheading the digital transformation of government. (IBM, n.d.)

A blockchain-based government model can protect data, simplify procedures, cut down on fraud, waste, and abuse, and boost accountability and confidence all at the same time. Sharing company resources with people via a distributed ledger protected by cryptography removes failure and naturally safeguards private information belonging to the government and citizens. This could resolve long-standing problems with safe storage, lessen labor-intensive procedures, and reduce disproportionate expenses related

to managing responsibility, combating corruption, and boosting confidence in online systems.

For instance, the use of smart contracts in payroll tax collection by blockchain can speed up the tax collection process by automatically transferring the net salary and tax payment amounts to the appropriate recipients, matching tax data with income transactions, and calculating tax and social security deductions. (consensys, n.d.)

To guarantee traceability and transparency in tax systems for blockchain properties thereby facilitating quicker and more efficient fraud and error detection the government works in tandem with tax authorities and customs agencies. The network's data is utilized to handle cargoes more effectively, quickly removing pre-screened ones and concentrating inspections on those that are strictly necessary. (DIEGO CAGIGAS, 2021) The use of blockchain to process data remotely and is now gaining momentum and evolving in the Informa- ionization space.

This has prompted policymakers to offer standards and suggestions for assessing the viability of implementing blockchain in tax administration.

The goal is to improve efficiency and transparency in handling tax administration, drawing from a variety of resources and serving a large number of participants in real-time of information.

Additionally, it aims to deliver reliability with private consortium blockchain and to effectively protect taxpayer information in payroll taxes, withholding taxes, Value Added Taxes, transfer pricing, and information sharing between tax authorities and the government. (Kim, 2021)

For the financial industry, contracts, financial processes, and transactions are crucial. When digital payments pass through processors and banks, there's almost always a risk that they will be targeted by fraudsters and become stolen. However, current blockchain technology, which excels in cryptographic algorithms, can reduce the likelihood of traditional fraud by preventing and thwarting methods that require multiple parties to validate transactions.

Peer-to-peer networks and anti-tampering features facilitate the rapid movement of verifiable and secure exchanges, which help manage risk within the financial system's network and transform transactions into fraud-free exchanges, thereby increasing the efficiency of the vast number of transactions. Conversely, this also enhances the execution's time efficiency. (Hissu Hyv`arinen, 2017)

2.12.2 Tax Administration in Palestine

Developing financial policies and overseeing their implementation for the Palestinian National Authority are fundamental responsibilities of the Palestinian Ministry of Finance. This involves ensuring effective contributions to the integration of economic, financial, and monetary policies to achieve consistency across their instruments and provide a framework for economic stability and growth.

This is promoting prosperity by advancing sustainable development goals, enhancing living standards across all sectors, ensuring dignified lives for citizens, and bolstering national economic strength to address significant challenges both globally and locally. Additionally, the Ministry of Finance (MoF) allocates funding for the Palestinian National Authority (PNA) budget from domestically generated tax revenues and efficiently manages the PNA's external financing resources. This approach encourages tax revenue growth and reduces operating costs through an integrated, financially transparent system supported by rigorous auditing procedures. (State of Palestine/ Ministry of Finance, 2018)

The Ministry of Finance (MoF) considers the efficient collection of tax, customs, and excise revenue to be a strategic objective. The General Directorate of Tax and Customs, which operates 16 branch offices across all governorates, is responsible for implementing this objective through effective tax administration and governance within the organizational framework. This initiative aims to monitor and expedite the delivery of value-added tax, property tax, customs duties, and excise taxes to citizens. The revenue management system consolidates tax data, allowing taxpayer records to be tracked in a single database. (State of Palestine/ Ministry of Finance, 2018) (Large taxpayers Unit/MOF, 2024)

Chapter Three: Methodology

3.1 Research Methodology and Proposed Model

This chapter presents a research methodology that combines both qualitative and quantitative approaches. It includes data collection, interviewee selection, interview questions, the construction of questionnaire sections, and data analysis including processing, exploring, and visualizing. The aim is to propose a VAT Administration System Model that describes and compares the current state of tax collection under the conventional tax administration system for revenue management system (RMS), as implemented by the General Directorate of Taxation at the Ministry of Finance (MOF), with the proposed tax administration system model based on blockchain technology and smart contracts as illustrated in Figure (3.1). (Milla Sepliana Setyowati, 2022).

The study measures the impact of the proposed system by analyzing the results obtained from the community of respondents through the questionnaire.

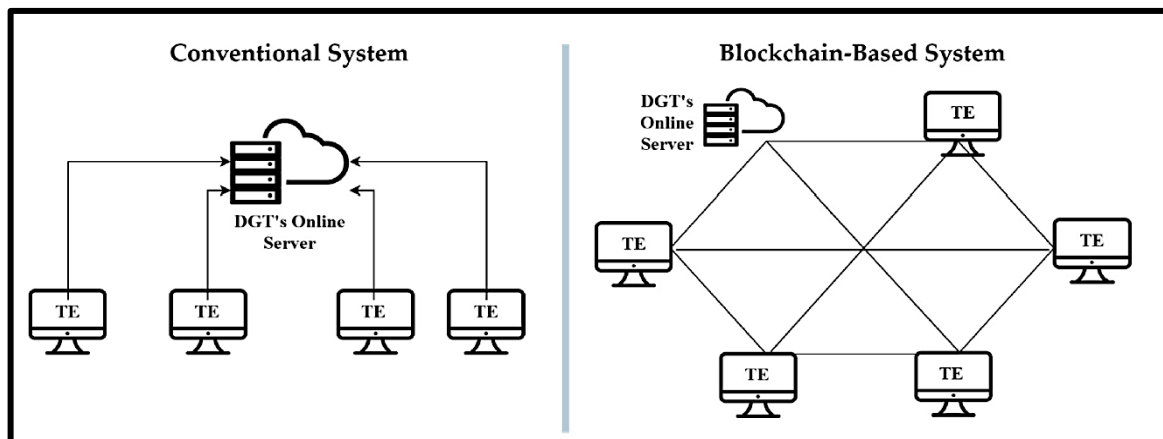


Figure 3.1: Comparison Between Conventional System and Blockchain System (Milla Sepliana Setyowati, 2022).

The model will emphasize the transformation of invoice management across the entire tax administration process, particularly during the verification of each taxpayer, leveraging blockchain features. The differences introduced by the model will impact production and operational levels and will be supported and validated by responses from the sample community.

3.2 Research Approach

This approach aims to mitigate the effects of tax fraud, an illegal process resulting from tax evasion facilitated by corruption. The corruption Facilitated by the Complexity of tax

systems as a result of the growth of the public sector operations over time to pursue increasing public revenues (TANZI, 2020), therefore through utilizing the features of blockchain technology will contribute to reducing the Complexity of conventional tax systems and identify the suspicious patterns of tax fraud through investigate the tax evasion factors and increase the detection of Fraudulent activities one of them the delays in the payment of due taxes and reducing real tax revenue.

The researcher utilized both qualitative and quantitative methods to explore various aspects of tax fraud and blockchain technology aiming to answer the research question regarding the capabilities of blockchain technology in mitigating tax fraud.

This approach provided reliable information about tax collection and a comprehensive understanding of revenue tax administration in Palestine. The qualitative and quantitative methods were employed as complementary tools to examine the phenomenon of tax fraud and the potential benefits of transforming the VAT administration system.

The purpose of this research is to conduct a descriptive analysis of a blockchain technology model that could be applied to the VAT system in Palestine, as well as to examine the dependent and independent variables, understanding and insightful the relations between:

- 1- Demographics to Understand the Background of Blockchain in Palestine.
- 2- Current understanding and usage of Blockchain and gauge the current knowledge and application of blockchain technology.
- 3- Perception of blockchain in tax fraud mitigation to understand and view the potential of Blockchain in combating tax fraud in Palestine.
- 4-Potential challenges and barriers to identifying perceived challenges in implementing Blockchain for tax fraud mitigation in Palestine.
- 5-Implementation and future outlook of Blockchain and gather opinions on the implementation process and future expectations.
- 6-Concerns regarding Blockchain technology implementation for Taxation in Palestine.
- 7- Case suggestions and measures of the domains and trends of implementation of Blockchain in Palestine to prevent tax fraud.
- 8-Transformation thoughts of tax administration through Blockchain Technology.

So present proposal work frame for MOF aligns with identify the factors influencing in adopting blockchain technology in proposed model for tax collection with ability to mitigate the probability of impact and occurring tax fraud, through explores the gradually transition between eight key pillars, as illustrated in Figure (3.2).

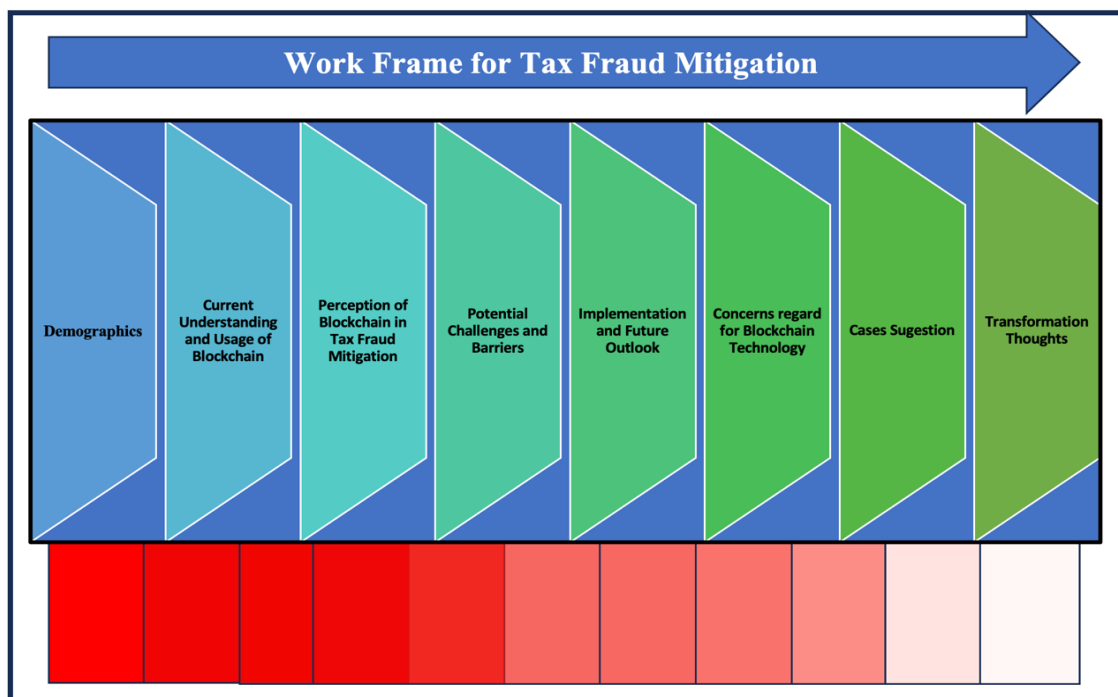


Figure 3.2: Work Frame for Proposed Model base on Blockchain to mitigate of Tax Fraud in Palestine (Prepared by the researcher).

It is important to note that blockchain technology is an emerging innovation and may not yet be a widespread trend or extensively implemented in Palestine. Therefore, this research adds value to the Ministry of Finance's knowledge by highlighting the role of blockchain technology in mitigating tax fraud within the tax system. (Milla Sepliana Setyowati, 2022) (Girardin, 2024)

3.3 Data Collection

The researcher conducted both data collection methods qualitative and quantitative, the qualitative technique involved intensive several case studies review in the domain of tax fraud, tax administration, and the latest publications in this field, to emphasize the empirical role of emerging technology blockchain in taxation.

Also implemented in-depth interviews with staff from the Directorate General of Taxes (DGT), particularly higher-level management of tax revenues in the Ministry of Finance MOF.

These interviews were aimed at gathering detailed description and supporting data through immersive and thorough discussions on the research topics with relevant parties.

3.3.1 Interviewees Selection

Four criteria are formulated to conduct the selection process of interviewees based on demonstrated experience and competence in tax revenues, designing positions in DGT, distribution of tax office branches in governorates, and “maturity level of tax administration” (PEFA, n.d.) based on tax typologies, by the information presented in Table (3.1). (Selina Demi, 2022)

This method reflected the extent of their understanding in public sector revenues, as well as the research problems and the actual conditions regarding the application of blockchain technology in VAT system.

The information obtained was considered primary data, which was then processed to answer the research questions. (Milla Sepliana Setyowati, 2022)

The most credible and accurate reflection and information about the facts of tax administration in Palestine were provided.

Table 3.1: Interviewees Selection Criteria

Name	Title	Location/Branch/ MOF
Mr. Nazih Tamimi	Director of Palestinian Centralized Clearance	Main building/Ramallah
Mr. Belal Ashour	Director of VAT Department	Branch/MOF/Hebron
Non identification upon his request.	Director of Large Taxpayers Department	Branch / MOF /Ramallah
Mrs. Feda Taha	Vice- Director of Palestinian Centralized Clearance	Main building/Ramallah

3.3.2 Interviews

Semi-structured interviews were conducted during January, February, and May 2024 interview mechanisms in person and the via Zoom platform as mentioned in Table (3. 2), using a list of questions prepared in advance, distributed in six main sections, and following the dynamics of the discussions with informants and the information gained. The Structure of interview questions included: (a) Key Responsibilities for the General Directorate of Value Added Tax in MOF in Palestine; (b) Evaluation for VAT Tax Collection in Palestine; (c) Implementation for VAT Tax Collection in Palestine; (d) Risks of VAT Tax Collection in Palestine; (e) Information Technology for the Stability of VAT Tax Collection in Palestine; and (f) Blockchain Technology for Improving VAT

Tax Collection in Palestine, as it presented in Appendix (1) arbitrated from Dr. Raed Saad, Assistant Professor of Accounting at AAUP, Dr. Mahmoud Obaid, Thesis Supervisor and Assistant Professor of Faculty Engineering at AAUP, Dr. Rami Hadrob Thesis Supervisor and Assistant of VP academic affairs at AAUP.

Table 3.2: Interview Mechanisms

Name	Date	Interview Mechanism
Mr. Nazih Tamimi	29/01/2024	in person
Mr. Belal Ashour	01/02/2024	Zoom
Non identification upon his request	05/02/2024	in person
Mrs. Feda Taha	31/05/2024	in person

3.4 Sample Design

The researcher employed a quantitative approach through a questionnaire instrument distributed using Google Forms in July-August 2024.

The total number of variables is 35, defined in SPSS as numeric and measured on ordinal and nominal scales, as shown in Table (3.3).

The values are measured on a Likert scale with the range: {strongly agree, agree, neither, strongly disagree, disagree}.

Table 3.3: Defined Variables in SPSS

No.	Measure	Variable-definition -Questionnaire
1	Ordinal	Age
2	Nominal	Highest Education Level
3	Nominal	Profession
4	Nominal	Nature of private sector
5	Ordinal	Size of private sector
6	Nominal	Job role
7	Ordinal	Number of Years' Experience
8	Ordinal	Blockchain Familiar and known
9	Ordinal	understanding the blockchain technology
10	Ordinal	like to use the blockchain technology in my work
11	Ordinal	used blockchain technology in the supply chain domain
12	Ordinal	used blockchain technology in the Finance domain

13	Ordinal	used blockchain technology in the Data Security domain
14	Ordinal	Blockchain technology effective for mitigating tax fraud
15	Ordinal	Transparency feature
16	Ordinal	Immutability feature
17	Ordinal	Decentralization feature
18	Ordinal	Traceability feature
19	Ordinal	Adoption of blockchain
20	Ordinal	Cost
21	Ordinal	Lake of expertise
22	Ordinal	Regulatory issues
23	Ordinal	challenge of regulatory
24	Ordinal	adopt blockchain Immediately
25	Ordinal	adopt blockchain Within 1-3 years
26	Ordinal	adopt blockchain 3-5 years
27	Ordinal	adopt blockchain 5 years
28	Ordinal	Training and education
29	Ordinal	Regulatory framework
30	Ordinal	Public-private partnerships
31	Ordinal	Pilot projects
32	Ordinal	Reduce significantly
33	Ordinal	Reduce moderately
34	Ordinal	no impact of blockchain
35	Ordinal	Increased fraud

The sample size reached (103) respondents, based on obtained demographic information. The data displayed that the professional breakdown of the respondents was approximately 69% from the public sector, and 31% from the private sector, as shown in Table (3.4)

Table 3.4: Profession of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Public Sector Employee	71	68.9	68.9	68.9
	Private Sector Employee	32	31.1	31.1	100.0
	Total	103	100.0	100.0	

The highest profession percentage in the private sector for the financial sector at 29%, then the service sector at 13%, commercial 7% the last one at 1% for industrial as illustrated in figure (3.3).

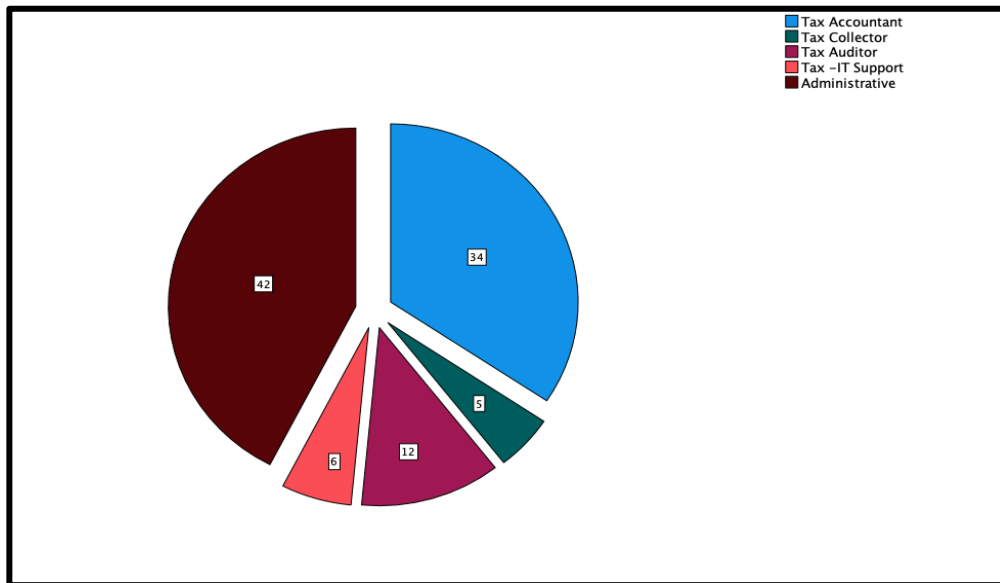


Figure 3.3: Job Role of Respondents.

Regarding the job role of respondents, its distributed with 42% percent for administrative, 34% tax accountant, 12% for tax auditor, 6% for Tax IT support, and 5% for tax collector as shown in figure (3.4).

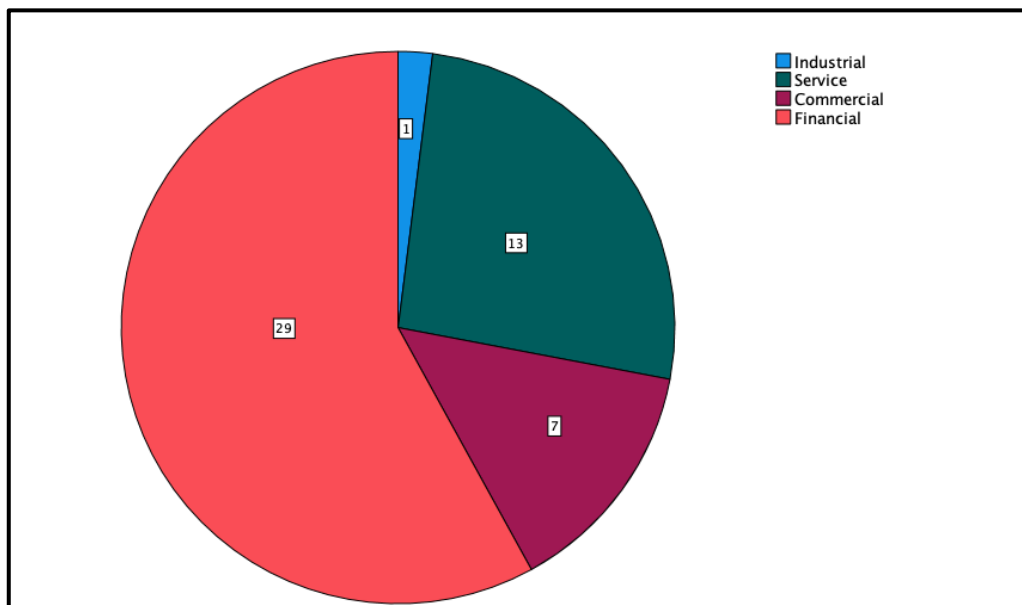


Figure 3.4: Respondents Profession in Private Sector

With highest percent in experience reached to 35% from 5-10 years, 23% for whom less than 5 years, 20% from 15-20 years and 18% for above of 20 years, as presented in Table (3.5).

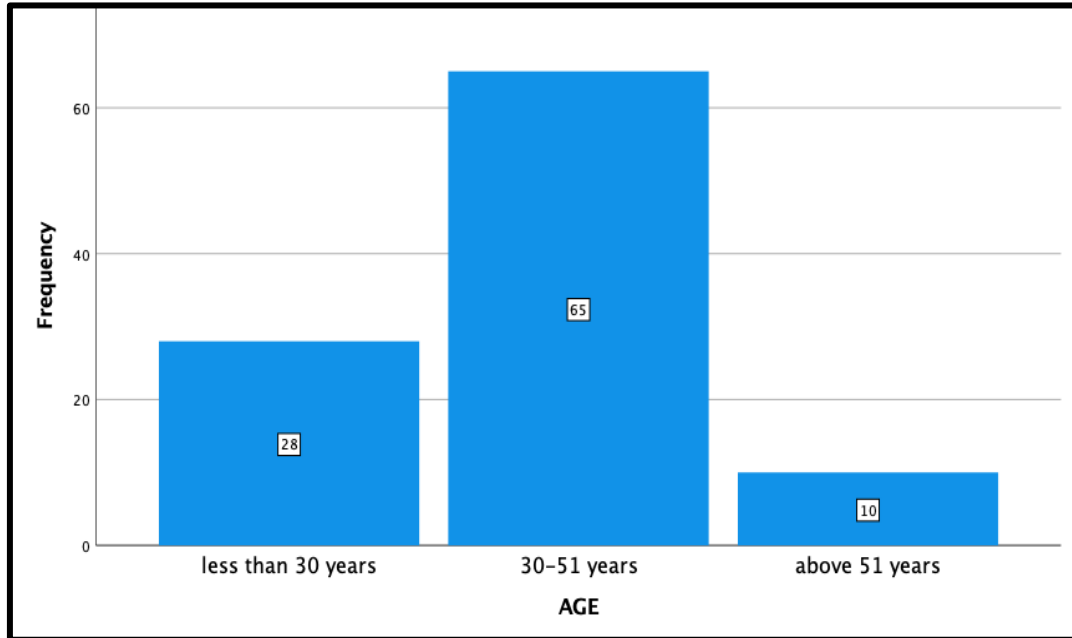


Figure 3.5: Interval Age of Respondents

Table 3.5: Experiences of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 5 years	24	23.3	24.0	24.0
	5-10 years	36	35.0	36.0	60.0
	15-20 years	21	20.4	21.0	81.0
	above 20 years	19	18.4	19.0	100.0
	Total	100	97.1	100.0	
Missing	System	3	2.9		
Total		103	100.0		

The majority of them in interval age [30-51] years with percent 65%, less than 30 years old with percent 28%, and above 51 years old with percent 10%, as illustrated in figure (3.5).

Reached the percent for the holders of bachelor's degree and less than 72%, Master's degree with 23%, PhD with 5%, as presented in table (3.6).

Table 3.6: Education Level of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor and less than	74	71.8	71.8	71.8
	Master	24	23.3	23.3	95.1
	PhD	5	4.9	4.9	100.0
	Total	103	100.0	100.0	

The percentage of respondents who strongly agreed and agreed to consider blockchain technology familiar and known reached 43.7% versus strongly disagreed and disagreed reached 33.1% which reflected there a slight difference of 10% to be the emerging blockchain technology popular and trend in Palestine, or with wide implementation in both public and private sector, as presented in Table (3.7).

Table 3.7: Measuring the familiarity of respondents with Blockchain technology

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	10	9.7	9.8	9.8
	agree	35	34.0	34.3	44.1
	neither	23	22.3	22.5	66.7
	strongly disagree	5	4.9	4.9	71.6
	disagree	29	28.2	28.4	100.0
	Total	102	99.0	100.0	
	Missing	System	1	1.0	
Total		103	100.0		

3.5 Data Reliability

The researcher ensured the consistency of questionnaire instruments, utilized measure analysis in SPSS, and estimated the internal consistency of the Likert scale statements through Cronbach's alpha analysis reliability testing, The Cronbach's alpha calculations, as shown in equation, involve taking the average covariance and dividing it by the average total variance (Frost, 2024), where:

- N = number of items
- \bar{c} = mean covariance between items.
- \bar{v} = mean item variance.

$$\alpha = \frac{N * \bar{c}}{\bar{v} + (N - 1) * \bar{c}}$$

Cronbach's alpha is crucial for examined a dataset comprising 27 Likert scale statements, the dataset consisted of responses collected from 103 respondents using a Likert scale ranging {strongly agree, agree, neither, strongly disagree, disagree}, these statements covered various dimensions under investigation in the research context (Malapane, 2024), current understanding and usage of blockchain (.807), perception of blockchain in tax fraud mitigation(.882), potential challenges and barriers (.657), implementation and future outlook (.766), thus the construct of questionnaire indicates that there is high level of consistency and reliability as showed in Table (3.8).

Table 3.8: Examining the Reliability of Likert Scale Statements Used Cronbach's Alpha

Dimension	Type	Purpose	Variables	Cronbach's Alpha	Number of items in each dimension
1	Current Understanding and Usage of Blockchain	To gauge the current knowledge and application of blockchain technology	understanding the blockchain technology	.807	5
			like to use the blockchain technology in my work		
			used blockchain technology in the supply chain domain		
			used blockchain technology in the Finance domain		
used blockchain technology in the Data Security domain					
2	Perception of Blockchain in	To understand how	Blockchain technology effective	.882	6

	Tax Fraud Mitigation	respondents view the potential of blockchain in combating tax fraud	for mitigating tax fraud Transparency feature Immutability feature Decentralization feature Traceability feature Adoption of blockchain		
3	Potential Challenges and Barriers	To identify perceived challenges in implementing blockchain for tax fraud mitigation	Cost Lake of expertise Regulatory issues challenge of regulatory	.657	4
4	Implementation and Future Outlook	To gather opinions on the implementation process and future expectations	adopt blockchain Immediately adopt blockchain Within 1-3 years adopt blockchain 3-5 years adopt blockchain 5 years Training and education Regulatory framework Public-private partnerships Pilot projects Reduce significantly Reduce moderately	.766	12

			no impact of blockchain		
			Increased fraud		

3.6 Validity

To validate the questionnaire instrument and ensure the accuracy of the results (Mohajan, 2017), Pearson correlation was utilized, as shown in equation, to measure the strength of association between the two variables, it is crucial to properly identify the independent and dependent variables and for meaningful conclusions. The statistic denoted as “r”, represents the strength and direction of the linear the relationship between 27 Likert statement, 5 nominal, applied to a sample. The formula. defined as by (Stewart, 2025), is as follows:

$$r = \frac{[n(\sum xy) - \sum x \sum y]}{\sqrt{[n(\sum x^2) - (\sum x)^2][n(\sum y^2) - (\sum y)^2]}}$$

where:

- x is the independent variable
- y is the dependent variable
- n is the sample size
- Σ represents a summation of all values.

The coefficient ranges from -1 to 1, and the interpretation of the correlation result as mentioned below (spssanalysis, 2024) (test, n.d.) (Turney, Pearson Correlation Coefficient (r) | Guide & Examples, 2022), indicated as follows:

- A positive “r”, means signifies as one variable increases, the other tends to increase as well.
- Conversely, a negative “r” signifies a negative correlation, suggesting that as one variable increases, the other tends to decrease.
- A correlation coefficient close to 1 or -1 indicates a strong linear relationship, while a value near 0 implies a weak or no linear relationship.
- if Sig. (2-tailed), p-value <0.05 the question is valid and will be flagged with asterisks

- if Sig. (2-tailed), p-value >0.05 the question is not valid.

As presented in Appendix (3), all the significant p-values for (35) variables, and Appendix (5) for a presented definition for each variable in SPSS, indicated sample of estimated three correlations for each dimension as mentioned below:

3.6.1 Dimension #1: Demographic

Pearson correlation p-value is less than .05, indicating statistical significance, as illustrated in Table (3.9).

Table 3.9 Testing Validation “r” for Dimension#1

variable 1	variable 2	Pearson Correlation	Sig. (2-tailed)
Age	Experience	.574**	<.001
Size of private sector	Nature of private sector	.429**	.004
Job Role	Age	.290**	.004

3.6.2 Dimension #2: Current Understanding and Usage of Blockchain

Pearson correlation p-value is less than .05, indicating statistical significance, as illustrated in Table (3.10).

Table 3.10: Testing Validation “r” for Dimension#2

variable 1	variable 2	Pearson Correlation	Sig. (2-tailed)
BLCUNDESTAND (understanding the blockchain technology)	BLCWILLINGUSING (like to use the blockchain technology in my work)	.413**	0.000
BLCUNDESTAND (understanding the blockchain technology)	BLCINFOSECURITY (used blockchain technology in the data security domain)	.480**	0.000
BLCWILLINGUSING (like to use the blockchain technology in my work)	BLCSUPPLYCHAIN (used blockchain technology in the supply chain domain)	.361**	0.000

3.6.3 Dimension #3: Perception of Blockchain in Tax Fraud Mitigation

Pearson correlation p-value is less than .05, indicating statistical significance, as illustrated in Table (3.11).

Table 3.11: Testing Validation “r” for Dimension#3

variable 1	variable 2	Pearson Correlation	Sig. (2-tailed)
BLCEFFECTIVEFTAXFRAUD (effective for mitigating tax fraud)	BLCTRANSPERANCY (transparency feature)	.846**	0.000
BLCTRANSPERANCY (transparency feature)	BLCADOPTIONDGT (adoption of blockchain)	.426**	0.000
BLCTRANSPERANCY (transparency feature)	BLCTRACABILITY (traceability feature)	.651**	0.000

3.6.4 Dimension #4: Potential Challenges and Barriers

Pearson correlation p- value is less than .05, indicating statistical significance, as illustrated in Table (3.12).

Table 3.12: Testing Validation “r” for Dimension#4

variable 1	variable 2	Pearson Correlation	Sig. (2-tailed)
BLCLACKE (lake of expertise)	BLCORGANIZEDISSUE (regulatory issues)	.432**	0.000
BLCORGANIZEDISSUE (regulatory issues)	BLCACCEPTANCE (challenge of regulatory)	.434**	0.000
BLCLACKE (lake of expertise)	BLCACCEPTANCE (challenge of regulatory)	.699**	0.000

3.6.5 Dimension #5: Implementation and future outlook

Pearson correlation p-value is less than 0.05, indicating statistical significance, as illustrated in Table (3.13).

Table 3.13: Testing Validation “r” for Dimension#5

variable 1	variable 2	Pearson Correlation	Sig. (2-tailed)
BLCIMMADIATE (adopt blockchain Immediately)	BLC13 (adopt blockchain Within 1-3 years)	.607**	0.000
BLC35	FARUDMODERATLY	.366**	0.000

(adopt blockchain 3-5 years)	(reduce fraud moderately)		
BLC35 (adopt blockchain 3-5 years)	BLCFRAMEORGANIZED (regulatory framework)	.359**	0.000

3.7 Chi-Square Test of Independence

The Chi-square test was utilized to evaluate the research hypothesis and determine the relationship between two categorical variables (ordinal, nominal). This test assesses whether the two variables are independent and not related to each other, as illustrated in equation, The calculations of the chi-square test as obtained by (Turney, Scribber, 2023). The Chi-square test calculates a statistic asymptotically based on the observed and expected cell counts. For each cell, the difference between the observed and expected counts is determined and squared. This positive value is then divided by the expected count to account for the varying sizes of the cells. After constructing this value for each cell, the results are summed across all cells to produce the test statistic. This statistic is then compared with the appropriate Chi-Squared distribution, resulting in an asymptotic (two-sided) p-value. A p-value less than 0.05 indicates a significant relationship between the variables.(Academy, n.d.)

3.7.1 Chi-Square Test of the Relationship Between Profession and the Cost of Adopting Blockchain Technology

Running the correlation test between the professional demographic, treated as the independent variable, and the cost of adopting blockchain technology, considered as potential challenges and barriers to preventing tax fraud, as the dependent variable, showed a p-value significantly less than 0.05, as illustrated in Table (3.14).

Table 3.14: Testing Chi- Square for Profession and Cost of Adopting the Blockchain Technology

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	13.900 ^a	3	.003
Likelihood Ratio	14.959	3	.002
Linear-by-Linear Association	4.898	1	.027
N of Valid Cases	101		

3.7.2 Chi-Square Test of the Relationship Between Profession and the Necessity of Pilot Projects

For the successful implementation of blockchain technology in taxation, a chi-square test was conducted to analyze the correlation between the independent variable of professional demographics and the dependent variable of the necessity for pilot projects. The results indicated a significant p-value of less than 0.05, as illustrated in Table (3.15).

Table 3.15: Testing Chi- Square for Profession and the Necessity of Pilot Projects

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.389 ^a	2	.041
Likelihood Ratio	7.941	2	.019
Linear-by-Linear Association	2.136	1	.144
N of Valid Cases	103		

3.7.3 Chi-Square Test Between Profession and Significant Reduction of Tax Fraud

To evaluate the potential impact of blockchain technology on reducing tax fraud, a chi-square test was conducting using professional demographics as the independent variable and the significant reduction of tax fraud as the dependent variable. The results indicated a p-value significantly less than 0.05, as illustrated in Table (3.16).

Table 3.16: Testing Chi- Square for Profession and Significantly Reduce of Tax Fraud

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11.644 ^a	3	.009
Likelihood Ratio	12.068	3	.007
Linear-by-Linear Association	.654	1	.419
N of Valid Cases	102		

3.7.4 Chi-Square Test Examining the Relationship Between Profession and the Perceived Impact of Blockchain on Long-Term Tax Fraud

The collection of opinions and future outlooks regarding the positive impact of implementing blockchain technology in taxation varies by profession. A chi-square test was conducted to examine the correlation between the demographic independent variable (profession) and the dependent variable (the perceived lack of impact of blockchain on tax fraud in the long term). The results indicated a significant p-value of less than 0.05, as illustrated in Table (3.17).

Table 3.17: Testing Chi- Square for Profession and No Impact of Blockchain on Tax Fraud in the Long Term.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	10.700 ^a	4	.030
Likelihood Ratio	10.685	4	.030
Linear-by-Linear Association	1.646	1	.199
N of Valid Cases	101		

3.7.5 Chi-Square Test of Job Role and Age

To determine the functional age based on the impact of job role, a chi-square test was conducted to assess the correlation between job role and age as an independent demographic variable. The results indicated a significant p-value of less than 0.05, as illustrated in the Table (3.18).

Table 3.18: Testing Chi- Square for Job Role and Age

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	16.924 ^a	8	.031
Likelihood Ratio	18.693	8	.017
Linear-by-Linear Association	8.248	1	.004
N of Valid Cases	99		

3.7.6 Chi-Square Test of Age and the Decentralization Feature of Blockchain Technology

To explore respondents' perceptions regarding the potential of blockchain in mitigating and combating tax fraud, we examined the influence of respondents' age. The decentralization feature of blockchain technology emerged as the most beneficial independent variable for tax fraud prevention, with a p-value significantly less than 0.05, as illustrated in Table (3.19).

Table 3.19: Testing Chi- Square for Age and Decentralization of Blockchain Technology

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	19.176 ^a	6	.004
Likelihood Ratio	17.640	6	.007
Linear-by-Linear Association	3.516	1	.061
N of Valid Cases	101		

3.7.7 Chi-Square Test of Age and Regulatory Issues in Adopting Blockchain Technology

Running the chi-square test to examine the correlation between age demographics (independent variable) and the regulatory issues associated with adopting blockchain technology (considered as the main potential challenges and barriers for tax fraud prevention, dependent variable) shows a p-value that is significantly less than 0.05, as illustrated in Table (3.20).

Table 3.20: Testing Chi- Square for Age and Regulatory Issues in Adopting Blockchain Technology

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	17.409 ^a	6	.008
Likelihood Ratio	17.388	6	.008
Linear-by-Linear Association	.418	1	.518
N of Valid Cases	102		

3.7.8 Chi-Square Test of Experience and the Decentralization Feature of Blockchain Technology

To explore respondents' perceptions regarding the potential of blockchain in mitigating and combating tax fraud, we found that their experiences and the decentralization feature of blockchain technology are the most beneficial factors for tax fraud prevention. The analysis revealed a significant p-value of less than 0.05, as illustrated in Table (3.21).

Table 3.21: Testing the Chi- Square for Experience and Decentralization Feature of Blockchain Technology

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	26.449 ^a	9	.002
Likelihood Ratio	24.666	9	.003
Linear-by-Linear Association	7.105	1	.008
N of Valid Cases	98		

3.7.9 Chi-Square Test Examining the Relationship Between Familiarity with Blockchain Technology and Profession

The familiarity and knowledge of blockchain technology depend on the respondents' professions, with a p-value significantly less than 0.05, as illustrated in Table (3.22).

Table 3.22: Testing Chi- Square to Assess Familiarity and Professional Knowledge of Blockchain Technology

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12.258 ^a	4	.016
Likelihood Ratio	12.141	4	.016
Linear-by-Linear Association	3.702	1	.054
N of Valid Cases	102		

3.7.10 Chi-Square Test on the Familiarity with Blockchain Technology in the Supply Chain Domain

To assess the use of blockchain technology in the supply chain domain, it is essential to understand the respondents' knowledge and familiarity with blockchain technology. The results indicate that the p-value is significantly less than 0.05, as illustrated in Table (3.23).

Table 3.23: Testing the Chi- Square Analysis of Familiarity with Blockchain technology in the Supply chain domain

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	39.863 ^a	16	.001
Likelihood Ratio	29.800	16	.019
Linear-by-Linear Association	5.771	1	.016
N of Valid Cases	101		

3.7.11 Chi-Square Test on Familiarity with Blockchain Technology in the Finance Domain

To assess the use of blockchain technology in the finance sector, it is essential to understand the respondents' knowledge and familiarity with blockchain. A chi-square test was conducted, revealing a p-value significantly less than 0.05, as illustrated in Table (3.24).

Table 3.24: Testing the Chi- Square analysis of Familiarity with Blockchain technology in the Finance domain

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	23.797 ^a	12	.022
Likelihood Ratio	25.417	12	.013
Linear-by-Linear Association	5.467	1	.019
N of Valid Cases	100		

3.7.12 Chi-Square Test Examines the Effectiveness of Blockchain Technology in Combating and Mitigating Tax Fraud, as Well as the Familiarity with Blockchain Technology.

To determine the effectiveness of blockchain technology in combating and mitigating tax fraud, it is essential to conduct chi-square testing and correlate it with the dependent variable of understanding and knowledge. The familiarity of respondents with blockchain technology showed a p-value that is significantly less than 0.05, as illustrated in Table (3.25).

Table 3.25: Testing the Chi- Square Between the Effectiveness of Blockchain Technology in Combating and Mitigating Tax Fraud and Familiarity with Blockchain Technology

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	31.479 ^a	12	.002
Likelihood Ratio	30.812	12	.002
Linear-by-Linear Association	1.613	1	.204
N of Valid Cases	100		

3.7.13 Chi-Square Test on the Relationship Between Familiarity with Blockchain Technology and Its Transparency Feature

Understanding and knowledge of blockchain technology among respondents largely depend on transparency, which is the most beneficial feature for preventing tax fraud. Therefore, a chi-square test was conducted, and the results showed a p-value that is significantly less than 0.05, as illustrated in Table (3.26).

Table 3.26: Testing the Chi- Square Relationship Between Familiarity with Blockchain Technology and Its Transparency feature

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	27.505 ^a	16	.036
Likelihood Ratio	26.200	16	.051
Linear-by-Linear Association	.023	1	.881
N of Valid Cases	102		

3.7.14 Chi-Square Test on the Relationship Between Familiarity with Blockchain Technology and Its Feature of Immutability

Understanding and knowledge of blockchain technology among respondents largely depend on its immutability, which is the most beneficial feature for preventing tax fraud. Therefore, a chi-square test was conducted, and the results showed a p-value that is significantly less than 0.05, as illustrated in Table (3.27).

Table 3.27: Testing the Chi- Square Relationship Between Familiarity with Blockchain Technology and Its Feature of Immutability

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	30.467 ^a	16	.016
Likelihood Ratio	28.406	16	.028

Linear-by-Linear Association	7.394	1	.007
N of Valid Cases	100		

3.7.15 Chi-Square Test on the Relationship Between Familiarity with Blockchain Technology and Its Feature of Traceability

Understanding and knowledge of blockchain technology among respondents largely depend on traceability, which is the most beneficial feature for preventing tax fraud. Therefore, a chi-square test was conducted, and the results showed a p-value that is significantly less than 0.05, as illustrated in Table (3.28).

Table 3.28: Testing the Chi- Square Between Familiarity with Blockchain Technology and Its Feature of Traceability

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	34.532 ^a	12	.001
Likelihood Ratio	32.952	12	.001
Linear-by-Linear Association	.002	1	.964
N of Valid Cases	102		

3.8 Open- Ended Questions Analysis Utilized Microsoft Excel

The researcher is gathering the opinions of respondents through a questionnaire that includes open-ended questions. This approach aims to obtain insightful information regarding the issues related to blockchain technology and tax fraud, as presented in the Table (3.29).

Table 3.29: Open- Ended questions

Issue #	Question	Number of respondents
3.8.1	What are your main concerns regarding the use of blockchain technology for tax fraud mitigation?	34
3.8.2	Can you suggest any specific use cases where blockchain technology can be effectively used to prevent tax fraud?	27
3.8.3	Do you have any additional thoughts on how blockchain technology can transform tax administration?	25
Total		86

3.8.1 Main Concerns Regarding the Use of Blockchain Technology for Mitigating Tax Fraud

The number of respondents was 34, compared to 3 respondents who had no concerns. Among the 34 respondents, their concerns were classified based on status: which indicates that these concerns were previously mentioned by the researcher in the questionnaire, and which reflects concerns mentioned by the respondents. The total frequency of concerns was 67, as shown in the Table. (3.30) below:

Table 3.30: Concerns Regarding the Use of Blockchain Technology for Mitigating Tax Fraud

Section #	Type	Purpose	Concern	Frequency	Status Concern (conformity, insert)
1	Demographics	To Understand the Background of the Respondents	Blockchain Familiar and known	6	conformity
2	Current Understanding and Usage of Blockchain	To gauge the current knowledge and application of blockchain technology	understandin g the blockchain technology	5	conformity
			like to use the blockchain technology in my work	0	non
			used blockchain technology in the supply chain domain	0	non
			used blockchain technology in	0	non

			the Finance domain		
			used blockchain technology in the Data Security domain	0	non
3	Perception of Blockchain in Tax Fraud Mitigation	To understand how respondents view the potential of blockchain in combating tax fraud	Blockchain technology effective for mitigating tax fraud	1	conformity
			Leakage	1	insert
			Transparency feature	3	conformity
			Privacy feature	4	insert
			Quality managing	1	insert
			Immutability feature	1	conformity
			Decentralization feature	1	conformity
			Traceability feature	0	non
			Adoption of blockchain	2	conformity
			Breaching	1	insert
			Hacking	1	insert
4		To identify perceived	Cost	10	conformity
			Complexity	4	insert

	Potential Challenges and Barriers	challenges in implementing blockchain for tax fraud mitigation	Lake of expertise	2	conformity
			Regulatory issues	5	conformity
			challenge of regulatory	4	conformity
			Cyber Security	1	insert
5	Implementation and Future Outlook	To gather opinions on the implementation process and future expectations	Transformation	2	insert
			adopt blockchain Immediately	0	non
			adopt blockchain Within 1-3 years	0	non
			adopt blockchain 3-5 years	0	non
			adopt blockchain 5 years	0	non
			Training and education	2	conformity
			Regulatory framework	4	conformity
			Public-private partnerships	3	conformity
			Pilot projects	1	conformity
			Reduce significantly	0	non

			Reduce moderately	0	non
			no impact of blockchain	1	conformity
			Increased fraud	0	non
			Non feedback	1	insert

The most common concerns expressed by respondents regarding the implementation of blockchain technology for mitigating tax fraud, in order of frequency (10, 6, 5, 5), are related to cost, familiarity with blockchain, understanding of the technology, and regulatory issues, as illustrated in Figure (3.6).

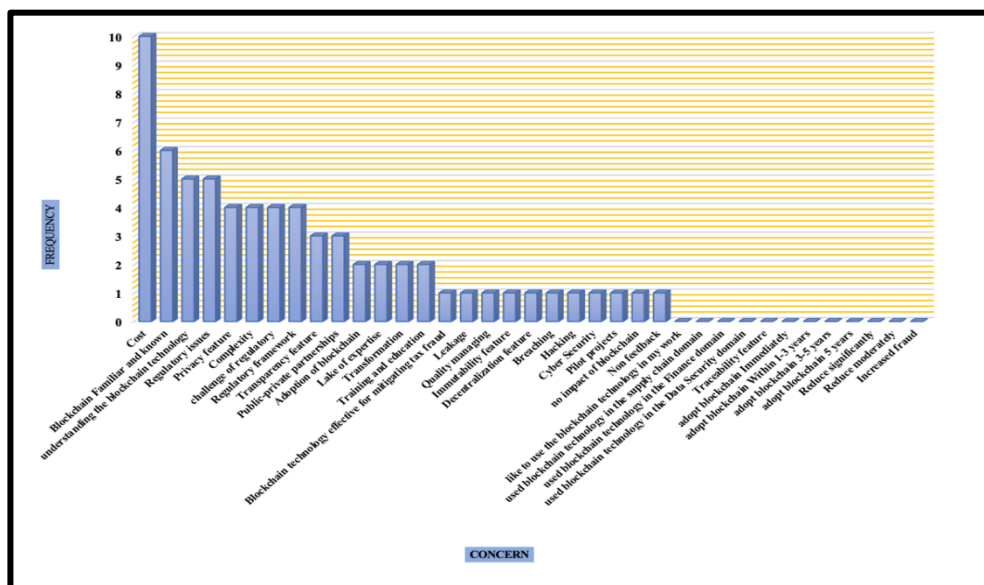


Figure 3.6 : The Main Concerns Regarding the Use of Blockchain Technology for Mitigating Tax Fraud

3.8.2 Suggestions for Use Cases: How Blockchain Technology Can Effectively Prevent Tax Fraud

The number of respondents providing suggestions is 27, compared to 11 respondents who had no suggestions. The 27 respondents distributed their suggestions based on a total of 34 frequencies, as shown in Table (3.31) below:

Table 3.31: Suggestion for Use Cases of Blockchain Technology to Effectively Prevent Tax Fraud

No.	Use case to prevent Tax fraud	Frequency
1	VAT Tax collection	3
2	Insurance companies	1
3	Financing companies	1
4	Retailers	1
5	Awareness	3
6	Public- private partnerships	1
7	E-invoicing	3
8	Property and assets	2
9	Financial and tax transactions	1
10	Payrolls	1
11	Tax adjustment	1
12	Verified the identification for taxpayers (individual, enterprises)	1
13	Shipping and global trade	1
14	Blockchain innovation center	1
15	Maintaining corporations lists of stakeholders	1
16	Tax reduction	2
17	Income tax inform	1
18	Requests for records	1
19	Training availability	1
20	Registration for financial and commercial dealings	1
21	Connection between bank accounts and tax authorities	1
22	Supply chain	1
23	Auto audit of tax	1
24	Auto interchange among tax authorities	1
25	Auto registration for SMEs and tax	1
26	Traceability for donations. and non-profitability transactions for non-governmental organizations	1

The highest-ranking use cases for effectively utilizing blockchain technology to prevent tax fraud are consecutively ranked with frequencies of (3, 3, 3) for awareness, e-invoicing, and VAT tax collection, as illustrated in Figure (3.7)

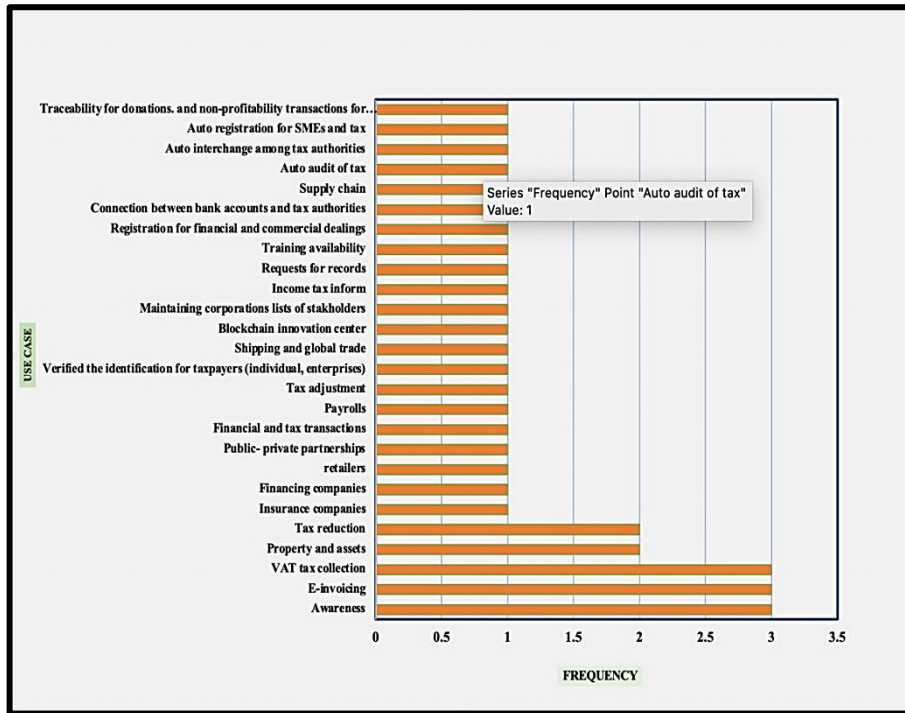


Figure 3.7: Use Cases for Effectively Utilizing Blockchain Technology to Prevent Tax Fraud

3.8.3 Thoughts on Transforming Tax Administration Through Blockchain Technology

The number of respondents is 25, compared to 13 respondents who had no thoughts on the matter. The 25 respondents expressed their opinions based on a total of 26 frequencies, as shown in Table (3.32) below:

Table 3.32: Thoughts on transforming Tax Administration Through Blockchain Technology to Effectively Prevent Tax Fraud

No.	Thought	Frequency
1	legal and regulatory work frame	1
2	suggestion of blockchain adoption	1
3	legislation and laws	1
4	incentives of taxation	1
5	study and view express through technician and specialist	1
6	Standard of information system	1
7	supply chain	2
8	verification of taxpayer identity	1
9	Data standardization and analysis	1
10	Real-time data sharing and reporting	2
11	Automated tax compliance	1
12	the government approval of blockchain technology	1

13	Insurance	1
14	Cryptocurrency	1
15	Healthcare	1
16	Competences	1
17	unified tax registry	1
18	smart contract for tax compliance	1
19	tax administration utilizing AI and blockchain	1
20	motivating the voluntary of tax compliance	1
21	decentralized platforms for taxation	1
22	increasing the trust among taxpayers and tax administration	1
23	anti-tax evasion cross border	1
24	financing models (financial tools) utilizing digital tokens	1

The highest ranking of ideas for transforming tax administration through the use of blockchain technology includes the following key areas: real-time data sharing and reporting, supply chain management, and financing models utilizing digital tokens. These areas are represented by the consecutive frequencies of (2, 2, 1), as illustrated in Figure (3.8).

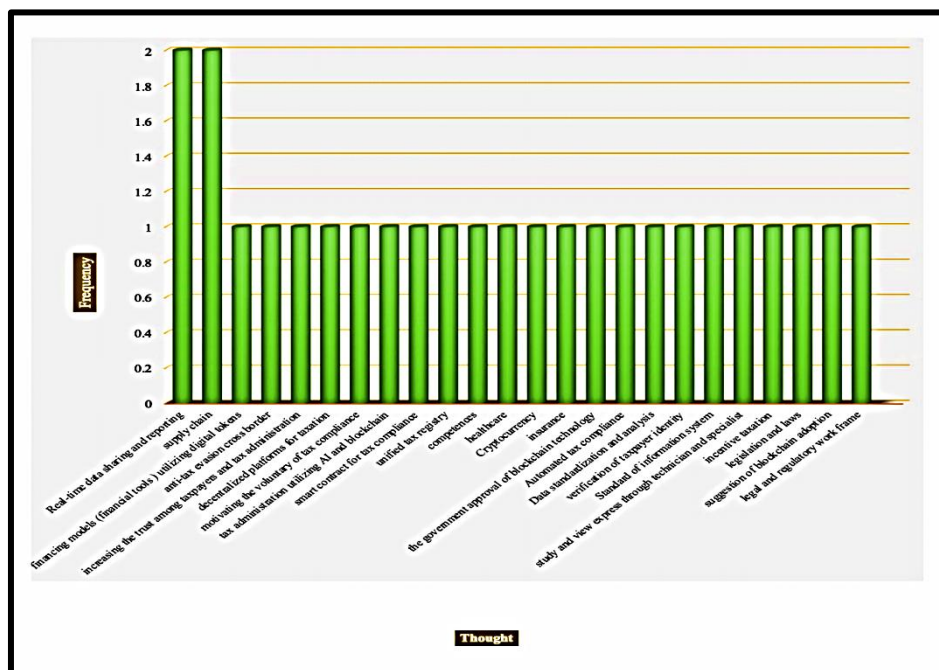


Figure 3.8: Thoughts to Transforming the Tax Administration Utilizing Blockchain Technology

3.9 Data Analysis

The researcher adopted a data analysis approach to transition from a conventional tax revenue system to blockchain technology, relying on a combination of primary data collection and both qualitative and quantitative analysis techniques. This research commenced with an examination of interview data from informants at (DGT), notes taken during field studies, and a literature review of documents related to blockchain technology, tax administration, and VAT systems in the relevant context. The selection of data was focused and pertinent to the research issue, achieved by linking it to the research problems and conducting a more in-depth analysis through seven phases to implement blockchain in the revenue management system, as outlined by (Milla Sepliana Setyowati, 2022):

- a) Describe the conventional revenue management system (RMS).
- b) Identifying Problems in RMS.
- c) Analyze whether blockchain technology can solve these problems.
- d) Analyze how blockchain technology can address these issues.
- e) Determine the appropriate type of blockchain technology.
- f) Analyze the appropriate design of blockchain technology.
- g) Analyze the impact of applying blockchain technology to revenue management systems for taxation.

as presented below in Figure (3.9).

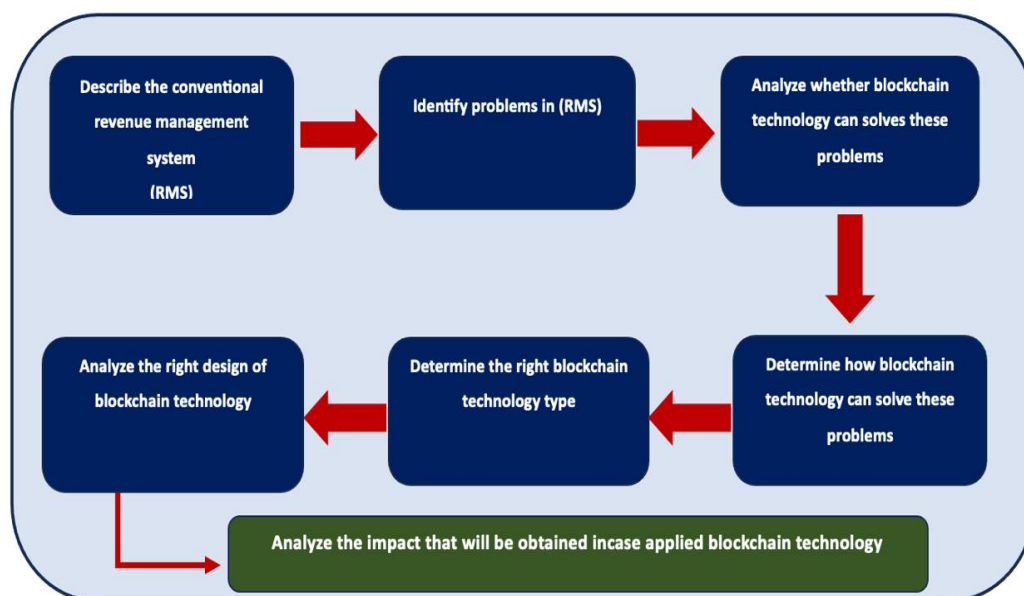


Figure 3.9: Scheme for Data Analysis to Adopt Blockchain in Tax Collection at the Ministry of Finance (Milla Sepliana Setyowati, 2022)

The starting point is to create a description for the Revenue Management System (RMS) through a questionnaire and interviews conducted with the Directorate General of Taxes (DGT). This process aims to identify and address existing problems, analyze them, and compare them with the features of blockchain technology to assess its potential for solving these issues. Consequently, there are various types of blockchain, and the decision should be based on the specific needs of the DGT to ensure a tangible impact on tax revenues if blockchain is implemented in the tax system.

Furthermore, there is a cycle of key activities involved in implementing and transforming a revenue management system based on blockchain to mitigate fraud in tax initiatives. This cycle includes platform selection, prototyping, production, and scaling, while also identifying the needs of the Directorate General of Taxes (DGT) and considering feasibility. Throughout this process, there are success factors as well as challenges (Selina Demi, 2022), as illustrated in figure (3.10).

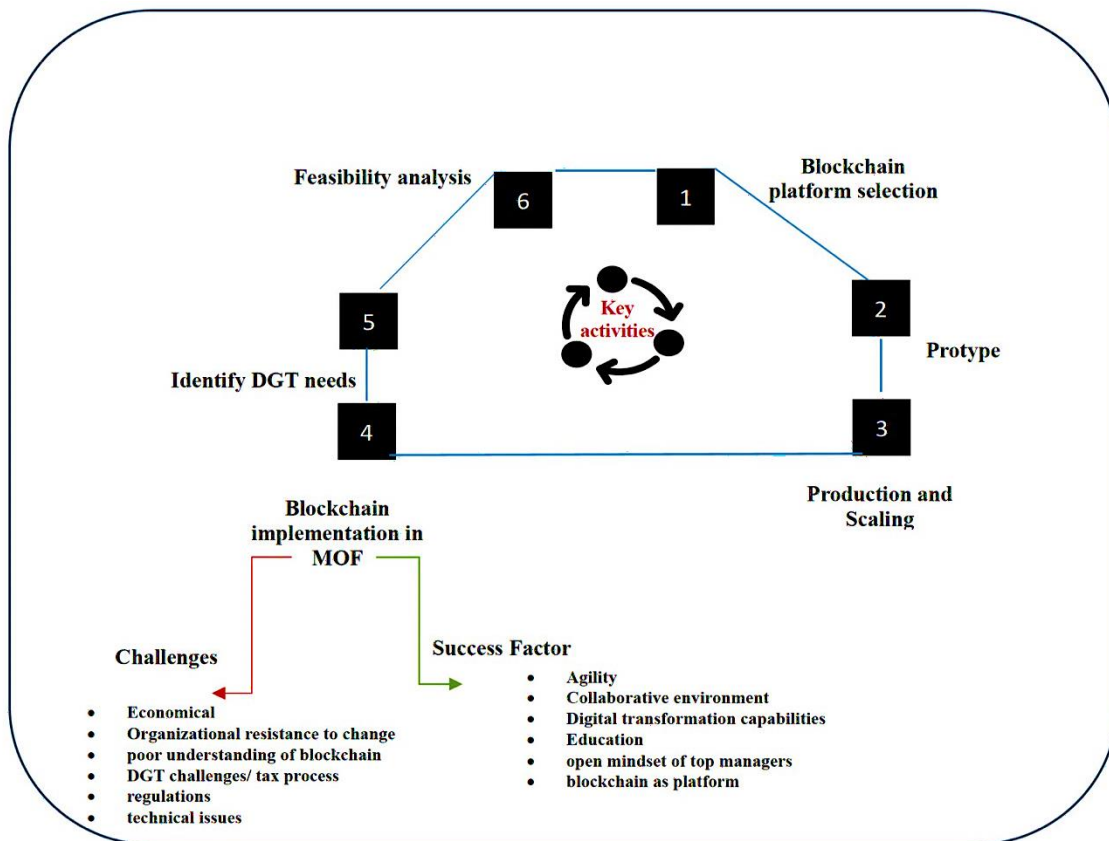


Figure 3.10: Cycle of Key Activities with Success Factors and Challenges in Applying Blockchain in DGT (Selina Demi, 2022)

3.10 Proposed Tax Administration System Models Based on Blockchain

This study will propose two models that build upon the experiences of other countries in the domains of tax administration and blockchain technology, aiming to apply these models with the Directorate General of Taxes (DGT) to mitigate tax fraud in Palestine.

3.10.1 Digitizing the Records of Pakistan's Taxation System Using Blockchain Technology

The taxation system of Pakistan has proposed a solution to prevent fraud by utilizing blockchain technology. This solution aims to prevent the alteration or deletion of records by digitizing all information previously maintained in physical registers. It is based on a distributed ledger blockchain ecosystem, which features the distribution of each transaction or record entry to every member of the blockchain. This approach will enhance immutability, privacy, and security, as effective fraud prevention can only be achieved through robust security measures, as illustrated in Figure (3.11). (Daniel Mago Vistro1, 2021)

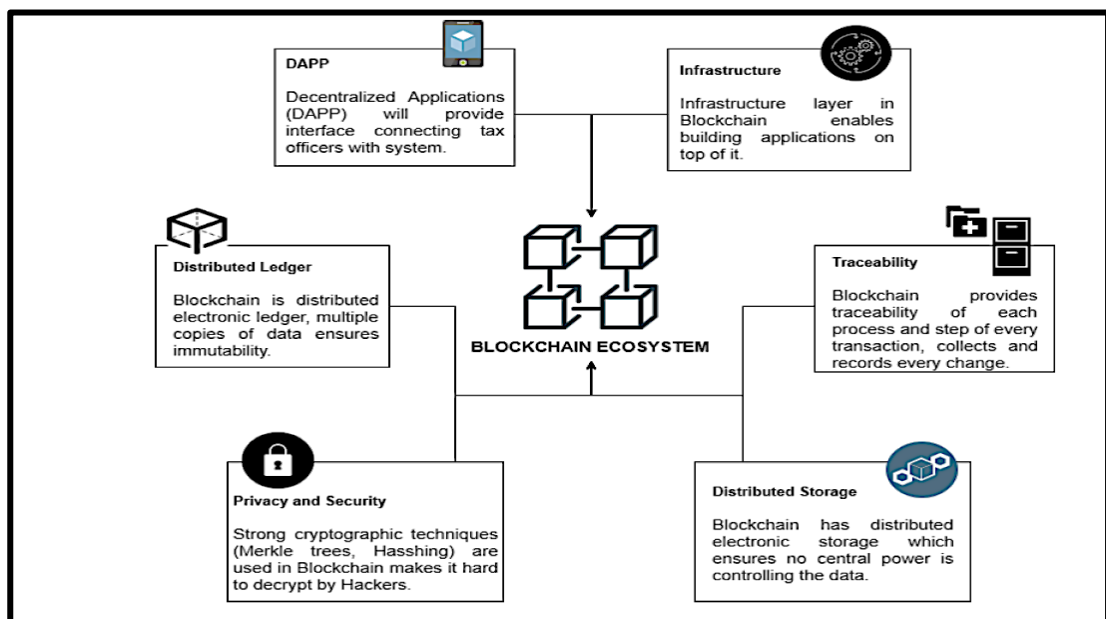


Figure 3.11: Key Features of Blockchain Ecosystem for preventing Tax Fraud (Daniel Mago Vistro1, 2021)

3.10.1.1 Proposed Framework for Digitizing the Records of Pakistan's Taxation System Using Blockchain Technology

The proposed framework presents a high-level architecture for stakeholders, including tax officers and inspectors responsible for managing the tax management system, as well as taxpayers who pay their taxes at the bank. The tax management system utilizes the Interplanetary File System (IPFS), which offers peer-to-peer hypermedia protocols that enhance the safety and speed of the web. This system is designed as a decentralized application (DAPP) and is built on blockchain distributed ledger technology, as illustrated in the accompanying Figure (3.12) (Daniel Mago Vistro1, 2021).

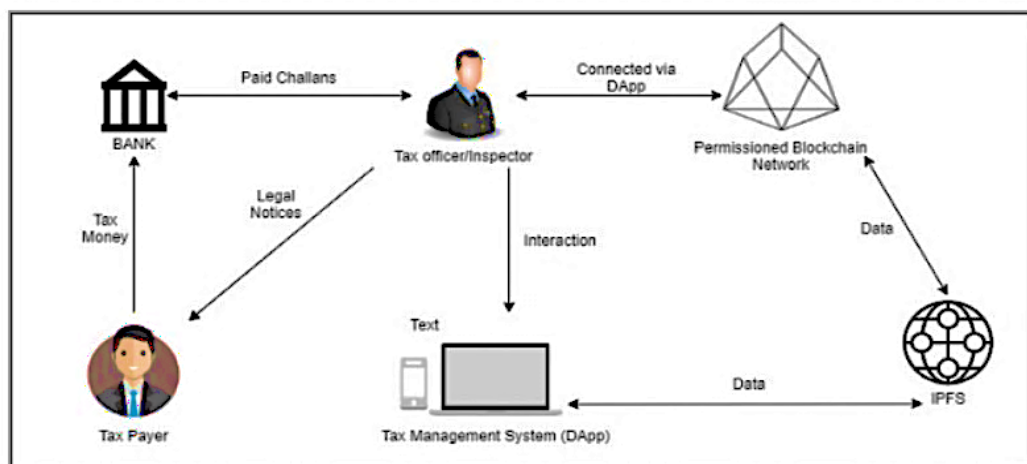


Figure 3.12: Proposed Framework for a Tax Management System in Pakistan

3.10.2 Tax Invoice Serial Number (TISN) in Indonesia

A TISN system based on blockchain technology will create a faster and more efficient system in Indonesia that can be directly monitored and tracked directly by the Directorate General of Taxes (DGT). TISN can be implemented using a permissioned private blockchain type.

The data recorded in each block of every transaction (TE) related to the sale or purchase of taxable goods or services, along with its transaction counterparty, will be secured using the hashing function of blockchain technology. This function prevents the TE from cheating by manipulating data within a block and also allows the DGT, as a regulatory body, to conduct comprehensive monitoring and track transactions. Consequently, all data related to transactions that generate VAT will be accurately and securely recorded, as illustrated in the Figures (3.13) and (3.14) (Milla Sepliana Setyowati, 2022).

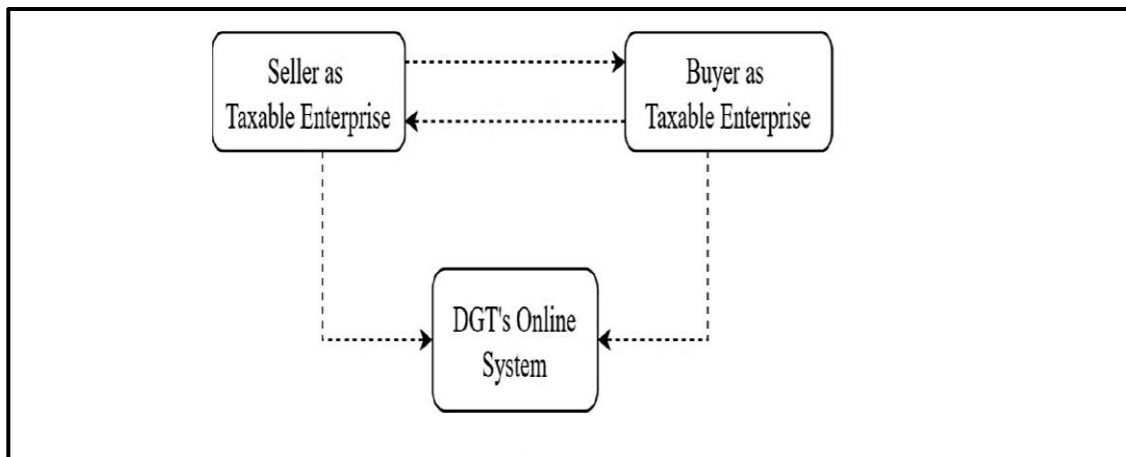


Figure 3.13: Scheme of Indonesian Vat System (Milla Sepliana Setyowati, 2023)

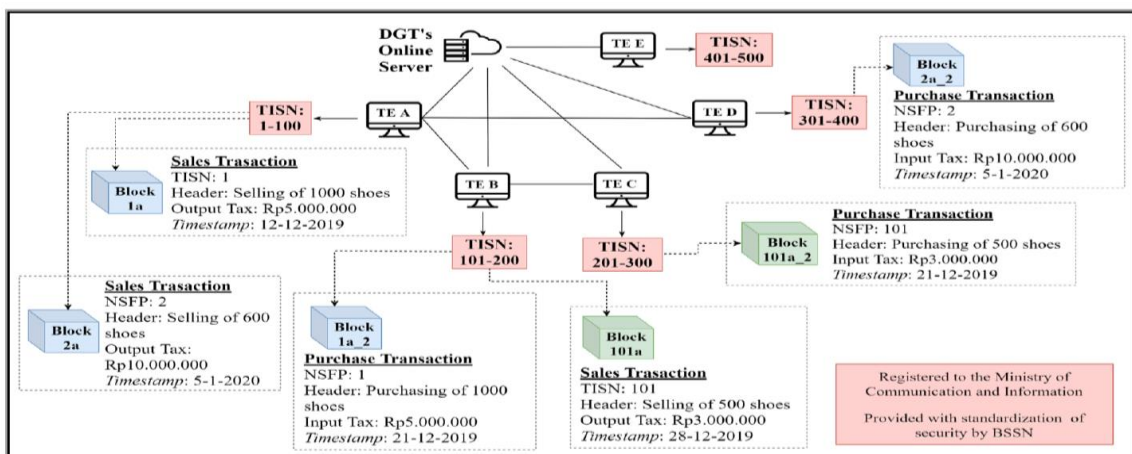


Figure 3.14: Business Logic of TISN Based on Blockchain (Milla Sepliana Setyowati, 2022)

Chapter Four: Findings and Result

This chapter examines the role of tax collection in enhancing the Palestinian public budget, with a particular focus on (VAT) revenues. It analyzes data from 2013 to 2022 and evaluates the effectiveness of tax policies and technologies in mitigating tax fraud. Extract findings and results that highlight the importance of adopting MOF for blockchain technology in tax collection and enhancing public revenue through effective detection for tax fraud.

4.1 Findings and Results from the Analysis for Tax Revenue the Ministry of Finance from 2013 to 2022

The researcher conducted an analysis of data extracted from the E-Annual Reports of General Government Operations for the Ministry of Finance (MOF) covering the period from 2013 to 2022. The analysis was performed using Microsoft Excel, and the results are presented below:

4.1.1 Fluency of Total Tax Revenue and Total Public Budget Revenue

Financial analysis indicates that tax revenue positively impacts total revenue under normal conditions. This is clearly illustrated in Figure (4.1), which compares the stream of total revenue with tax revenue.

For instance, in 2022, tax revenue amounted to \$4,429.50 million, significantly contributing to the total revenue of \$5,929.90 million.

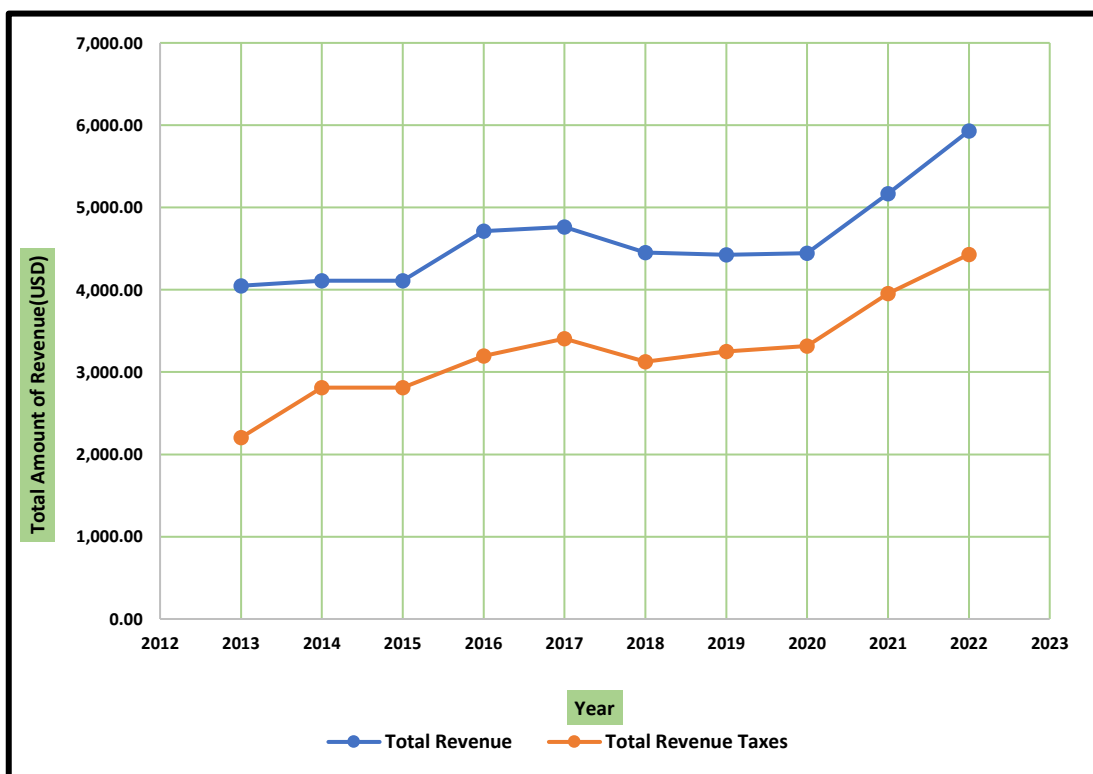


Figure 4.1: Streamline of Total Revenue Compare with Total of Taxes in the Last 10 Years

The comparison of total tax revenue between 2022 and 2021 reveals an increase of approximately \$764,000 in total revenue, compared to \$474,000 in total tax revenue, as shown in the Table (4.1).

Table 4.1: Total Revenue versus Total Revenue of Taxes (2021-2022)

Year	Total Revenue (USD)	Total Revenue Taxes (USD)
2022	5,929.90	4,429.50
2021	5,166.40	3,955.80

Establishing a chain of blocks based on the data presented in Table (4.2.2), we analyze the revenue stream from the starting block of 2013-2014 to the ending block of 2019-2020. In 2013-2014, there was a slight variation in the total revenue, amounting to approximately \$63,000. However, a significant increase in tax revenue was observed, totaling around \$608,000. In the following year, 2014-2015, the revenue remained stable, and in 2015-2016, the total revenue was approximately \$600,000, with total tax revenue at \$386,000. This indicates that taxes may be a disincentive for total revenue, highlighting the close connection between taxation and financial policy. (Observatory, 2024) as illustrated in figure (4.2) (4.3).

Table 4.2: Total Revenue versus Total Revenue of Taxes During (2013-2020)

Year	Total Revenue (USD)	Total Revenue Taxes (USD)
2020	4,444.80	3,316.20
2019	4,427.20	3,251.60
2018	4,453.20	3,126.80
2017	4,764.60	3,406.10
2016	4,712.90	3,197.60
2015	4,112.20	2,811.30
2014	4,112.20	2,811.30
2013	4,049.20	2,203.90

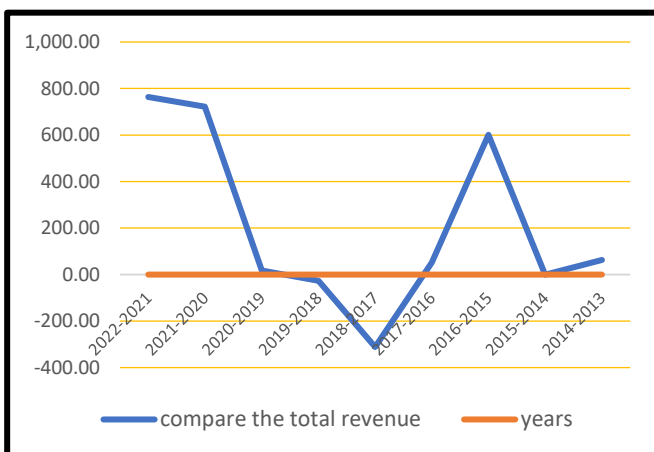


Figure 4.2: Streamline of Total Revenue in the Last 10 years

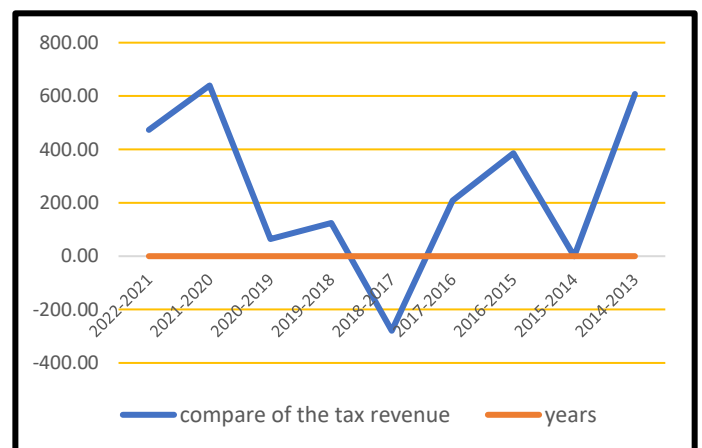


Figure 4.3: Streamline of Tax Revenue in the Last 10 years

4.1.2 Total Revenue Percentage Change and Implications for Increasing Tax Revenue

The Policies for revenue collection have an impact on the tax revenue, as illustrated in Figure (4.4). For example in 2022, the percentage of tax revenue as a portion of total revenue was approximately 75%, compared to 77% in 2021. The decline may be attributed to various factors, including adverse economic conditions, the effects of health crises, and emergency situations such as the COVID-19 pandemic and lockdowns from 2020 to 2021.

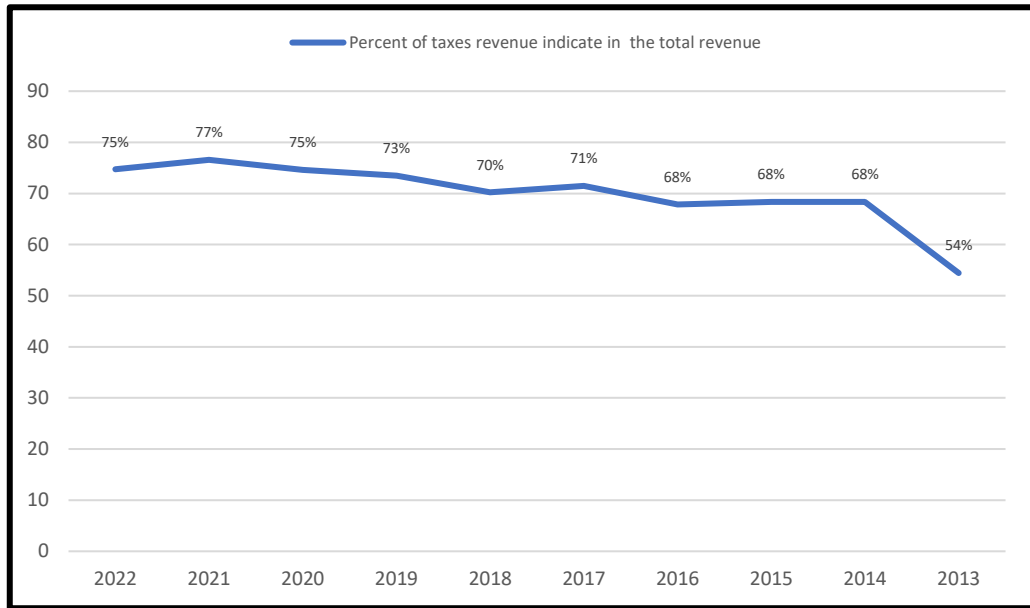


Figure 4.4:Percent indicate of Taxes Revenue Indicate in the Total Revenue During 2013-2022

Comparing the percentage indication of tax revenue with the percentage of implication, notable trends, For example, in 2022, the percentage indication of tax revenue was 75% of the total revenue, while the percentage of implication was approximately -1.87%. In 2020, the percentage indication of tax revenue remained at 75% of the total revenue, with the percentage of implication around 1.16%. In 2018, the percentage indicated for tax revenue was 70% of the total revenue, compared to a percentage of the implication of about -1.27%. In 2017, the percentage indication of tax revenue increased to approximately 71%, while the percentage of implication was 3.23%. This analysis highlights the relationship between the increase in tax revenue and its impact on total revenue.

Table 4.3: Percent Implications of Taxes Revenue During (2013-2022)

Years	Percent of implication taxes revenue in the total revenue
2022-2021	-1.87%
2021-2020	1.96%
2020-2019	1.16%
2019-2018	3.23%

2018-2017	-1.27%
2017-2016	3.64%
2016-2015	-0.52%
2015-2014	0.00%
2014-2013	13.94%

4.1.3 Tax Evasion and VAT Revenue as Proportion of Total Tax Revenue the last Decade

The analysis reveals an inverse relationship between total tax collection and VAT revenue. For instance, in 2013, VAT accounted for 36% of total tax revenue, whereas by 2021, it had dropped to 23%, despite an overall increase in tax revenue. This decline suggests that VAT collection serves as a benchmark for total tax collection and may indicate instances of tax evasion that occurred between 2013 and 2021. Therefore, we can consider 2019 as a benchmark year, establishing a normal baseline with a VAT percentage of 33%. This level is acceptable and reflects an efficient mechanism for collecting VAT while monitoring for tax evasion. However, it is important to acknowledge the challenges posed by economic factors and the effective policies implemented by the Directorate General of Taxes (DGT) to address these issues, as illustrated in Figure (4.5).



Figure 4.5: Percent of VAT Revenue in Total Amount of taxes revenue in Magnitude (Million) in the last 10 years

The implications of tax fraud involve deceit and falsehoods aimed at defrauding the public of money or value. Combating these crimes is crucial for protecting the tax base and supporting essential public services (Government, 2024), as illustrated in Table (4.2.3).

Table 4.4: Percent VAT Revenue Indicate in Total Revenue with Reasons

Year	Percent VAT Taxes	Status	Reasons
2013	36%	Non applicable	Compared with the opposite case in 2016, it gained 36%>29% despite an increase in tax revenue.
2019	33%	Normal	Balanced of tax revenue with VAT revenue.
2021	23%	Non applicable	Compared with the opposite case in 2020, it gained to 26%>23% despite the tax revenue being lowered from 2021.

4.1.4 Risky Role of Tax Evasion on VAT Revenue and Public Budget (2013–2022)

The advancement of technology, innovation, and changes in policies, along with learning from past experiences, are all factors that evolve over time and help detect and reduce the implications of tax evasion. These developments improve the performance of tax collection and optimize the use of available resources to maximize revenue for the public budget. The fluctuations in VAT amounts and the real added value for the public budget are evident; as shown in Figure (4.6), VAT revenue reached a peak of \$1,142.70 million in 2022, compared to a low of \$796,000 in 2013. This significant increase motivates the adoption of blockchain technology in taxation.

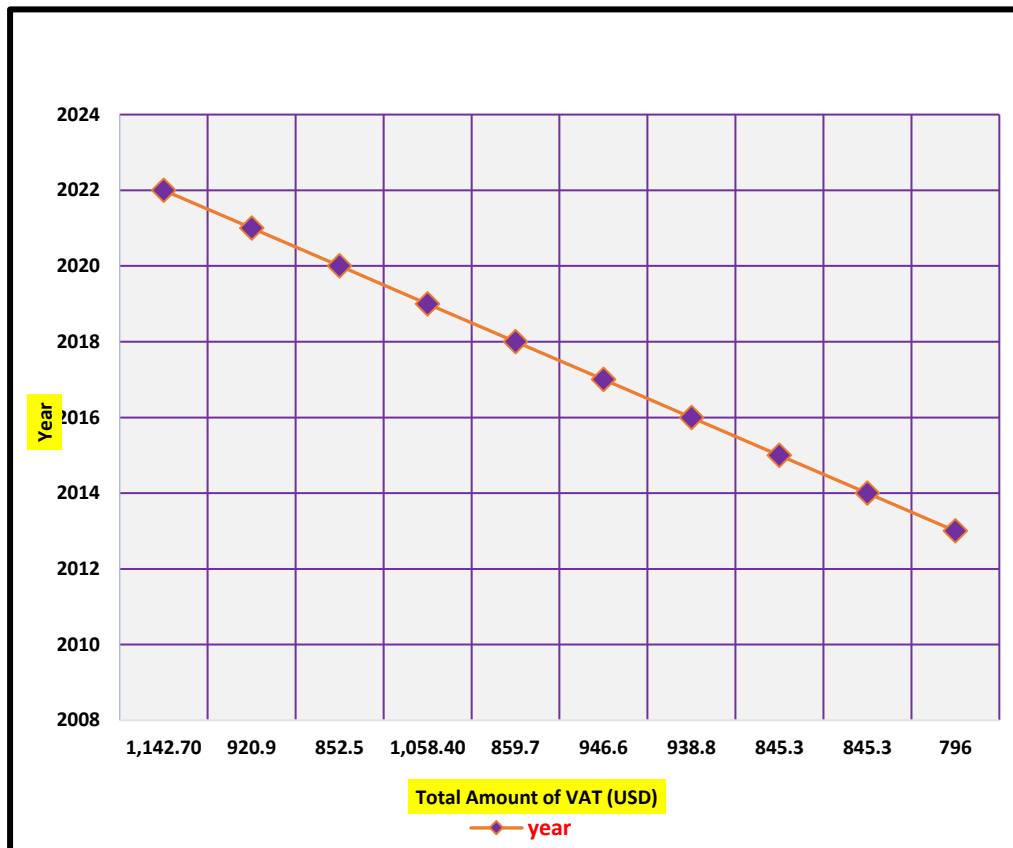


Figure 4.6: VAT Tailored Revenue in Magnitude (Million) in the Last 10 years

4.2 Findings and Results Based on Interview with DGT Staff at the MOF

This section examines the critical factors influencing tax collection through an analysis of interviewees, guided by the questions outlined in Appendix 1. The selection criteria for respondents were based on their demonstrated experience and competence in tax revenue management, the design of positions within the Directorate General of Taxes (DGT), the distribution of tax office branches across governorates, and the level of tax administration (PEFA, n.d.) as categorized by tax typologies. This information is presented in Table (3.3.1). The responses were categorized and analyzed using Microsoft Excel, focusing on each question's target and respective outcomes. (Selina Demi, 2022),

4.2.1: Key Responsibilities for GDT staff

Result: Positive Relation Between Governance and Tax Collection

The quality of governance within the Ministry of Finance (MOF) has a positive effect on tax collection, leading to increased taxpayer compliance. The MOF's administrative structure delineates roles and responsibilities, ensuring the efficient management of accounting, value-added tax (VAT), customs, and excise operations.

This quality of governance is essential for directing efforts to enhance governance and boost long-term tax revenue. (Kahunde Rehema, 2019).

4.2.2: Evaluation of Palestine VAT

Result: Positive Relationship between Tax Compliance and Taxpayer Control

Informants indicated a positive relationship between tax control and taxpayer compliance but suggested that policies and procedures be updated.

Prior to March 2022, the tax administration manual lacked automated procedures, resulting in issues such as missing invoices, forgery, and tax evasion. Following the transformation, discrepancies in tax revenues were identified, and electronic controls were enhanced through historical surveys and reverse checks.

The system was implemented in 14 regional tax offices, where officer inspectors issued notifications to address issues related to actual sales and purchases.

A database of invoices was created, and annual audits and inspections were conducted for companies across four sectors: industrial, services, financial, and commercial.

4.2.3: Implementation of Palestine VAT

Result: There is a positive relationship between the reliability of taxpayer data and VAT tax collection in Palestine

Taxpayer status can change over time due to circumstances such as bankruptcy or changes in partnership, necessitating continuous updates. The lack of connection between the DGT and the Ministry of National Economy affects data collection and reliability. The DGT maintains a database of invoices to regulate purchases and sales, imposing a VAT and tax rate of 16%. Taxpayers are required to submit invoices as part of their declarations. However, the system does not provide real-time information on taxpayer payments.

4.2.4: Risks of VAT Tax Collection in Palestine

Result: There is a positive relationship between the types of risks and tax collection.

Internal risks include functional age, staff turnover, and capacity building in taxation. External risks encompass fraudulent invoices and underreporting of income. For instance, fictitious invoices have been identified in several sectors, highlighting gaps in the current monitoring system and difficulties in mobility between branches of the DGT.

DGT is currently in the development phase for a department focused on managing taxation risks and implementing automated transformations. The disparity between expected and actual tax revenue is influenced by the overall economic situation and circumstances.

4.2.5 Information Technology for Enhancing the Stability of VAT Tax Collection in Palestine.

Result: There is a positive relationship between system technology and tax collection.

The system adopted by the DGT is the Revenue Management System (RMS), which is used to collect tax revenue and enhances the efficiency of the collection process for the DGT.

4.2.6 Blockchain Technology for Enhancing VAT Tax Collection in Palestine

Result: There is a positive relationship between knowledge of blockchain technology and tax collection.

DGT had not previously been aware of blockchain technology or the features that could improve tax collection and reduce tax fraud.

4.3 Implementation of blockchain technology in streamlining VAT transactions, highlighting its potential to improve revenue management and reduce tax fraud.

Revenue Management System (RMS) e-services utilized by the Ministry of Finance (MOF) facilitate the collection of owed taxes from taxpayers by creating a tax file for each individual. This allows for effective tracking of payment amounts. The process of data streamlining is illustrated in Figure (4.7), based on interviews conducted with the (DGT).

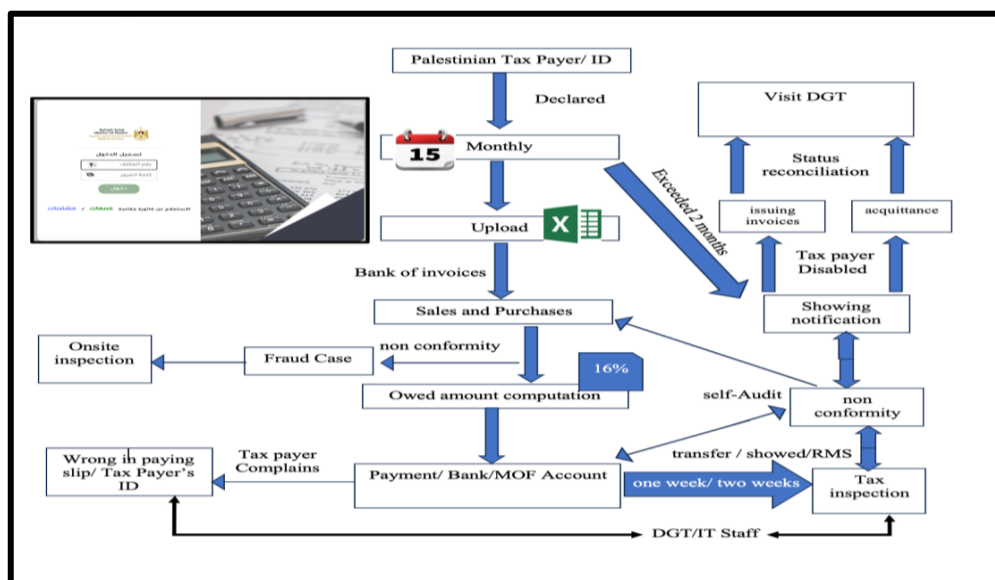


Figure 4.7: Revenue Management System (RMS) of MOF

Red flags are identified while reviewing the main phases of the mechanism adopted in the current Revenue Management System (RMS) of DGT for collecting VAT taxes. This also includes an increase in tolerance for potential tax fraud, as outlined in the Table (4.4), as below.

Table 4.5: Red Flags and RMS

No.	Red Flag	Tolerance for Tax Fraud
1.	No secure electronic connection has been established between the Revenue Management System (RMS) and the accounting system's taxpayer and bank systems.	<ul style="list-style-type: none"> There is no quote in the tax process between the DGT, the taxpayer, and the bank. The DGT will cover the cost of an onsite inspection for the taxpayer.
2.	There is a low level of liability for taxpayer declarations regarding sales and purchases.	<ul style="list-style-type: none"> Manual entry of his ID was accompanied by a taxpayer error during the input process. The format is editable and allows for manipulation.
3.	There is no consideration of real-time calculations for the owed amount of VAT at 16%, including payment and collection.	<p>Due to time discrepancies between:</p> <ul style="list-style-type: none"> The contract date between the seller and the buyer. Declaration date for uploading sales and purchases. The Transaction date for the deposit amount of the owed tax.

	<ul style="list-style-type: none"> • The Transaction date (ranging from one week to two weeks) indicates the period required to transfer the transaction from the bank system to the RMS. • The intervention of DGT /IT staff is required to complete the task of transferring payment amount to RMS.
<p>4. There is a discrepancy in the flow of revenue between the issuance of invoices and the volume of sales and purchases.</p>	<ul style="list-style-type: none"> • There is no integration between the revenue collection mechanism and the bank of invoices. Therefore, it is necessary to ensure conformity between the number of transactions and the issuance of invoices through both electronic and manual audits.

4.4 Palestinian Blockchain Tax Payment Model (PBTP)

This thesis will propose a Palestinian model for the Ministry of Finance based on blockchain technology to improve the tax administration to be more effective in collecting taxes to achieve a real impact raising in public revenue and mitigate the cost of randomly revenue streamlining of output operations of DGT causing negative implications in the form of tax fraud by imposing features of blockchain technology to reduce tolerance of tax evasion during life cycle of tax collection through reach to maximum transparency and data security, data recorded in each block of each Taxpayer involved in a sale or purchase transaction of taxable goods or taxable services with its transaction counterparty will be locked with the hashing function of the blockchain technology. Blockchain technology ensures data integrity by recording transactions in immutable blocks. This prevents data manipulation or fraud, as each transaction is securely hashed and verified within the network. It also enables the DGT as a regulator to conduct comprehensive monitoring and track transactions. Thus, all data recording of transactions that produce VAT will be tracked and recorded properly and securely. The integration of blockchain technology with the tax policy is a crucial step toward a more efficient and transparent tax system. The Palestinian Blockchain Tax Payment Model (PBTP) is a proposed model for the Ministry of Finance in Palestine, to achieve benefits for our national revenue through innovation of technology in ahead blockchain, as illustrated in Figure (4.8).

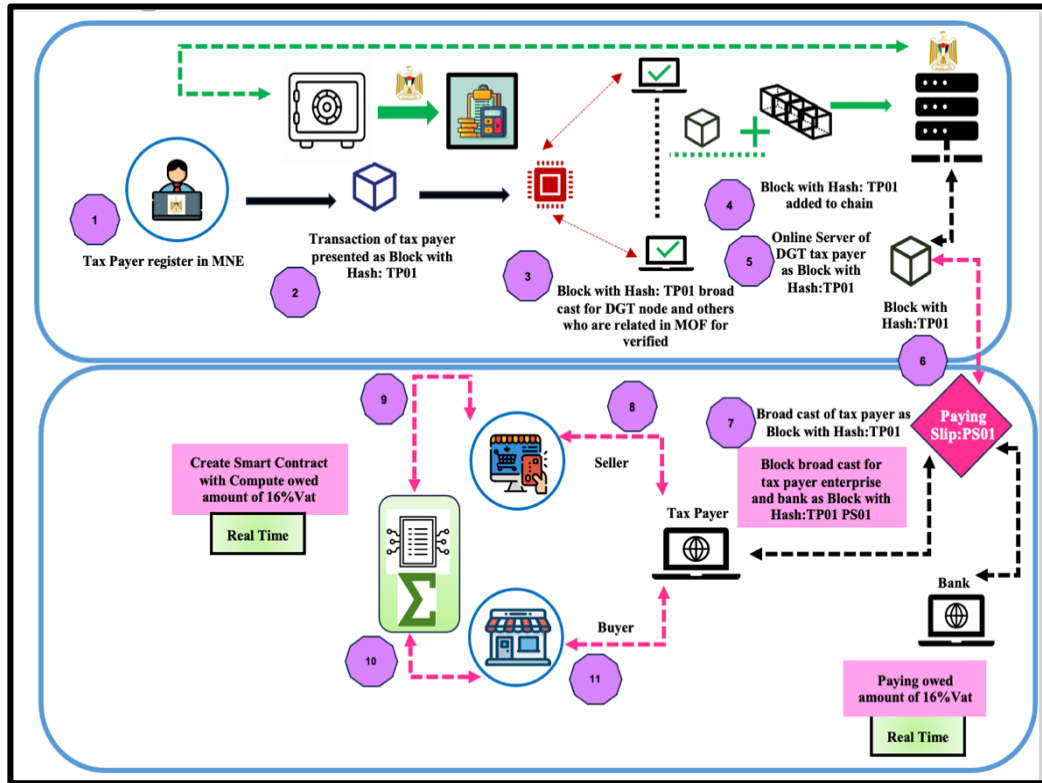


Figure 4.8: Palestinian Blockchain Tax Payment Model (PBTP)

Its potential benefits include an auditable and tamper-proof record of transactions, tax traceability, and Smart contracts, which automate tax calculations and payments, reducing administrative burdens on tax authorities and online businesses. These contracts can be self-executing or self-enforcing, allowing for efficient tax collection and payment. It also facilitates cross-border taxation, simplifying calculations and currency conversions, and provides a secure and decentralized way to verify the digital identities of online businesses, reducing the risk of identity fraud. This technology can be leveraged with the digitization and synchronization of the national identification card, mobile phone numbers, and Tax Identification (TIN) numbers, making it easier to identify potential taxpayers, modernizing tax administration, and fostering a tax-accountable digital economy. (Sampson Anomah *, 2024)

The System of tax based on blockchain technology, adds information to a distributed ledger, the others which must confirm a peer's transaction, then added to a block, which links creating a chain with unique hashes, making fraud detection easy, as illustrated in Figure (4.9). (Rodríguez, 2022-2023)

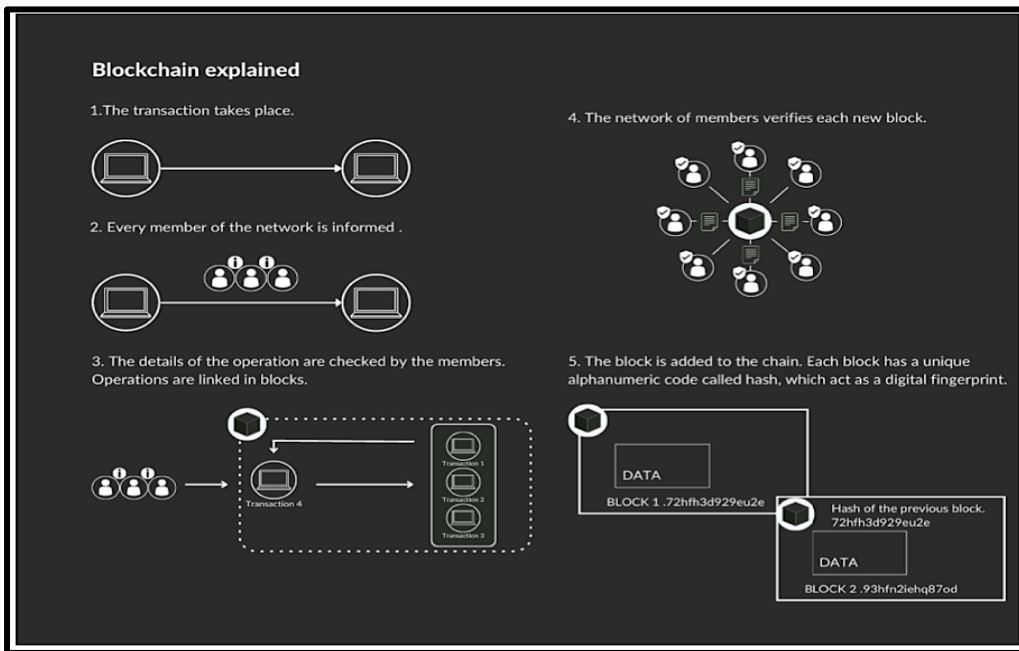


Figure 4.9: The System of tax based on blockchain technology Deloitte2017, (Rodríguez, 2022-2023)

This means the functioning of VAT payment with blockchain will simultaneously be a smart contract calculation between the payer and the company, as illustrated in Figure (4.10).

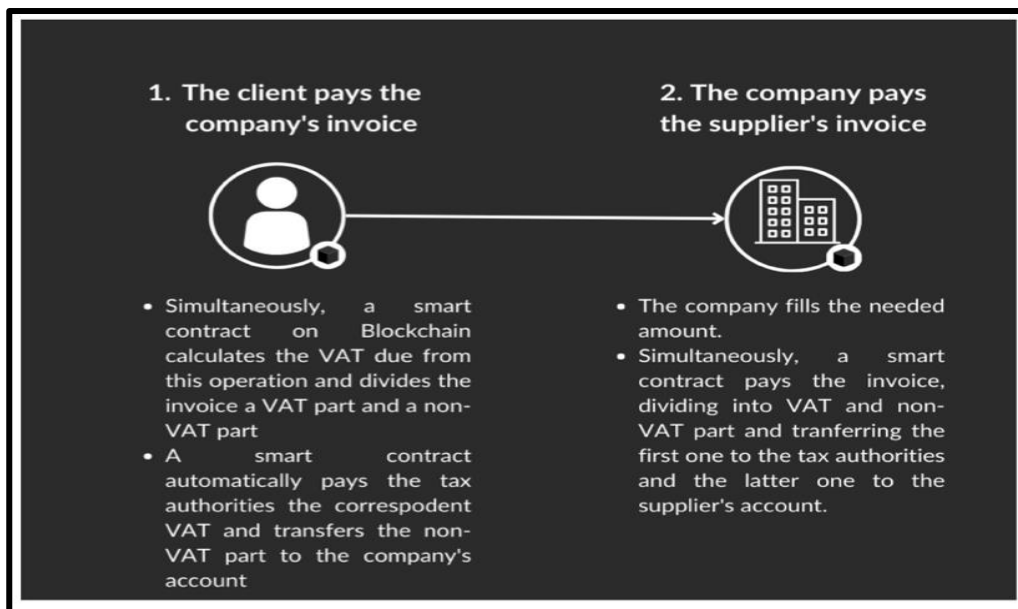


Figure 4.10: VAT payment based on (PBTP)Model Deloitte2017, (Rodríguez, 2022-2023).

Verified the VAT tax amount payment based on the PBTP model, starting from submitting the tax file, gathering of data, verification, calculating for tax owed amount accepting and payment, as illustrated in Figure (4.11). (Saha, 2020)

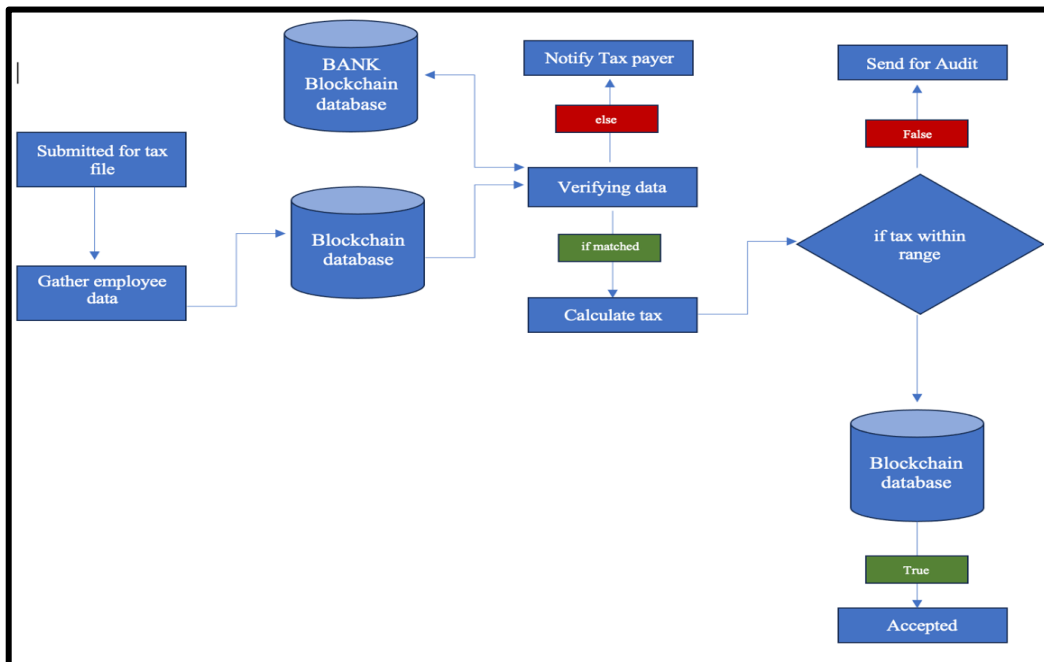


Figure 4.11: Verified VAT tax amount in proposed PBTP Model (Saha, 2020)

4.5 Developing a best practice framework for the digital transformation of tax based on Blockchain Technology consists of the following:

- Demographics
- Current Understanding and Usage of Blockchain
- Perception of Blockchain in Tax Fraud Mitigation
- Potential Challenges and Barriers
- Implementation and Future Outlook
- Concerns regard for Blockchain Technology
- Cases use Suggestions
- Transformation Thoughts

The base formulation for launching blockchain technology in Palestine depends on providing answers to the thesis questions:

Question (1): How could blockchain technology identify suspicious patterns of tax fraud?

The analytics of demographic data for (103) respondents, gained the following results: Identification of suspicious patterns of tax fraud utilized blockchain technology effectively depends on the characteristics and categories of adopters of the blockchain technology and a super player role, shown in:

The professional percentage of the public sector is approximately 68.9% and the private sector with 31.1%. Utilized Pearson test that displayed significant relation (age,

experience), and (age, job role), whereas the highest interval age [30-51] years with percent 65%, and with highest percent in experience reached 35% from (5-10) years, regard to the job role of administrative with 42%, 34% tax accountant, in addition, 40 out of 69 respondents approximately 58% in the public sector, versus 27 out of 32 approximately 84% respondents in private sector agreed and strongly agreed considering the cost of adopting the blockchain technology as potential challenges and barriers to prevent the tax fraud, around 77.46% of public sector respondents, versus around 97% of private sector respondents agreed and strongly agreed on necessity of pilot projects considering as guarantee for successful implementation of blockchain technology in taxation.

The expectation percentage of the public sector is around 63.38%, versus the private sector with 65% agreed and strongly agreed with the positive impact of blockchain technology in reducing fraud in taxation, and with the future outlook of blockchain in the public sector with 32 respondents out of 69, percent 46.37%, versus 15 respondents out of (32) 47% for private sector disagree and strongly considering that there is no impact of blockchain on tax fraud in the long term.

The functional age has a significant impact on the effective utilization of blockchain technology through the results of administrative job roles the interval age [30-51] years reached 39% formulating 24 out of 62 out of a total number of job roles 99, versus 90% in the interval [above 51] years formulate 9 out of 10 out of a total number of job role 99. The perception of respondents, about the potential of decentralized blockchain technology is the most beneficial for tax fraud prevention and mitigation through combating tax fraud, agree and strongly around 62% are less than 30 years and [30-51] years, 70% are above 51 years, regard to experience less than 5 years agree and strongly with 46%, [5-10] years 76.47%, [15-20] years 48%, above 20 years 74%.

Regulatory issues of adopting the blockchain technology are considered as main potential challenges and barriers for tax fraud prevention, promoted through that agreement and strongly less than 30 years with percent 71.42%, [30-51] years with percent 64%, 90% above 51 years.

Finally, considering that blockchain technology is familiar and known depending on the profession of the public sector 35% agree strongly versus 65% in the private sector overall in Palestine around 44%.

Question (2): How could blockchain technology investigate tax evasion?

Tax evasion is subset of tax fraud, hence to make examining and discovering of tax fraud, the initial phase measuring of current understanding for the blockchain technology with percent around 54% of respondents agree and strongly they have the knowledge of blockchain significant percent of they willing to use it in their work reached to 65.34%, with agree and strongly applying in supply chain with percent 53%, with 66.33% in financial domain, 69% in the data security domain, with significant correlation between them as displayed in the result of Pearson test, with positive perception regard to the effective role of blockchain in mitigate tax fraud 73.26%, and adopting by (DGT) to improve the compliance with agree and strongly with 74%, for the features of blockchain technology with percent of agree and strongly transparency(77%) the most beneficial for

tax fraud prevention, then the traceability (72.27%), immutability(65.34%), and decentralized (62.37%), familiarity of the respondents for blockchain technology depends on transparency with (84.44%), depends on immutability with (76%), depends on traceability (78%), and assertion it with the higher ranking of transformation thoughts the real-time data sharing and reporting.

Question (3): How could blockchain increase detect fraudulent activities in taxation?

Detection of tax fraud utilizes blockchain technology to identify and highlight the potential challenges and barriers to implementing blockchain technology. The cost is one of the challenges in adopting the blockchain in tax fraud, with a percentage agreeing and strongly agreeing (66.33%); the lack of expertise (71%); and regulatory issues (96%), the most significant being regulatory acceptance (74%), with a significant correlation among them.

Regarding for future outlook in adopting the (DGT) of blockchain technology immediately to combat tax fraud with percentage of agree and strongly (67%), during -3 years (58%), during 3-5 years (57%), during 5 years (58%), the factors are necessary for successful implementation of blockchain in tax systems, training and education with (83%), Regulatory framework (82%), public-private partnerships (81%), pilot projects (83%), the impact of blockchain in long term reduce significantly the tax fraud (64%), reduce moderately (66%), there is no impact for blockchain technology in combating the tax fraud (28%), increased fraud the impact of blockchain (36%), emphasize with the highest ranking of blockchain use cases in Palestine consecutively for (awareness, E-invoicing, VAT tax collection).

4.6 Recommendations

The Palestinian government should develop a legal framework to support blockchain adoption. Key steps include:

1. Conducting pilot projects in VAT collection.
2. Training tax officials on blockchain technology.
3. Establishing public-private partnerships to fund implementation.
4. To make push up towards the Palestinian e-government and will serve digital economy.

References

- A, J. H., & G, K. (2022). Blockchain in data science. In International Journal of Research Publication and Reviews, International Journal of Research Publication and Reviews (Vol. 3, Issue 5, pp. 2830–2833).
<https://ijrpr.com/uploads/V3ISSUE5/IJRPR4206.pdf>
- Abdelkarim, N., & Jaber, F. (2018). Fair tax monitor: العدالة مؤشر الضريبية [Fair tax monitor: Tax justice indicator].
- Adelekan, N. O. A., Adisa, N. O., Ilugbusi, N. B. S., Obi, N. O. C., Awonuga, N. K. F., Asuzu, N. O. F., & Ndubuisi, N. N. L. (2024). Evolving tax compliance in the digital era: A comparative analysis of AI-driven models and blockchain technology in U.S. tax administration. Computer Science & IT Research Journal, 5(2), 311–335. <https://doi.org/10.51594/csitrj.v5i2.759>
- admin. (2024, January 8). Pearson correlation in SPSS – Explained, performing, reported. Statistical Analysis Services for Academic Researches. <https://spssanalysis.com/pearson-correlation-analysis-in-spss/#>
- Ainsworth, R. T., & Shact, A. (2016). Blockchain (Distributed Ledger Technology) solves VAT fraud. SSRN Electronic Journal. <https://doi.org/10.2139/ssrn.2853428>
- Alexander, G. (2022). Blocking the gap: The potential for blockchain technology to secure VAT compliance. EC Tax Review, 31(3), 140–155. <https://doi.org/10.54648/ecta2022014>
- Alkhodre, A., Ali, T., Jan, S., Alsaawy, Y., Khusro, S., & Yasar, M. (2019). A blockchain-based value added tax (VAT) system: Saudi Arabia as a use-case. International Journal of Advanced Computer Science and Applications, 10(5). <https://doi.org/10.14569/ijaesa.2019.0100588>
- alleviatetax. (2023). alleviatetax. <https://alleviatetax.com>
- AMAN Coalition. (2017). A summary of working papers on tax evasion [Report]. https://www.aman-palestine.org/cached_uploads/download/migrated-files/itemfiles/32b776551f48a8720b7605f9ebdacadaf8.pdf
- Assessing the reliability of Likert scale statements in an e-commerce quantitative study: A Cronbach alpha analysis using SPSS Statistics. (2024, May 3). IEEE Conference Publication | IEEE Xplore. <https://ieeexplore.ieee.org/abstract/document/10534753/authors#authors>
- Blockchain in government and the public sector | Real world blockchain use cases. (n.d.). Consensys. <https://consensys.io/blockchain-use-cases/government-and-the-public-sector>

- Blockchain: A game changer for audit processes? | Deloitte Malta | Audit & Assurance. (2018, June 28). Deloitte. <https://www.deloitte.com/mt/en/services/audit-assurance/perspectives/mt-blockchain-a-game-changer-for-audit.html>
- Byrd, A., & Byrd, A. (2023, September 5). What is self-sovereign identity, and how can it revolutionize data collection and targeting? AdMonsters. <https://www.admonsters.com/what-is-self-sovereign-identity/>
- Cagigas, D., et al. (2021). Blockchain for public services: A systematic literature review. *IEEE Access*, 9, 13904–13921. <https://doi.org/10.1109/access.2021.3052019>
- Canada Revenue Agency. (2025, March 21). Tax evasion: Understanding the consequences. Canada.ca. <https://www.canada.ca/en/revenue-agency/programs/about-canada-revenue-agency-cra/compliance/combat-tax-crimes.html>
- Centre for Multilevel Modelling & British Academy. (n.d.). Chi-squared test practical. University of Bristol. <https://www.bristol.ac.uk/cmm/media/research/ba-teaching-ebooks/pdf/Chi-Squared%20-%20Practical.pdf>
- Collosa, A. (2021, June 14). Blockchain in tax administrations. Inter-American Center of Tax Administrations. <https://www.ciat.org/blockchain-in-tax-administrations/?lang=en>
- Council, B. (2023). Blockchain for beginners. *Acta Universitatis*, 895. <https://doi.org/10.11118/actaun201967030883>
- De La Feria, R. (2020). Tax fraud and selective law enforcement. *Journal of Law and Society*, 47(2), 240–270. <https://doi.org/10.1111/jols.12221>
- Demi, S., Sánchez-Gordón, M., & Kristiansen, M. (2022). Blockchain for requirements traceability: A qualitative approach. *Journal of Software Evolution and Process*, 35(9). <https://doi.org/10.1002/smr.2493>
- Economics Observatory. (2024, August 7). Which taxes are best and worst for growth? Economics Observatory. <https://www.economicsobservatory.com/which-taxes-are-best-and-worst-for-growth#>
- Fintricity. (2017, May 12). Blockchain and tax fraud. Fintricity. <https://www.fintricity.com/blockchain-tax-fraud/#:~:text=Blockchain%20makes%20fraud%20and%20errors,and%20consequences%20of%20non%2Dcompliance.>
- Frost, J. (2022). Cronbach's alpha: Definition, calculations & example. Statistics by Jim. <https://statisticsbyjim.com/basics/cronbachs-alpha/>
- Gayvoronskaya, T., & Meinel, C. (2020). What is hidden behind the term "Blockchain"? In *Blockchain* (pp. 5–13). https://doi.org/10.1007/978-3-030-61559-8_2

- Girardin, M. (2024, July 22). What is qualitative research? Methods and examples. Forage. <https://www.theforage.com/blog/skills/what-is-qualitative-research>
- Hayes, A. (2025, March 24). Blockchain facts: What it is, how it works, and how it can be used. Investopedia. <https://www.investopedia.com/terms/b/blockchain.asp>
- Hossain, S., Saha, S., Akhi, J. F., & Helaly, T. (2020). Automated tax return verification with blockchain technology. In A. Abraham & A. Dutta (Eds.), *Algorithms for intelligent systems* (pp. 45–55). https://doi.org/10.1007/978-981-15-3607-6_4
- Hossain, Safayet, et al. “Automated Tax Return Verification with Blockchain Technology.” *Proceedings of International Joint Conference on Computational Intelligence*, 2020, pp. 45–55, https://doi.org/10.1007/978-981-15-3607-6_4. Accessed 4 Sept. 2021
- Hyvärinen, H., Risius, M., & Friis, G. (2017). A blockchain-based approach towards overcoming financial fraud in public sector services. *Business & Information Systems Engineering*, 59(6), 441–456. <https://doi.org/10.1007/s12599-017-0502-4>
- IBM. (n.d.). Blockchain for government – IBM Blockchain. IBM. <https://www.ibm.com/blockchain/industries/government>.
- Javaid, M., Haleem, A., Khan, S., Khan, M. I., & Suman, R. (2022). A review of blockchain technology applications for financial services. *BenchCouncil Transactions on Benchmarks, Standards and Evaluations*, 2(3), Article 100073. <https://doi.org/10.1016/j.tbench.2022.100073>
- Kahunde, R., Mukisa, I., & Teera, J. (2019). The effect of the quality of governance on tax revenue in East Africa. *Tanzanian Economic Review*, 9(1), 15–34. <https://EconPapers.repec.org/RePEc:ris:tanzer:0001>
- Kavoya, J. (2018). Digital technologies in the tax industry: The case of VAT. *Tax Administration Review*. https://www.ciat.org/Biblioteca/Revista/Revista_43/ingles/2018_TR_43_kavoya.pdf

- Khalil, M., Khawaja, K. F., & Sarfraz, M. (2021). The adoption of blockchain technology in the financial sector during the era of Fourth Industrial Revolution: A moderated mediated model. *Quality & Quantity*, 56(4), 2435–2452.
<https://doi.org/10.1007/s11135-021-01229-0>
- Kim, Y. R. (C.). (2021). Blockchain initiatives for tax administration. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3798136>
- Lage Rodríguez, M., & Facultade de Economía e Empresa. (n.d.). Blockchain implementation in taxation (I. Fernández Fernández & M. M. Sieiro Constenla, Eds.). *University of A Coruña*.
https://ruc.udc.es/dspace/bitstream/handle/2183/33822/LageRodriguez_Marina_TFG_2_023.pdf?sequence=2&isAllowed=y
- Large Taxpayers Unit/MOF. (2024). Blockchain technology and tax fraud. [Interview].
- Liu, C., Xiao, Y., Javangula, V., Hu, Q., Wang, S., & Cheng, X. (2018). NormaChain: A blockchain-based normalized autonomous transaction settlement system for IoT-based e-commerce. *IEEE Internet of Things Journal*, 5(4), 2341–2351.
<https://doi.org/10.1109/JIOT.2018.2875509>
- Lyutova, O. I., & Fialkovskaya, I. D. (2021). Blockchain technology in tax law theory and tax administration. *RUDN JOURNAL OF LAW*, 25(3), 693–710. <https://doi.org/10.22363/2313-2337-2021-25-3-693-710>
- Gupta, M. (2018). *Blockchain for dummies*. John Wiley & Sons, Inc.
- Ministry of Finance. (2018). [Financial Report]. Pmof.ps.
<https://www.pmf.ps/internal.php?var=09&tab=02>
- Mohajan, H. K. (2017). Two criteria for good measurements in research: Validity and reliability. *Annals of Spiru Haret University Economic Series*, 17(4), 59–82.
<https://doi.org/10.26458/1746>
- Morkunas, V. J., Paschen, J., & Boon, E. (2019). How blockchain technologies impact your business model. *Business Horizons*, 62(3), 295–306.
<https://doi.org/10.1016/j.bushor.2019.01.009>
- Morton, E., & Curran, M. (2023). Exemplifying the opportunities and limitations of blockchain technology through corporate tax losses. In *Handbook of big data and analytics in accounting and auditing* (pp. 177–205). https://doi.org/10.1007/978-981-19-4460-4_9
- Nemade, A. E., Kadam, S. S., Choudhary, R. N., Fegade, S. S., & Agarwal, K. (2019). Blockchain technology used in taxation. In *2019 International Conference on*

Vision Towards Emerging Trends in Communication and Networking (ViTECoN) (pp. 1–4). <https://doi.org/10.1109/vitecon.2019.8899652>

Sontakke, N., Deshmukh, K., Ghuge, N., Sawant, S., & Pradhan, M. (2023). A novel approach for invoice management using blockchain. arXiv. <https://doi.org/10.48550/arxiv.2309.03303>

Palestine, I. (2023, September 6). Blockchain Palestine. This Week in Palestine. <https://thisweekinpalestine.com/blockchain-palestine>

PEFA Secretariat. (2023). 2022 stocktaking of PFM diagnostic tools: Global trends and insights (Volume 2). <https://www.pefa.org/sites/pefa/files/PEFA%202022%20Stocktaking%20-%20B11.pdf>

Peláez-Repiso, A., Sánchez-Núñez, P., & Calvente, Y. G. (2021). Tax regulation on blockchain and cryptocurrency: The implications for open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(1), Article 98. <https://doi.org/10.3390/joitmc7010098>

Real-Statistics.com. (2024). Dichotomous variables & chi-square independence testing. <https://real-statistics.com/correlation/dichotomous-variables-chi-square-independence-testing/>

Anomah, S., Addae, E., Boadi, E. K., & Oduro, R. (2024). Blockchain technology integration in tax policy: Navigating challenges and unlocking opportunities for improving the taxation of Ghana's digital economy. *Scientific African*, 24, e02210. <https://doi.org/10.1016/j.sciaf.2024.e02210>

Sarmah, S. S. (2018). Understanding blockchain technology. *Computer Science and Engineering*, 8(2), 23–29. <http://www.sapub.org/global/showpaperpdf.aspx?doi=10.5923/j.computer.20180802.02>

Setyowati, M. S., Utami, N., Saragih, A. H., & Hendrawan, A. (2022b). Strategic factors in implementing blockchain technology in Indonesia's value-added tax system. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.4093657>

Stewart, K. (2025, March 27). Pearson's correlation coefficient: Definition, formula, & facts. *Encyclopedia Britannica*. <https://www.britannica.com/topic/Pearsons-correlation-coefficient>

Tabatabaei, M. H., Vitenberg, R., & Veeraragavan, N. R. (2023). Understanding blockchain: Definitions, architecture, design, and system comparison. *Computer Science Review*, 50, 100575. <https://doi.org/10.1016/j.cosrev.2023.100575>

Tanzi, V. (2020). Complexity, corruption, and tax evasion. In *Oxford University Press eBooks* (pp. 160–178).

<https://doi.org/10.1093/oso/9780198866428.003.0010>

- The Portland Trust. (2023). Palestinian economic bulletin (Vol. Bulletin 198, pp. 1–4) [Report]. <https://portlandtrust.org/wp-content/uploads/2023/03/Bulletin-198-March-English-A4.pdf>
- Turney, S. (2022, May 23). Chi-square (χ^2) tests. Scribbr. <https://www.scribbr.com/statistics/chi-square-tests/>
- Turney, S. (2022, May 13). Pearson correlation coefficient (r). Scribbr. <https://www.scribbr.com/statistics/pearson-correlation-coefficient/>
- Unknown. (n.d.). Validity and reliability test. In Validity and reliability test (pp. 8-1–8-9). <https://industrialengineering11.wordpress.com/wp-content/uploads/2014/04/validity-and-reliability-test.pdf>
- Vistro, D. M., & Mago, D. (2021, September 13). Fraud prevention in taxation system of Pakistan using blockchain technology. Atlantis Press. <https://www.atlantispress.com/proceedings/iciic-21/125960852>
- Walker, S. (2021, March 26). What is tax fraud? Walker Law. <https://walk-law.com/what-is-tax-fraud/>
- Yang, B., Dawod, A. Y., & International College of Digital Innovation, Chiang Mai University. (2023). Electronic invoice management strategy based on blockchain technology. In Proceedings of the 7th TICC International Conference 2023 Toward Sustainable Development Goals: Transformation and Beyond [Conference proceeding]. <https://ticc.icdi.cmu.ac.th/Files/paper/Paper%204.pdf>
- Yayman, D. (2021). Blockchain in taxation. *Journal of Accounting and Finance*, 21(4). <https://doi.org/10.33423/jaf.v21i4.4530>
- Yli-Huumo, J., Ko, D., Choi, S., Park, S., & Smolander, K. (2016). Where is current research on blockchain technology?—A systematic review. *PLOS ONE*, 11(10), e0163477. <https://doi.org/10.1371/journal.pone.0163477>
- Zídková, H., & Št'astná, A. (2019). VAT collection methods. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, 67(3), 883–895. <https://doi.org/10.11118/actaun201967030883>
- World Economic Forum. (2020). WEF Blockchain Toolkit. World Economic Forum. <https://widgets.weforum.org/blockchain-toolkit/tax-implications/index.html>. Accessed 14 Apr. 2025.

Appendices

Appendix (1): Interview Questions



Master's Degree of Data Science and Business Analytics

Dear General Directorate of Value Added Tax in Ministry of Finance

The researcher is conducting a study entitled: "Blockchain Technology for Mitigating Tax Fraud in Palestine." Under the supervision of Dr. Mahmoud Obaid and Dr. Rami Hadrob.

We kindly request your cooperation in filling out the questionnaire objectively. The data collected will be crucial for the success of the research and the completion of the requirements for obtaining a master's degree in Data Science and Business Analytics from the Arab American University.

Please note that the data will be collected solely for scientific research purposes and will be treated with the utmost confidentiality. No personal information will be shared.

For any inquiries, please contact the researcher via

e-mail r.odeh14@student.aaup.edu or call the following number: 0599927818.

Thank you for your cooperation.

Researcher:

Rema Odeh

Interviewee Name:

Interview Questions		
Part (1): Key Responsibilities for General Directorate of Value Added Tax in MOF in Palestine.		Clarifications for each question
Questions:	Answers:	
1- What is your job title?		<p>These questions are designed to serve as tax control for revenue collection and aim to evaluate the relationship between governance and tax collection in the VAT directorate by focusing on several aspects:</p> <ol style="list-style-type: none"> 1- Its impact on financial data: This point investigates how governance practices affect the accuracy and completeness of financial records related to tax collection. 2- Efficiency of tax collection: This analyzes the effectiveness of processes and procedures used to collect taxes, identifying potential areas for improvement through better governance. 3- Principles of governance: This assesses the extent to which the VAT directorate adheres to established principles of good governance, such as transparency, accountability, and rule of law. 4- Implementation of tax regulations: This examines who is responsible for implementing tax regulations and how effectively they are carried out. 5- Employee responsibility and commitment: This evaluates the level of responsibility and commitment among employees in the VAT directorate towards achieving higher tax revenue goals. 6- Hypothesis: If governance is increased, will tax revenue and compliance rise?
2- What is your role in the institution?		
Part (2): Evaluation for VAT Tax Collection in Palestine		

<p>1- What are the procedures you are following to update the regulations and policies for collecting VAT Tax?</p>		<p>This question examines how tax control is one of the factors influencing taxpayer compliance. It aims to understand:</p> <ol style="list-style-type: none"> 1. Procedures and policies: This investigate what procedures and policies are in place for tax control, especially for VAT collection. 2. Impact of existing tax rate: This analyzes the current VAT tax rate (16%) and its actual effect on tax collection, assessing its effectiveness in encouraging compliance. 3. Regulation updates based on revenue changes: This explores whether changes in tax revenue, either increases or decreases, have triggered updates or adjustments to tax regulations and policies in the past. <p>Hypothesis: For example:</p> <ul style="list-style-type: none"> • "Increasing tax control would lead to higher taxpayer compliance and, consequently, higher tax revenue." • "Updating tax regulations based on revenue changes has a significant impact on taxpayer compliance."
<p>1.1 How do you determine your need to update?</p>		<ol style="list-style-type: none"> 1. How does the tax directorate gather information about taxpayer compliance (e.g., through reporting requirements, audits, data analysis)? <ul style="list-style-type: none"> • This clarifies the specific type of information you're asking about and provides some examples. 2. How can understanding taxpayer behavior benefit tax administrators? <ul style="list-style-type: none"> • This rephrases the question to focus on the benefits and avoid vagueness.

		<p>3. Will understanding taxpayer behavior help in evaluating the effectiveness of proposed models to mitigate tax evasion and fraud?</p> <ul style="list-style-type: none"> • This clarifies the connection between taxpayer behavior and potential solutions.
1.2 How do you approve the update?		<p>Hypothesis: The relationship between taxpayer behavior and tax evasion/fraud significantly influences the effectiveness of proposed mitigation models.</p> <ul style="list-style-type: none"> • This statement clearly establishes a cause-and-effect relationship and specifies the research focus.
1.3 How do you implement the update?		
Part (3): Implementation for VAT Tax Collection in Palestine		
1- What are the procedures for following up on the counting of establishments in Palestine?		<p>Target of the question:</p> <ol style="list-style-type: none"> 1. To understand the relationship between the tax department and the Ministry of Economy, specifically through the use of company registration data. 2. To determine whether there is an automated data transfer system between these two entities. 3. To analyze the interaction between private companies and the tax directorate. 4. To examine the application of the 16% VAT rate on local goods and services and its differentiation based on establishment categories (small, medium, and large). <ol style="list-style-type: none"> 4.1 To assess the effectiveness of controls in establishment registration and their impact on preventing tax evasion. 4.2 To evaluate the fairness and accuracy of assigning VAT categories based on company size and characteristics.

		Hypothesis: There is a significant relationship between the assigned VAT category of an enterprise and its likelihood of engaging in tax evasion.
2- What are the methods to collect VAT?		<ol style="list-style-type: none"> 1- To analyze the relationship between buyers and sellers in the context of VAT. 2- To understand the process of tax deduction on purchases and subsequent remittance to the tax directorate. 3- To identify vulnerabilities in the current system for tax deduction and remittance, potentially leading to tax evasion.
3- What are the principles of the VAT collection system?		<ul style="list-style-type: none"> • The equation (OUTPUT TAX-INPUT TAX=NET TAX) provides a basic definition, but it's not a complete explanation of how VAT works. You could expand on this in several ways: <ul style="list-style-type: none"> ○ Briefly explain the concept of value added and how it applies to VAT. ○ Describe the VAT rate and how it's applied to transactions. ○ Outline the key responsibilities of businesses in the VAT system (e.g., charging VAT, collecting it, claiming input tax). ○ Mention any specific exemptions or special cases that apply to certain types of businesses or transactions. <p>For example, you could rephrase the question as: In simple terms, how does the VAT system function for businesses, including charging the tax, managing input and output tax, and filing returns?</p>

4- What is the revenue percentage of VAT in the public treasury?		<ul style="list-style-type: none"> ○ Percentage of VAT tax revenue in the public treasury ○ Changes in the percentage over time: ○ Changes in economic activity. ○ Changes in the VAT rate. ○ Changes in tax administration and compliance. ○ Other factors. ○ Impact of changes on revenue
--	--	--

Part (4): Risks of VAT Tax Collection in Palestine		
1- How do you identify the risks of VAT collection?		<p>1-Identifying Threats to VAT Collection Through Risk Assessment</p> <p>1.1 External Risks:</p> <p>1.1.1 Force Majeure: Natural disasters, pandemics, or armed conflicts can significantly disrupt economic activity and VAT collection.</p> <p>1.1.2 Political and Legislative: Changes in government policies, tax laws, or trade agreements can affect VAT revenues.</p> <p>1.1.3 Situations in the Branch: Industry-specific challenges like market downturns or supply chain disruptions can impact specific sectors and their VAT contributions.</p> <p>1.2 Operational Risks:</p> <p>1.3 Strategic Risks:</p> <p>1.4 Insolvency Risks:</p>
2- What are the types of tax fraud?		1- Many tax authorities around the world are seeing particular types of tax evasion: under-reporting of income through

		<p>electronic sales suppression and over-reporting of deductions through false invoicing. Tax evasion and fraud can be further facilitated by the cash economy and the sharing (or online) economy.</p> <p>2- Willful Failure to Pay Income Taxes</p> <p>3- Making a Frivolous Tax Claim</p> <p>4- Other Common Tax Fraud Crimes</p> <p>5- Employee Tax Fraud Explained</p> <p>6- Common Employment Tax Fraud Scams</p> <p>7- Tax Preparer Fraud</p>
3-How can you deal with tax fraud?		<p>1- How they explore tax fraud patterns.</p> <p>2- If they conduct audit trail or not.</p> <p>3- There are any systems or technologies using.</p>
4- What is the percentage difference between the actual and budgeted amounts of VAT?		<p>1- How they expecting the amount of revenues in such year.</p> <p>2- How they be accepted the difference with budgeted. (What is red flag percentage)</p>
Part (5): Information Technology for the Stability of VAT Tax Collection in Palestine		
1- What is the information system adopted for collecting VAT?		However, cost effective technology solutions are already available for tax authorities to implement, and which prevent and detect these types of tax evasion and tax fraud.
2- What are the mechanisms being implemented to detect tax fraud?		<p>1. To understand the behavior of tax payers.</p> <p>2. Audit trail.</p>
Part (6): Blockchain Technology for Improving VAT Tax Collection in Palestine		
1- Have you heard before about blockchain technology?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<p>1.To measure if they are familiar with this concept or not.</p> <p>2.To measure the culture of tax directorate in the recent technology using for anticorruption.</p>

2- Do you know the features of blockchain technology for detecting tax fraud?	<input type="checkbox"/> Yes <input type="checkbox"/> No	To measure if they know the features (security, immutability, audit trail...)
3- Do you know the benefits of adopting blockchain technology by the entities of taxation for increasing revenues?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<p>To answers the sub questions of thesis: How could blockchain solving for problem in vat collection) What are the variables that will formulate the proposed model.</p> <ol style="list-style-type: none"> 1. How could blockchain technology identify suspicious patterns of tax fraud? (increase in quality of data) 2. How could blockchain technology investigate tax evasion? (error free remittance) 3. How could blockchain increase detect fraudulent activities in taxation? (behaviour of tax payers)
4- Do you agree to make an assessment for readiness MOF to implement blockchain technology in VAT collection?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<ol style="list-style-type: none"> 1. To measure the fact of technology in MOF. 2. Their answers sholud support the thesis in using blockchain technology. 3. To be the proposed model e-invoices.

Appendix (2): Questionnaire



درجة الماجستير في علم البيانات وتحليل الأعمال

تجري الباحثة دراسة بعنوان " تكنولوجيا سلسلة الكتل للتخفيف من الاحتيال الضريبي في فلسطين"، بإشراف د. محمود عبيد، د. رامي حدرب، الهدف منها إبراز دور التكنولوجيا الناشئة سلسلة الكتل أو " بلوكشين" في التخفيف من الاحتيال الضريبي، والتي يتم تعريفها على أنها دفتر أستاذ موزع بشكل لا مركزي، يتيح حفظ سجلات المعاملات بشكل آمن وشفاف ومقاوم للتلاعب عبر شبكة من أجهزة الكمبيوتر، من أهم تطبيقات "البلوكشين" العملات المشفرة "البيتكوين"، ولكن تمتد تطبيقاتها إلى أبعد من ذلك، وبالأخص في القطاع المالي والتحصيل الضريبي للتخفيف من الآثار السلبية التي قد تنجم من الاحتيال الضريبي لتحقيق أعلى عائد على الخزينة العامة .

ولأغراض علمية نعكس من خلالها واقع التحصيل الضريبي وأبرز التحديات التي تواجه الإدارة العامة للضرائب والجمارك في وزارة المالية، سيتم جمع البيانات لخدمة البحث وبسرية تامة، ولا يوجد ما يستدعي للإفصاح عن أي معلومات شخصية تخصكم.

وعليه فإننا نرجو منكم التعاون مع الباحثة في تعبئة الاستبانة بموضوعية، إذ أن البيانات التي سيتم جمعها هامة لإنجاح واستكمال متطلبات نيل شهادة الماجستير في علم البيانات وتحليل الأعمال.

في حال وجود أي استفسار، يمكنكم مراسلة الباحثة من خلال:

البريد الإلكتروني: r.odeh14@student.aaup.edu

الاتصال على الرقم: 0599927818

شاكرين لكم حسن تعاونكم

الباحثة/ريما عود

Section #1: Demographics

To Understand the Background of the Respondents

القسم الأول: المعلومات الديمغرافية/ التركيبية السكانية

لفهم خلفية المستجيبين

1-What is your age?

less than 30 years 30-51 years above 51 years

١- ما هو عمرك؟

أكبر من ٥١ عام ٣٠-٥١ عام أقل من ٣٠ عام

2-What is your highest level of education?

less than Bachelor Master PhD

٢- ما هو المستوى التعليمي الأعلى لك؟

دكتوراة ماجستير بكالوريوس فأقل

3- What is your profession/industry?

٣- ما هي مهنتك/ طبيعة عملك؟

Private Sector Employee

موظف قطاع خاص

Public Sector Employee

موظف قطاع عام

in case you are in private sector employee, please specify your sector

Industrial Service Commercial Financial

في حال أنك موظف قطاع خاص، الرجاء حدد قطاعك

مالي تجاري خدماتي صناعي

in case you are in private sector employee, please specify the size of your enterprise

less than 10 employees 10-49 employees 50-249 employees above 250 employees

الرجاء تحديد حجم المنشأة التي تعمل بها

أقل من ١٠ موظفين ١٠-٤٩ موظف ٥٠-٢٤٩ موظف أكثر من ٢٥٠ موظف

Please , specify your job role:

Tax Accountant Tax Collector Tax Auditor Tax -IT Support Administrative

الرجاء، حدد دورك الوظيفي

محاسب ضريبي محصل ضريبي مدقق ضريبي حاسوب ضريبي إداري

Please, specify your number of years of experience in the tax domain.

less than 5 years 5-10 years 15-20 years above 20 years

الرجاء، حدد عدد سنوات خبرتك العملية في المجال الضريبي:

أقل من ٥ سنوات من ٥-١٠ سنة من ١٠-٢٠ سنة أكثر من ٢٠ سنة

Consider blockchain technology familiar and known

strongly agree agree neither strongly disagree disagree

تعتبر تكنولوجيا سلسلة الكتل " بلوكشين " شائعة ومتعارف عليها

أو أفقر بشدة أو أفقر محايد غير موافق بشدة غير موافق

Section #2: Current Understanding and Usage of Blockchain.

To gauge the current knowledge and application of blockchain technology.

القسم الثاني: الفهم والاستخدام الحالي لتكنولوجيا سلسلة الكتل " بلوكشين ".

لقياس المعرفة والتطبيقات الحالية لتكنولوجيا سلسلة الكتل " بلوكشين ".

I understanding the blockchain technology?

strongly agree agree neither strongly disagree disagree

أنا أفهم تكنولوجيا سلسلة الكتل " بلوكشين "؟

أو أفقر بشدة أو أفقر محايد غير موافق بشدة غير موافق

I like to use the blockchain technology in my work?

strongly agree agree neither strongly disagree disagree

أرغب في استخدام تكنولوجيا سلسلة الكتل " بلوكشين " في عملي؟

أوافق بشدة أوافق محايد غير موافق بشدة غير موافق

Have you used blockchain technology in the supply chain domain?

strongly agree agree neither strongly disagree disagree

يتم استخدام تكنولوجيا سلسلة الكتل " بلوكشين " في مجال سلسلة التوريدات؟

أوافق بشدة أوافق محايد غير موافق بشدة غير موافق

Have you used blockchain technology in the Finance domain?

strongly agree agree neither strongly disagree disagree

يتم استخدام تكنولوجيا سلسلة الكتل " بلوكشين " في المجال المالي؟

أوافق بشدة أوافق محايد غير موافق بشدة غير موافق

Have you used blockchain technology in the Data Security domain?

strongly agree agree neither strongly disagree disagree

يتم استخدام تكنولوجيا سلسلة الكتل " بلوكشين " في المجال أمن البيانات؟

أوافق بشدة أوافق محايد غير موافق بشدة غير موافق

Section #3: Perception of Blockchain in Tax Fraud Mitigation.

To understand how respondents view the potential of blockchain in combating tax fraud.

القسم الثالث: التصور حول تكنولوجيا سلسلة الكتل " بلوكشين " في التخفيف من الاحتيال الضريبي.

لفهم آراء المستجيبين حول إمكانية تكنولوجيا سلسلة الكتل " بلوكشين " في مكافحة الاحتيال الضريبي.

Blockchain technology effective for mitigating tax fraud?

strongly agree agree neither strongly disagree disagree

تكنولوجيا سلسلة الكتل " بلوكشين " هي فعالة للتخفيف من الاحتيال الضريبي؟

أوافق بشدة أوافق محايد غير موافق بشدة غير موافق

Transparency feature of blockchain technology is the most beneficial for tax fraud prevention?

strongly disagree

strongly agree agree neither disagree

الشفافية هي من الخصائص الأكثر فائدة في تكنولوجيا سلسلة الكتل " بلوكشين " لمنع الاحتيال الضريبي؟

أوافق بشدة أوافق محايد غير موافق بشدة غير موافق

Immutability feature of blockchain technology is the most beneficial for tax fraud prevention?

strongly agree agree neither strongly disagree disagree

الثبات (غير قابل للتغيير) هي من الخصائص الأكثر فائدة في تكنولوجيا سلسلة الكتل " بلوكشين " لمنع الاحتيال الضريبي؟

أوافق بشدة أوافق محايد غير موافق بشدة غير موافق

Decentralization feature of blockchain technology is the most beneficial for tax fraud prevention?

strongly agree agree neither strongly disagree disagree

اللامركزية هي من الخصائص الأكثر فائدة في تكنولوجيا سلسلة الكتل " بلوكشين " لمنع الاحتيال الضريبي؟

أوافق بشدة أوافق محايد غير موافق بشدة غير موافق

Traceability feature of blockchain technology is the most beneficial for tax fraud prevention?
strongly agree agree neither strongly disagree disagree

التتبع هي من الخصائص الأكثر فائدة في تكنولوجيا سلسلة الكتل " بلوكشين " لمنع الاحتيال الضريبي؟

أوافق بشدة أوافق محايد غير موافق بشدة غير موافق

Adoption of blockchain technology by Directorate General of Taxation would improve tax compliance?

strongly agree agree neither strongly disagree disagree

تبني تكنولوجيا سلسلة الكتل " بلوكشين " من قبل الإدارة العامة للضرائب سيحسن من الامتثال الضريبي؟

أوافق بشدة أوافق محايد غير موافق بشدة غير موافق

Section #4: Potential Challenges and Barriers

To identify perceived challenges in implementing blockchain for tax fraud mitigation.

القسم الرابع: التحديات والعواقب المحتملة

لتعريف وتحديد تصور عن التحديات في تنفيذ تكنولوجيا سلسلة الكتل " بلوكشين" للتخفيف من الاحتيال الضريبي.

The Cost is the main challenge in adopting blockchain technology for tax fraud prevention?

strongly agree agree neither strongly disagree disagree

التكلفة هي التحدي الرئيسي في تبني تكنولوجيا سلسلة الكتل " بلوكشين" لمنع الاحتيال الضريبي؟

أوافق بشدة أوافق محايد غير موافق بشدة غير موافق

The Lack of expertise is the main challenge in adopting blockchain technology for tax fraud prevention?

strongly agree agree neither strongly disagree disagree

الندرة في الخبرة هي التحدي الرئيسي في تبني تكنولوجيا سلسلة الكتل " بلوكشين" لمنع الاحتيال الضريبي؟

أوافق بشدة أوافق محايد غير موافق بشدة غير موافق

The Regulatory issues is the main challenge in adopting blockchain technology for tax fraud prevention?

strongly agree agree neither strongly disagree disagree

القضايا التنظيمية هي التحدي الرئيسي في تبني تكنولوجيا سلسلة الكتل " بلوكشين" لمنع الاحتيال الضريبي؟

أوافق بشدة أوافق محايد غير موافق بشدة غير موافق

The challenge of regulatory acceptance for blockchain in tax administration is

strongly agree agree neither strongly disagree disagree

significant?

التحدي القبول التنظيمي لتكنولوجيا سلسلة الكتل " بلوكشين " في إدارة الضرائب لها أهمية؟

غير موافق

غير موافق بشدة

محايد

أوافق

أوافق بشدة

Section #5: Implementation and Future Outlook

To gather opinions on the implementation process and future expectations.

القسم الخامس: التنفيذ والترقب للمستقبل

لجمع الآراء لعملية التنفيذ والتوقعات المستقبلية

Directorate General of Taxation should adopt blockchain technology to combat tax

fraud Immediately?

strongly agree agree neither strongly disagree disagree

الإدارة العامة للضرائب يجب ان تتبنى تكنولوجيا سلسلة الكتل " بلوكشين لمحاربة الاحتيال الضريبي فوراً؟

غير موافق غير موافق بشدة محايد أوافق أوافق بشدة

Directorate General of Taxation should adopt blockchain technology to combat tax

fraud Within 1-3 years?

strongly agree agree neither strongly disagree disagree

الإدارة العامة للضرائب يجب ان تتبنى تكنولوجيا سلسلة الكتل " بلوكشين لمحاربة الاحتيال الضريبي خلال 1-3 أعوام؟

غير موافق غير موافق بشدة محايد أوافق أوافق بشدة

Directorate General of Taxation should adopt blockchain technology to combat tax fraud Within 3-5 years?

strongly agree agree neither strongly disagree disagree

الإدارة العامة للضرائب يجب ان تتبنى تكنولوجيا سلسلة الكتل " بلوكشين لمحاربة الاحتيال الضريبي خلال 3-5 أعوام؟

أوافق بشدة أوافق محايد غير موافق بشدة غير موافق

Directorate General of Taxation should adopt blockchain technology to combat tax fraud Within 5 years?

strongly agree agree neither strongly disagree disagree

الإدارة العامة للضرائب يجب ان تتبنى تكنولوجيا سلسلة الكتل " بلوكشين لمحاربة الاحتيال الضريبي خلال 5 أعوام؟

أوافق بشدة أوافق محايد غير موافق بشدة غير موافق

Training and education are necessary for successful implementation of blockchain in tax systems?

strongly agree agree neither strongly disagree disagree

التدريب والتعليم ضروري لنجاح تنفيذ تكنولوجيا سلسلة الكتل " بلوكشين" في أنظمة الضريبة؟

أوافق بشدة أوافق محايد غير موافق بشدة غير موافق

Regulatory framework is necessary for successful implementation of blockchain in tax systems?

strongly agree agree neither strongly disagree disagree

الإطار التنظيمي ضروري لنجاح تنفيذ تكنولوجيا سلسلة الكتل " بلوكشين" في أنظمة الضريبة؟

أوافق بشدة أوافق محايد غير موافق بشدة غير موافق

Public-private partnerships are necessary for successful implementation of blockchain in tax systems?

strongly agree agree neither strongly disagree disagree

شركات ما بين القطاع العام والخاص ضرورية لنجاح تنفيذ تكنولوجيا سلسلة الكتل "بلوكشين" في أنظمة الضريبة؟

أوافق بشدة أوافق محايد غير موافق بشدة غير موافق

Pilot projects are necessary for successful implementation of blockchain in tax systems?

strongly agree agree neither strongly disagree disagree

المشاريع التجريبية ضرورية لنجاح تنفيذ تكنولوجيا سلسلة الكتل "بلوكشين" في أنظمة الضريبة؟

أوافق بشدة أوافق محايد غير موافق بشدة غير موافق

Reduce significantly the impact of blockchain technology on tax fraud in the long term.

strongly agree agree neither strongly disagree disagree

انخفاض أهمية الاحتيال الضريبي هو أثر تكنولوجيا سلسلة الكتل "بلوكشين" على المدى البعيد.

أوافق بشدة أوافق محايد غير موافق بشدة غير موافق

Reduce moderately the impact of blockchain technology on tax fraud in the long term.

strongly agree agree neither strongly disagree disagree

انخفاض معتدل في الاحتيال الضريبي هو أثر تكنولوجيا سلسلة الكتل "بلوكشين" على المدى البعيد.

أوافق بشدة أوافق محايد غير موافق بشدة غير موافق

There is no impact of blockchain technology on tax fraud in the long term.

strongly agree agree neither strongly disagree disagree

لا يوجد أثر لتكنولوجيا سلسلة الكتل "بلوكشين" في الاحتيال الضريبي على المدى البعيد.

أوافق بشدة أوافق محايد غير موافق بشدة غير موافق

Increased fraud is the impact of blockchain technology on tax in the long term.

strongly agree agree neither strongly disagree disagree

زيادة الاحتيال أثر تكنولوجيا سلسلة الكتل "بلوكشين" في الضريبة على المدى البعيد.

أوافق بشدة أوافق محايد غير موافق بشدة غير موافق

Section #6: Open-ended Questions

To gather detailed qualitative insights.

القسم السادس: أسئلة مفتوحة

لجمع تفاصيل لرؤى نوعية

What are your main concerns regarding the use of blockchain technology for tax

fraud mitigation? ما هي مخاوفك الرئيسية إزاء استخدام تكنولوجيا سلسلة الكتل "بلوكشين" للتخفيف من الاحتيال الضريبي؟

Can you suggest any specific use cases where blockchain technology can be effectively used to prevent tax fraud?

هل يمكنك اقتراح حالات محددة لاستخدام تكنولوجيا سلسلة الكتل "بلوكشين" بفاعلية لمنع الاحتيال الضريبي؟

Do you have any additional thoughts on how blockchain technology can transform tax administration?

هل لديك أي أفكار إضافية كيف يمكن تكنولوجيا سلسلة الكتل "بلوكشين" في تحول إدارة الضريبة؟

Appendix (3): Variable-definition

No.	Variable coding-SPSS	Measure	Variable-definition -Questionnaire
1	AGE	Ordinal	Age
2	EDU	Nominal	Highest Education Level
3	PROFESION	Nominal	Profession
4	SPESIFIEDPRIVATE	Nominal	Nature of private sector
5	PRIVATESIZE	Ordinal	Size of private sector
6	JOBROLE	Nominal	Job role
7	EXPERIENCE	Ordinal	Number of Years' Experience
8	BLCPOPULAR	Ordinal	Blockchain Familiar and known
9	BLCUNDESTAND	Ordinal	understanding the blockchain technology
10	BLCWILLINGUSING	Ordinal	like to use the blockchain technology in my work
11	BLCSUPPLYCHAIN	Ordinal	used blockchain technology in the supply chain domain
12	BLCFINANCIAL	Ordinal	used blockchain technology in the Finance domain
13	BLCINFOSECURITY	Ordinal	used blockchain technology in the Data Security domain
14	BLCEFFECTIVEFTAXFR AUD	Ordinal	Blockchain technology effective for mitigating tax fraud
15	BLCTRANSPERANCY	Ordinal	Transparency feature
16	BLCIMMUTABILITY	Ordinal	Immutability feature
17	BLCDECENTRLIAZED	Ordinal	Decentralization feature
18	BLCRACABILITY	Ordinal	Traceability feature
19	BLCADOPTIONDGT	Ordinal	Adoption of blockchain
20	BLCCOST	Ordinal	Cost
21	BLCLACKE	Ordinal	Lake of expertise
22	BLCORGANIZEDISSUE	Ordinal	Regulatory issues
23	BLCACCEPTANCE	Ordinal	challenge of regulatory
24	BLCIMMADIATE	Ordinal	adopt blockchain Immediately
25	BLC13	Ordinal	adopt blockchain Within 1-3 years
26	BLC35	Ordinal	adopt blockchain 3-5 years
27	BLC5	Ordinal	adopt blockchain 5 years

28	BLCTRAINING	Ordinal	Training and education
29	BLCFRAMEORGANIZED	Ordinal	Regulatory framework
30	BLCPARTENERSHIP	Ordinal	Public-private partnerships
31	BLCPILOTPROJECT	Ordinal	Pilot projects
32	FARUDSIGNIFICANTLY	Ordinal	Reduce significantly
33	FARUDMODERATLY	Ordinal	Reduce moderately
34	BLCNOIMPACTFRAUD	Ordinal	no impact of blockchain
35	BLCINCREASEFRAUD	Ordinal	Increased fraud

Appendix (4): Descriptive Statistic-Frequency

```

FREQUENCIES VARIABLES=BLCUNDESTAND BLCWILLINGUSING BLCSUPPLYCHAIN BLCFINANC
IAL BLCINFOSECURITY
    BLCEFFECTIVEFTAXFRAUD BLC TRANSPERANCY BLCIMMUTABILITY BLCDECENTRALIZED
BLC TRACABILITY
    BLCADOPTIONDGT BLC COST BLC LACKE BLC ORGANIZED ISSUE BLC ACCEPTANCE BLC IMM
EDIATE BLC13 BLC35 BLC5
    BLC TRAINING BLC FRAME ORGANIZED BLC PARTENERSHIP BLC PILOT PROJECT FARU
SIGN
IFICANTLY FARU MODERATLY
    BLC NO IMPACT FRAUD BLC INCREASE FRAUD
    /ORDER=ANALYSIS.

```

Frequencies

Notes

Output Created	04-JAN-2025 02:42:50	
Comments		
Input	Data	/Users/mac/Desktop/Blockchain-Thesis/NEW-CYCLE-THESIS/FULL-PROPOSAL/obaid+hodro ub/write-metho/questionair/bc-fraud-dataset-30-08.sav
	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	103
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data.

Notes

Syntax		FREQUENCIES VARIABLES=BLCUNDEST AND BLCWILLINGUSI BLC SUPPLYCHAIN BLCFINANCIAL BLCINFOSECURITY BLCEFFECTIVEFTAXFRAU D BLCTRANSPERANCY BLCIMMUTABILITY BLCDECENTRIAZED BLC TRACABILITY BLC ADOPTIONDGT BLC COST BLC LACKE BLC ORGANIZEDISSUE BLC ACCEPTANCE BLC IMMEDIATE BLC13 BLC35 BLC5 BLC TRAINING BLC FRAMEORGANIZED BLC PARTENERSHIP BLC PILOTPROJECT FARUDSIGNIFICANTLY FARUDMODERATLY BLCNOIMPACTFRAUD BLCINCREASEFRAUD /ORDER=ANALYSIS.
Resources	Processor Time	00:00:00.06
	Elapsed Time	00:00:00.00

Statistics

		BLCUNDESTAN D	BLCWILLINGUSI NG	BLC SUPPLYCH AIN	BLCFINANCIAL	BLCINFOSECUR ITY
N	Valid	99	101	102	101	101
	Missing	4	2	1	2	2

Statistics

		BLCEFFECTIVE FTAXFRAUD	BLCTRANSPER ANCY	BLCIMMUTABIL ITY	BLCDECENTRI AZED	BLC TRACABIL TY
N	Valid	101	103	101	101	103
	Missing	2	0	2	2	0

Statistics

		BLC ADOPTION DGT	BLC COST	BLC LACKE	BLC ORGANIZE DISSUE	BLC ACCEPTAN CE
N	Valid	103	101	102	102	102
	Missing	0	2	1	1	1

Statistics

		BLCIMMADIAT E	BLC13	BLC35	BLC5	BLCTRAINING	BLCFRAMEORG ANIZED
N	Valid	102	103	101	102	102	103
	Missing	1	0	2	1	1	0

Statistics

		BLCPARTENER SHIP	BLCPILOTPROJ ECT	FARUDSIGNIFIC ANTLY	FARUDMODER ATLY	BLCNOIMPACT FRAUD
N	Valid	101	103	102	100	101
	Missing	2	0	1	3	2

Statistics

		BLCINCREASEF RAUD
N	Valid	103
	Missing	0

Frequency Table

BLCUNDESTAND

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	11	10.7	11.1	11.1
	agree	42	40.8	42.4	53.5
	neither	19	18.4	19.2	72.7
	strongly disagree	5	4.9	5.1	77.8
	disagree	22	21.4	22.2	100.0
	Total		99	96.1	100.0
Missing	System	4	3.9		
Total		103	100.0		

BLCWILLINGUSING

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	13	12.6	12.9	12.9
	agree	53	51.5	52.5	65.3
	neither	24	23.3	23.8	89.1
	disagree	11	10.7	10.9	100.0
	Total		101	98.1	100.0
Missing	System	2	1.9		
Total		103	100.0		

BLCSUPPLYCHAIN

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	8	7.8	7.8	7.8
	agree	46	44.7	45.1	52.9
	neither	31	30.1	30.4	83.3
	strongly disagree	2	1.9	2.0	85.3
	disagree	15	14.6	14.7	100.0
	Total	102	99.0	100.0	
Missing	System	1	1.0		
Total		103	100.0		

BLCFINANCIAL

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	17	16.5	16.8	16.8
	agree	50	48.5	49.5	66.3
	neither	29	28.2	28.7	95.0
	disagree	5	4.9	5.0	100.0
	Total	101	98.1	100.0	
Missing	System	2	1.9		
Total		103	100.0		

BLCINFOSECURITY

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	27	26.2	26.7	26.7
	agree	43	41.7	42.6	69.3
	neither	27	26.2	26.7	96.0
	strongly disagree	1	1.0	1.0	97.0
	disagree	3	2.9	3.0	100.0
	Total	101	98.1	100.0	
Missing	System	2	1.9		
Total		103	100.0		

BLCEFFECTIVEFTAXFRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	19	18.4	18.8	18.8
	agree	55	53.4	54.5	73.3
	neither	25	24.3	24.8	98.0
	disagree	2	1.9	2.0	100.0
	Total	101	98.1	100.0	
Missing	System	2	1.9		
Total		103	100.0		

BLCTRANSPERANCY

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	20	19.4	19.4	19.4
	agree	59	57.3	57.3	76.7
	neither	21	20.4	20.4	97.1
	strongly disagree	1	1.0	1.0	98.1
	disagree	2	1.9	1.9	100.0
	Total	103	100.0	100.0	

BLCIMMUTABILITY

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	18	17.5	17.8	17.8
	agree	48	46.6	47.5	65.3
	neither	29	28.2	28.7	94.1
	strongly disagree	1	1.0	1.0	95.0
	disagree	5	4.9	5.0	100.0
	Total	101	98.1	100.0	
Missing	System	2	1.9		
Total		103	100.0		

BLCDECENTRIALIZED

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	17	16.5	16.8	16.8
	agree	46	44.7	45.5	62.4
	neither	30	29.1	29.7	92.1
	disagree	8	7.8	7.9	100.0
	Total	101	98.1	100.0	
Missing	System	2	1.9		
Total		103	100.0		

BLCTRACABILITY

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	22	21.4	21.4	21.4
	agree	51	49.5	49.5	70.9
	neither	25	24.3	24.3	95.1
	disagree	5	4.9	4.9	100.0
	Total	103	100.0	100.0	

BLCADOPTIONDGT

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	24	23.3	23.3	23.3
	agree	52	50.5	50.5	73.8
	neither	25	24.3	24.3	98.1
	disagree	2	1.9	1.9	100.0
	Total	103	100.0	100.0	

BLCCOST

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	20	19.4	19.8	19.8
	agree	47	45.6	46.5	66.3
	neither	25	24.3	24.8	91.1
	disagree	9	8.7	8.9	100.0
	Total	101	98.1	100.0	
Missing	System	2	1.9		
Total		103	100.0		

BLCLACKE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	24	23.3	23.5	23.5
	agree	48	46.6	47.1	70.6
	neither	27	26.2	26.5	97.1
	disagree	3	2.9	2.9	100.0
	Total	102	99.0	100.0	
Missing	System	1	1.0		
Total		103	100.0		

BLCORGANIZEDISSUE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	13	12.6	12.7	12.7
	agree	57	55.3	55.9	68.6
	neither	26	25.2	25.5	94.1
	disagree	6	5.8	5.9	100.0
	Total	102	99.0	100.0	
Missing	System	1	1.0		
Total		103	100.0		

BLCACCEPTANCE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	18	17.5	17.6	17.6
	agree	57	55.3	55.9	73.5
	neither	24	23.3	23.5	97.1
	disagree	3	2.9	2.9	100.0
	Total	102	99.0	100.0	
Missing	System	1	1.0		
Total		103	100.0		

BLCIMMADIATE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	25	24.3	24.5	24.5
	agree	43	41.7	42.2	66.7
	neither	27	26.2	26.5	93.1
	strongly disagree	1	1.0	1.0	94.1
	disagree	6	5.8	5.9	100.0
	Total	102	99.0	100.0	
Missing	System	1	1.0		
Total		103	100.0		

BLC13

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	20	19.4	19.4	19.4
	agree	40	38.8	38.8	58.3
	neither	36	35.0	35.0	93.2
	disagree	7	6.8	6.8	100.0
	Total	103	100.0	100.0	

BLC35

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	20	19.4	19.8	19.8
	agree	38	36.9	37.6	57.4
	neither	36	35.0	35.6	93.1
	strongly disagree	1	1.0	1.0	94.1
	disagree	6	5.8	5.9	100.0
	Total	101	98.1	100.0	
Missing	System	2	1.9		
Total		103	100.0		

BLC5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	21	20.4	20.6	20.6
	agree	38	36.9	37.3	57.8
	neither	33	32.0	32.4	90.2
	strongly disagree	1	1.0	1.0	91.2
	disagree	9	8.7	8.8	100.0
	Total	102	99.0	100.0	
Missing	System	1	1.0		
Total		103	100.0		

BLCTRaining

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	47	45.6	46.1	46.1
	agree	38	36.9	37.3	83.3
	neither	15	14.6	14.7	98.0
	disagree	2	1.9	2.0	100.0
	Total	102	99.0	100.0	
Missing	System	1	1.0		
Total		103	100.0		

BLCFRAMEORGANIZED

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	36	35.0	35.0	35.0
	agree	48	46.6	46.6	81.6
	neither	19	18.4	18.4	100.0
	Total	103	100.0	100.0	

BLCPARTENERSHIP

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	44	42.7	43.6	43.6
	agree	38	36.9	37.6	81.2
	neither	18	17.5	17.8	99.0
	disagree	1	1.0	1.0	100.0
	Total	101	98.1	100.0	
Missing	System	2	1.9		
Total		103	100.0		

BLCPILOTPROJECT

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	34	33.0	33.0	33.0
	agree	52	50.5	50.5	83.5
	neither	17	16.5	16.5	100.0
	Total	103	100.0	100.0	

FARUDSIGNIFICANTLY

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	20	19.4	19.6	19.6
	agree	45	43.7	44.1	63.7
	neither	33	32.0	32.4	96.1
	disagree	4	3.9	3.9	100.0
	Total	102	99.0	100.0	
Missing	System	1	1.0		
Total		103	100.0		

FARUDMODERATLY

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	15	14.6	15.0	15.0
	agree	51	49.5	51.0	66.0
	neither	29	28.2	29.0	95.0
	strongly disagree	1	1.0	1.0	96.0
	disagree	4	3.9	4.0	100.0
	Total	100	97.1	100.0	
Missing	System	3	2.9		
Total		103	100.0		

BLCNOIMPACTFRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	8	7.8	7.9	7.9
	agree	20	19.4	19.8	27.7
	neither	26	25.2	25.7	53.5
	strongly disagree	10	9.7	9.9	63.4
	disagree	37	35.9	36.6	100.0
	Total	101	98.1	100.0	
Missing	System	2	1.9		
	Total	103	100.0		

BLCINCREASEFRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	11	10.7	10.7	10.7
	agree	26	25.2	25.2	35.9
	neither	30	29.1	29.1	65.0
	strongly disagree	10	9.7	9.7	74.8
	disagree	26	25.2	25.2	100.0
	Total	103	100.0	100.0	

Appendix (5): Chi-Square correlation Coefficient

```

CORRELATIONS
/VARIABLES=AGE EDU PROFESION SPESIFIEDPRIVATE PRIVATESIZE JOBROLE EXPERIE
NCE BLCPOPULAR
      BLCUNDESTAND BLCWILLINGUSING BLC SUPPLYCHAIN BLCFINANCIAL BLCINFOSECURIT
Y BLC EFFECTIVEFTAXFRAUD
      BLC TRANSPERANCY BLCIMMUTABILITY BLCDECENTRLIAZED BLC TRACABILITY BLCADOP
TIONDGT BLCCOST BLCLACKE
      BLCORGANIZEDISSUE BLCACCEPTANCE BLCIMMADIATE BLC13 BLC35 BLC5 BLC TRAINI
NG BLCFRAMEORGANIZED
      BLCPARTENERSHIP BLCPILOTPROJECTFARUDSIGNIFICANTLYFARUDMODERATLY BLCNO
IMPACTFRAUD BLCINCREASEFRAUD
/PRINT=TWOTAIL NOSIG FULL
/MISSING=PAIRWISE.

```

Correlations

Notes

Output Created		04-JAN-2025 03:03:58
Comments		
Input	Data	/Users/mac/Desktop/Blockchain-Thesis/NEW-CYCLE-THESIS/FULL-PROPOSAL/obaid+hodroub/write-metho/questionair/bc-fraud-dataset-30-08.sav
	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	103
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each pair of variables are based on all the cases with valid data for that pair.

Notes

Syntax	<pre> CORRELATIONS /VARIABLES=AGE EDU PROFESION SPESIFIEDPRIVATE PRIVATE SIZE JOBROLE EXPERIENCE BLCPOPULAR BLCUNDESTAND BLCWILLINGUSING BLC SUPPLYCHAIN BLCFINANCIAL BLCINFOSECURITY BLC EFFECTIVE TAX FRAU D BLC TRANSPERANCY BLCIMMUTABILITY BLCDECENTRALIAZED BLCRACABILITY BLCADPTIONDGT BLC COST BLC LACKE BLC ORGANIZEDISSUE BLC ACCEPTANCE BLC IMMADIATE BLC13 BLC35 BLC5 BLC TRAINING BLC FRAME ORGANIZED BLC PARTENERSHIP BLC PILOT PROJECT FARUDSIGNIFICANTLY FARUDMODERATLY BLCNOIMPACTFRAUD BLCINCREASEFRAUD /PRINT=T WOTAIL NOSIG FULL MISSING=PAIRWISE. </pre>	
Resources	Processor Time	00:00:00.28
	Elapsed Time	00:00:00.00

Correlations

		AGE	EDU	PROFESION
AGE	Pearson Correlation	1	.057	-.087
	Sig. (2-tailed)		.564	.383
	N	103	103	103
EDU	Pearson Correlation	.057	1	.091
	Sig. (2-tailed)	.564		.363
	N	103	103	103
PROFESION	Pearson Correlation	-.087	.091	1
	Sig. (2-tailed)	.383	.363	
	N	103	103	103
SPESIFIEDPRIVATE	Pearson Correlation	-.098	-.150	-.362**
	Sig. (2-tailed)	.497	.299	.010
	N	50	50	50
PRIVATESIZE	Pearson Correlation	.239	-.023	-.257
	Sig. (2-tailed)	.098	.874	.075
	N	49	49	49
JOBROLE	Pearson Correlation	.290**	.090	.134
	Sig. (2-tailed)	.004	.375	.185
	N	99	99	99
EXPERIENCE	Pearson Correlation	.574**	.091	-.148
	Sig. (2-tailed)	.000	.367	.142
	N	100	100	100
BLCPOPULAR	Pearson Correlation	.078	-.146	-.191
	Sig. (2-tailed)	.437	.143	.054
	N	102	102	102
BLCUNDESTAND	Pearson Correlation	.088	-.122	-.148
	Sig. (2-tailed)	.384	.228	.144
	N	99	99	99
BLCWILLINGUSING	Pearson Correlation	.006	.035	.140
	Sig. (2-tailed)	.949	.725	.164
	N	101	101	101
BLCSUPPLYCHAIN	Pearson Correlation	-.015	-.168	.045
	Sig. (2-tailed)	.882	.091	.654
	N	102	102	102
BLCFINANCIAL	Pearson Correlation	.024	-.174	-.125
	Sig. (2-tailed)	.811	.082	.214
	N	101	101	101
BLCINFOSECURITY	Pearson Correlation	.055	-.127	-.032
	Sig. (2-tailed)	.586	.206	.747
	N	101	101	101

Correlations

		SPESIFIEDPRIV ATE	PRIVATESIZE	JOBROLE
AGE	Pearson Correlation	-.098	.239	.290 ^{**}
	Sig. (2-tailed)	.497	.098	.004
	N	50	49	99
EDU	Pearson Correlation	-.150	-.023	.090
	Sig. (2-tailed)	.299	.874	.375
	N	50	49	99
PROFESION	Pearson Correlation	-.362 ^{**}	-.257	.134
	Sig. (2-tailed)	.010	.075	.185
	N	50	49	99
SPESIFIEDPRIVATE	Pearson Correlation	1	.429 ^{**}	-.225
	Sig. (2-tailed)		.004	.124
	N	50	43	48
PRIVATESIZE	Pearson Correlation	.429 ^{**}	1	.103
	Sig. (2-tailed)	.004		.497
	N	43	49	46
JOBROLE	Pearson Correlation	-.225	.103	1
	Sig. (2-tailed)	.124	.497	
	N	48	46	99
EXPERIENCE	Pearson Correlation	.086	.160	.249 [*]
	Sig. (2-tailed)	.551	.277	.014
	N	50	48	96
BLCPOPULAR	Pearson Correlation	-.019	-.175	-.008
	Sig. (2-tailed)	.895	.234	.936
	N	49	48	98
BLCUNDESTAND	Pearson Correlation	.026	-.096	-.054
	Sig. (2-tailed)	.859	.518	.600
	N	49	48	96
BLCWILLINGUSING	Pearson Correlation	-.043	-.194	-.012
	Sig. (2-tailed)	.770	.187	.907
	N	49	48	97
BLCSUPPLYCHAIN	Pearson Correlation	-.148	-.127	.026
	Sig. (2-tailed)	.304	.386	.796
	N	50	49	98
BLCFINANCIAL	Pearson Correlation	-.013	.035	.059
	Sig. (2-tailed)	.929	.813	.565
	N	49	48	97
BLCINFOSECURITY	Pearson Correlation	-.175	-.127	.056
	Sig. (2-tailed)	.229	.396	.584
	N	49	47	98

Page 4

Correlations

		BLCWILLINGUS NG	BLCSUPPLYCH AIN	BLCFINANCIAL
AGE	Pearson Correlation	.006	-.015	.024
	Sig. (2-tailed)	.949	.882	.811
	N	101	102	101
EDU	Pearson Correlation	.035	-.168	-.174
	Sig. (2-tailed)	.725	.091	.082
	N	101	102	101
PROFESION	Pearson Correlation	.140	.045	-.125
	Sig. (2-tailed)	.164	.654	.214
	N	101	102	101
SPESIFIEDPRIVATE	Pearson Correlation	-.043	-.148	-.013
	Sig. (2-tailed)	.770	.304	.929
	N	49	50	49
PRIVATESIZE	Pearson Correlation	-.194	-.127	.035
	Sig. (2-tailed)	.187	.386	.813
	N	48	49	48
JOBROLE	Pearson Correlation	-.012	.026	.059
	Sig. (2-tailed)	.907	.796	.565
	N	97	98	97
EXPERIENCE	Pearson Correlation	-.044	-.073	-.038
	Sig. (2-tailed)	.668	.470	.712
	N	98	99	98
BLCPOPULAR	Pearson Correlation	-.056	.240 [*]	.235 [*]
	Sig. (2-tailed)	.583	.016	.019
	N	100	101	100
BLCUNDESTAND	Pearson Correlation	.413 ^{**}	.381 ^{**}	.413 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	98	99	97
BLCWILLINGUSING	Pearson Correlation	1	.361 ^{**}	.277 ^{**}
	Sig. (2-tailed)		.000	.006
	N	101	101	99
BLCSUPPLYCHAIN	Pearson Correlation	.361 ^{**}	1	.608 ^{**}
	Sig. (2-tailed)	.000		.000
	N	101	102	100
BLCFINANCIAL	Pearson Correlation	.277 ^{**}	.608 ^{**}	1
	Sig. (2-tailed)	.006	.000	
	N	99	100	101
BLCINFOSECURITY	Pearson Correlation	.438 ^{**}	.546 ^{**}	.731 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	99	100	99

Page 6

Correlations

		BLCINFOSECURITY	BLCEFFECTIVEFTAXFRAUD	BLCTRANSFERANCY
AGE	Pearson Correlation	.055	.047	.034
	Sig. (2-tailed)	.586	.644	.735
	N	101	101	103
EDU	Pearson Correlation	-.127	-.136	-.132
	Sig. (2-tailed)	.206	.175	.183
	N	101	101	103
PROFESION	Pearson Correlation	-.032	-.050	-.129
	Sig. (2-tailed)	.747	.623	.192
	N	101	101	103
SPESIFIEDPRIVATE	Pearson Correlation	-.175	.008	.156
	Sig. (2-tailed)	.229	.954	.280
	N	49	50	50
PRIVATE SIZE	Pearson Correlation	-.127	-.186	-.074
	Sig. (2-tailed)	.396	.200	.615
	N	47	49	49
JOBROLE	Pearson Correlation	.056	.016	.017
	Sig. (2-tailed)	.584	.874	.871
	N	98	97	99
EXPERIENCE	Pearson Correlation	-.084	-.198	-.132
	Sig. (2-tailed)	.410	.051	.190
	N	98	98	100
BLCPOPULAR	Pearson Correlation	.259 ^{**}	.128	.015
	Sig. (2-tailed)	.009	.206	.882
	N	100	100	102
BLCUNDESTAND	Pearson Correlation	.480 ^{**}	.430 ^{**}	.344 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	97	97	99
BLCWILLINGUSING	Pearson Correlation	.438 ^{**}	.589 ^{**}	.538 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	99	99	101
BLCSUPPLYCHAIN	Pearson Correlation	.546 ^{**}	.268 ^{**}	.305 ^{**}
	Sig. (2-tailed)	.000	.007	.002
	N	100	100	102
BLCFINANCIAL	Pearson Correlation	.731 ^{**}	.411 ^{**}	.522 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	99	99	101
BLCINFOSECURITY	Pearson Correlation	1	.590 ^{**}	.540 ^{**}
	Sig. (2-tailed)		.000	.000
	N	101	99	101

Page 7

Correlations

		BLCIMMUTABIL ITY	BLCDECENTRLI AZED	BLCTRACABILI TY
AGE	Pearson Correlation	.031	-.188	-.033
	Sig. (2-tailed)	.757	.060	.738
	N	101	101	103
EDU	Pearson Correlation	-.115	-.070	-.073
	Sig. (2-tailed)	.251	.486	.463
	N	101	101	103
PROFESION	Pearson Correlation	-.065	.131	-.171
	Sig. (2-tailed)	.516	.193	.083
	N	101	101	103
SPESIFIEDPRIVATE	Pearson Correlation	.044	.025	.028
	Sig. (2-tailed)	.766	.866	.845
	N	48	49	50
PRIVATESIZE	Pearson Correlation	-.165	-.010	-.185
	Sig. (2-tailed)	.263	.945	.202
	N	48	49	49
JOBROLE	Pearson Correlation	-.142	-.155	-.104
	Sig. (2-tailed)	.165	.129	.307
	N	97	97	99
EXPERIENCE	Pearson Correlation	-.220 [*]	-.271 ^{**}	-.194
	Sig. (2-tailed)	.030	.007	.054
	N	98	98	100
BLCPOPULAR	Pearson Correlation	.273 ^{**}	-.102	.004
	Sig. (2-tailed)	.006	.312	.964
	N	100	100	102
BLCUNDESTAND	Pearson Correlation	.538 ^{**}	.326 ^{**}	.308 ^{**}
	Sig. (2-tailed)	.000	.001	.002
	N	97	98	99
BLCWILLINGUSING	Pearson Correlation	.479 ^{**}	.416 ^{**}	.419 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	100	100	101
BLCSUPPLYCHAIN	Pearson Correlation	.323 ^{**}	.133	.232 [*]
	Sig. (2-tailed)	.001	.185	.019
	N	100	101	102
BLCFINANCIAL	Pearson Correlation	.460 ^{**}	.288 ^{**}	.408 ^{**}
	Sig. (2-tailed)	.000	.004	.000
	N	99	99	101
BLCINFOSECURITY	Pearson Correlation	.464 ^{**}	.399 ^{**}	.420 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	99	99	101

Page 8

Correlations

		BLCADOPTION DGT	BLCCOST	BLCLACKE
AGE	Pearson Correlation	-.037	.121	.078
	Sig. (2-tailed)	.711	.227	.435
	N	103	101	102
EDU	Pearson Correlation	-.135	-.040	-.220 [*]
	Sig. (2-tailed)	.173	.690	.026
	N	103	101	102
PROFESION	Pearson Correlation	-.135	-.221 [*]	-.067
	Sig. (2-tailed)	.174	.026	.501
	N	103	101	102
SPESIFIEDPRIVATE	Pearson Correlation	-.050	.059	-.071
	Sig. (2-tailed)	.731	.685	.625
	N	50	49	50
PRIVATESIZE	Pearson Correlation	-.098	.060	.011
	Sig. (2-tailed)	.504	.685	.942
	N	49	48	49
JOBROLE	Pearson Correlation	-.100	.076	-.170
	Sig. (2-tailed)	.324	.457	.093
	N	99	97	98
EXPERIENCE	Pearson Correlation	-.232 [*]	.020	-.136
	Sig. (2-tailed)	.020	.844	.179
	N	100	98	99
BLCPOPULAR	Pearson Correlation	.083	.036	.085
	Sig. (2-tailed)	.407	.719	.398
	N	102	100	101
BLCUNDESTAND	Pearson Correlation	.348 ^{**}	.053	.356 ^{**}
	Sig. (2-tailed)	.000	.607	.000
	N	99	97	99
BLCWILLINGUSING	Pearson Correlation	.356 ^{**}	.178	.142
	Sig. (2-tailed)	.000	.076	.156
	N	101	100	101
BLCSUPPLYCHAIN	Pearson Correlation	.235 [*]	.106	.185
	Sig. (2-tailed)	.018	.295	.063
	N	102	100	102
BLCFINANCIAL	Pearson Correlation	.275 ^{**}	.121	.314 ^{**}
	Sig. (2-tailed)	.005	.234	.001
	N	101	99	100
BLCINFOSECURITY	Pearson Correlation	.328 ^{**}	.216 [*]	.186
	Sig. (2-tailed)	.001	.032	.064
	N	101	99	100

Page 9

Correlations

		BLCORGANIZE DISSUE	BLCACCEPTAN CE	BLCIMMADIAT E
AGE	Pearson Correlation	.064	-.031	-.018
	Sig. (2-tailed)	.521	.754	.854
	N	102	102	102
EDU	Pearson Correlation	-.102	-.234 [*]	.032
	Sig. (2-tailed)	.307	.018	.747
	N	102	102	102
PROFESION	Pearson Correlation	-.250 [*]	-.146	-.040
	Sig. (2-tailed)	.011	.142	.693
	N	102	102	102
SPESIFIEDPRIVATE	Pearson Correlation	.225	.090	-.055
	Sig. (2-tailed)	.116	.539	.706
	N	50	49	50
PRIVATE SIZE	Pearson Correlation	.043	-.007	-.056
	Sig. (2-tailed)	.770	.963	.702
	N	48	48	49
JOBROLE	Pearson Correlation	-.105	-.166	.001
	Sig. (2-tailed)	.302	.102	.995
	N	98	98	98
EXPERIENCE	Pearson Correlation	.015	-.156	-.107
	Sig. (2-tailed)	.883	.124	.292
	N	99	99	99
BLCPOPULAR	Pearson Correlation	.105	.104	.111
	Sig. (2-tailed)	.297	.302	.268
	N	101	101	101
BLCUNDESTAND	Pearson Correlation	.312 ^{**}	.350 ^{**}	.205 [*]
	Sig. (2-tailed)	.002	.000	.043
	N	98	98	98
BLCWILLINGUSING	Pearson Correlation	.220 [*]	.235 [*]	.349 ^{**}
	Sig. (2-tailed)	.028	.019	.000
	N	100	100	100
BLCSUPPLYCHAIN	Pearson Correlation	.188	.172	.086
	Sig. (2-tailed)	.059	.085	.394
	N	101	101	101
BLCFINANCIAL	Pearson Correlation	.263 ^{**}	.328 ^{**}	.131
	Sig. (2-tailed)	.008	.001	.192
	N	100	100	100
BLCINFOSECURITY	Pearson Correlation	.210 [*]	.238 [*]	.298 ^{**}
	Sig. (2-tailed)	.036	.017	.003
	N	100	100	100

Correlations

		BLC13	BLC35	BLC5	BLCTRAINING
AGE	Pearson Correlation	.139	.082	.260 ^{**}	.067
	Sig. (2-tailed)	.160	.415	.008	.500
	N	103	101	102	102
EDU	Pearson Correlation	.030	-.037	.021	-.170
	Sig. (2-tailed)	.761	.714	.833	.087
	N	103	101	102	102
PROFESION	Pearson Correlation	-.197 [*]	-.130	-.132	-.178
	Sig. (2-tailed)	.047	.196	.185	.073
	N	103	101	102	102
SPESIFIEDPRIVATE	Pearson Correlation	.064	.064	.063	.296 [*]
	Sig. (2-tailed)	.661	.661	.666	.039
	N	50	49	50	49
PRIVATESIZE	Pearson Correlation	-.094	.189	.165	.125
	Sig. (2-tailed)	.519	.198	.258	.397
	N	49	48	49	48
JOBROLE	Pearson Correlation	-.013	.018	-.054	-.114
	Sig. (2-tailed)	.897	.859	.600	.265
	N	99	97	98	98
EXPERIENCE	Pearson Correlation	.097	-.031	.003	.054
	Sig. (2-tailed)	.335	.760	.977	.592
	N	100	98	99	99
BLCPOPULAR	Pearson Correlation	.210 [*]	.166	.040	.154
	Sig. (2-tailed)	.034	.098	.695	.125
	N	102	100	101	101
BLCUNDESTAND	Pearson Correlation	.304 ^{**}	.178	.133	.399 ^{**}
	Sig. (2-tailed)	.002	.080	.191	.000
	N	99	97	98	98
BLCWILLINGUSING	Pearson Correlation	.326 ^{**}	.158	.067	.268 ^{**}
	Sig. (2-tailed)	.001	.117	.506	.007
	N	101	99	100	100
BLCSUPPLYCHAIN	Pearson Correlation	.218 [*]	.119	.137	.261 ^{**}
	Sig. (2-tailed)	.028	.240	.173	.008
	N	102	100	101	101
BLCFINANCIAL	Pearson Correlation	.227 [*]	.211 [*]	.141	.418 ^{**}
	Sig. (2-tailed)	.023	.036	.163	.000
	N	101	99	100	100
BLCINFOSECURITY	Pearson Correlation	.333 ^{**}	.219 [*]	.144	.355 ^{**}
	Sig. (2-tailed)	.001	.029	.152	.000
	N	101	99	100	100

Correlations

		BLCFRAMEORG ANIZED	BLCPARTENER SHIP	BLCPILOTPROJ ECT
AGE	Pearson Correlation	.001	-.086	-.024
	Sig. (2-tailed)	.995	.394	.812
	N	103	101	103
EDU	Pearson Correlation	-.130	-.222 [*]	-.161
	Sig. (2-tailed)	.190	.026	.105
	N	103	101	103
PROFESION	Pearson Correlation	-.139	-.019	-.145
	Sig. (2-tailed)	.161	.852	.145
	N	103	101	103
SPESIFIEDPRIVATE	Pearson Correlation	.265	.054	-.020
	Sig. (2-tailed)	.063	.713	.893
	N	50	49	50
PRIVATE SIZE	Pearson Correlation	.029	-.139	-.131
	Sig. (2-tailed)	.845	.346	.370
	N	49	48	49
JOBROLE	Pearson Correlation	-.051	-.318 ^{**}	-.136
	Sig. (2-tailed)	.616	.001	.179
	N	99	97	99
EXPERIENCE	Pearson Correlation	.004	-.179	-.029
	Sig. (2-tailed)	.968	.078	.775
	N	100	98	100
BLCPOPULAR	Pearson Correlation	.092	.047	.179
	Sig. (2-tailed)	.355	.640	.072
	N	102	100	102
BLCUNDESTAND	Pearson Correlation	.359 ^{**}	.311 ^{**}	.262 ^{**}
	Sig. (2-tailed)	.000	.002	.009
	N	99	97	99
BLCWILLINGUSING	Pearson Correlation	.254 [*]	.298 ^{**}	.223 [*]
	Sig. (2-tailed)	.011	.003	.025
	N	101	99	101
BLCSUPPLYCHAIN	Pearson Correlation	.205 [*]	.309 ^{**}	.277 ^{**}
	Sig. (2-tailed)	.039	.002	.005
	N	102	100	102
BLCFINANCIAL	Pearson Correlation	.475 ^{**}	.384 ^{**}	.415 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	101	99	101
BLCINFOSECURITY	Pearson Correlation	.407 ^{**}	.364 ^{**}	.407 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	101	99	101

Page 12

Correlations

		FARUDSIGNIFICANTLY	FARUDMODERATLY	BLCNOIMPACT FRAUD
AGE	Pearson Correlation	.101	.098	.026
	Sig. (2-tailed)	.314	.332	.796
	N	102	100	101
EDU	Pearson Correlation	-.103	-.051	.024
	Sig. (2-tailed)	.305	.616	.815
	N	102	100	101
PROFESION	Pearson Correlation	.080	.001	-.128
	Sig. (2-tailed)	.422	.992	.201
	N	102	100	101
SPESIFIEDPRIVATE	Pearson Correlation	-.130	-.058	.195
	Sig. (2-tailed)	.374	.698	.174
	N	49	48	50
PRIVATE SIZE	Pearson Correlation	-.111	-.063	.330 ^a
	Sig. (2-tailed)	.452	.679	.021
	N	48	46	49
JOBROLE	Pearson Correlation	-.056	-.073	-.077
	Sig. (2-tailed)	.585	.478	.453
	N	98	96	97
EXPERIENCE	Pearson Correlation	.019	.024	-.041
	Sig. (2-tailed)	.850	.816	.688
	N	99	97	98
BLCPOPULAR	Pearson Correlation	.077	.062	.145
	Sig. (2-tailed)	.444	.542	.150
	N	101	99	100
BLCUNDE STAND	Pearson Correlation	.185	.290 ^{**}	.104
	Sig. (2-tailed)	.068	.004	.306
	N	98	96	98
BLCWILLINGUSING	Pearson Correlation	.299 ^{**}	.322 ^{**}	-.206 ^a
	Sig. (2-tailed)	.003	.001	.039
	N	100	99	100
BLC SUPPLYCHAIN	Pearson Correlation	.298 ^{**}	.218 ^a	-.059
	Sig. (2-tailed)	.002	.030	.558
	N	101	99	101
BLCFINANCIAL	Pearson Correlation	.242 ^a	.239 ^a	-.029
	Sig. (2-tailed)	.015	.018	.777
	N	100	98	99
BLCINFOSECURITY	Pearson Correlation	.344 ^{**}	.261 ^{**}	-.128
	Sig. (2-tailed)	.000	.010	.207
	N	100	98	99

Page 13

Correlations

		BLCINCREASEF RAUD
AGE	Pearson Correlation	.093
	Sig. (2-tailed)	.348
	N	103
EDU	Pearson Correlation	.121
	Sig. (2-tailed)	.222
	N	103
PROFESION	Pearson Correlation	-.100
	Sig. (2-tailed)	.314
	N	103
SPESIFIEDPRIVATE	Pearson Correlation	.199
	Sig. (2-tailed)	.166
	N	50
PRIVATE SIZE	Pearson Correlation	.319 [*]
	Sig. (2-tailed)	.026
	N	49
JOBROLE	Pearson Correlation	-.044
	Sig. (2-tailed)	.664
	N	99
EXPERIENCE	Pearson Correlation	.005
	Sig. (2-tailed)	.958
	N	100
BLCPOPULAR	Pearson Correlation	.217 [*]
	Sig. (2-tailed)	.029
	N	102
BLCUNDESTAND	Pearson Correlation	.107
	Sig. (2-tailed)	.291
	N	99
BLCWILLINGUSING	Pearson Correlation	-.002
	Sig. (2-tailed)	.988
	N	101
BLC SUPPLYCHAIN	Pearson Correlation	-.116
	Sig. (2-tailed)	.247
	N	102
BLCFINANCIAL	Pearson Correlation	-.122
	Sig. (2-tailed)	.223
	N	101
BLCINFOSECURITY	Pearson Correlation	-.078
	Sig. (2-tailed)	.437
	N	101

Correlations

		AGE	EDU	PROFESION
BLCEFFECTIVEFTAXFRAUD	Pearson Correlation	.047	-.136	-.050
	Sig. (2-tailed)	.644	.175	.623
	N	101	101	101
BLCTRANSPERANCY	Pearson Correlation	.034	-.132	-.129
	Sig. (2-tailed)	.735	.183	.192
	N	103	103	103
BLCIMMUTABILITY	Pearson Correlation	.031	-.115	-.065
	Sig. (2-tailed)	.757	.251	.516
	N	101	101	101
BLCDECENTRALIZED	Pearson Correlation	-.188	-.070	.131
	Sig. (2-tailed)	.060	.486	.193
	N	101	101	101
BLCTRACABILITY	Pearson Correlation	-.033	-.073	-.171
	Sig. (2-tailed)	.738	.463	.083
	N	103	103	103
BLCADOPTIONDGT	Pearson Correlation	-.037	-.135	-.135
	Sig. (2-tailed)	.711	.173	.174
	N	103	103	103
BLCCOST	Pearson Correlation	.121	-.040	-.221 [*]
	Sig. (2-tailed)	.227	.690	.026
	N	101	101	101
BLCLACKE	Pearson Correlation	.078	-.220 [*]	-.067
	Sig. (2-tailed)	.435	.026	.501
	N	102	102	102
BLCORGANIZEDISSUE	Pearson Correlation	.064	-.102	-.250 [*]
	Sig. (2-tailed)	.521	.307	.011
	N	102	102	102
BLCACCEPTANCE	Pearson Correlation	-.031	-.234 [*]	-.146
	Sig. (2-tailed)	.754	.018	.142
	N	102	102	102
BLCIMMEDIATE	Pearson Correlation	-.018	.032	-.040
	Sig. (2-tailed)	.854	.747	.693
	N	102	102	102
BLC13	Pearson Correlation	.139	.030	-.197 [*]
	Sig. (2-tailed)	.160	.761	.047
	N	103	103	103
BLC35	Pearson Correlation	.082	-.037	-.130
	Sig. (2-tailed)	.415	.714	.196
	N	101	101	101

Correlations

		SPESIFIEDPRIV ATE	PRIVATESIZE	JOBROLE
BLCEFFECTIVEFTAXFRAUD	Pearson Correlation	.008	-.186	.016
	Sig. (2-tailed)	.954	.200	.874
	N	50	49	97
BLCTRANSPERANCY	Pearson Correlation	.156	-.074	.017
	Sig. (2-tailed)	.280	.615	.871
	N	50	49	99
BLCIMMUTABILITY	Pearson Correlation	.044	-.165	-.142
	Sig. (2-tailed)	.766	.263	.165
	N	48	48	97
BLCDECENTRIALIZED	Pearson Correlation	.025	-.010	-.155
	Sig. (2-tailed)	.866	.945	.129
	N	49	49	97
BLCTRACABILITY	Pearson Correlation	.028	-.185	-.104
	Sig. (2-tailed)	.845	.202	.307
	N	50	49	99
BLCADOPTIONDGT	Pearson Correlation	-.050	-.098	-.100
	Sig. (2-tailed)	.731	.504	.324
	N	50	49	99
BLCCOST	Pearson Correlation	.059	.060	.076
	Sig. (2-tailed)	.685	.685	.457
	N	49	48	97
BLCLACKE	Pearson Correlation	-.071	.011	-.170
	Sig. (2-tailed)	.625	.942	.093
	N	50	49	98
BLCORGANIZEDISSUE	Pearson Correlation	.225	.043	-.105
	Sig. (2-tailed)	.116	.770	.302
	N	50	48	98
BLCACCEPTANCE	Pearson Correlation	.090	-.007	-.166
	Sig. (2-tailed)	.539	.963	.102
	N	49	48	98
BLCIMMEDIATE	Pearson Correlation	-.055	-.056	.001
	Sig. (2-tailed)	.706	.702	.995
	N	50	49	98
BLC13	Pearson Correlation	.064	-.094	-.013
	Sig. (2-tailed)	.661	.519	.897
	N	50	49	99
BLC35	Pearson Correlation	.064	.189	.018
	Sig. (2-tailed)	.661	.198	.859
	N	49	48	97

Correlations

		EXPERIENCE	BLOPOPULAR	BLCUNDESTAN D
BLC EFFECTIVE TAX FRAUD	Pearson Correlation	-.198	.128	.430 ^{**}
	Sig. (2-tailed)	.051	.206	.000
	N	98	100	97
BLC TRANSPERANCY	Pearson Correlation	-.132	.015	.344 ^{**}
	Sig. (2-tailed)	.190	.882	.000
	N	100	102	99
BLC IMMUTABILITY	Pearson Correlation	-.220 [*]	.273 ^{**}	.538 ^{**}
	Sig. (2-tailed)	.030	.006	.000
	N	98	100	97
BLC DECENTRALIZED	Pearson Correlation	-.271 ^{**}	-.102	.326 ^{**}
	Sig. (2-tailed)	.007	.312	.001
	N	98	100	98
BLC TRACABILITY	Pearson Correlation	-.194	.004	.308 ^{**}
	Sig. (2-tailed)	.054	.964	.002
	N	100	102	99
BLC ADOPTION DGT	Pearson Correlation	-.232 [*]	.083	.348 ^{**}
	Sig. (2-tailed)	.020	.407	.000
	N	100	102	99
BLC COST	Pearson Correlation	.020	.036	.053
	Sig. (2-tailed)	.844	.719	.607
	N	98	100	97
BLC CLACKE	Pearson Correlation	-.136	.085	.356 ^{**}
	Sig. (2-tailed)	.179	.398	.000
	N	99	101	99
BLC ORGANIZED ISSUE	Pearson Correlation	.015	.105	.312 ^{**}
	Sig. (2-tailed)	.883	.297	.002
	N	99	101	98
BLC ACCEPTANCE	Pearson Correlation	-.156	.104	.350 ^{**}
	Sig. (2-tailed)	.124	.302	.000
	N	99	101	98
BLC IMMEDIATE	Pearson Correlation	-.107	.111	.205 [*]
	Sig. (2-tailed)	.292	.268	.043
	N	99	101	98
BLC13	Pearson Correlation	.097	.210 [*]	.304 ^{**}
	Sig. (2-tailed)	.335	.034	.002
	N	100	102	99
BLC35	Pearson Correlation	-.031	.166	.178
	Sig. (2-tailed)	.760	.098	.080
	N	98	100	97

Correlations

		BLCWILLINGUS NG	BLCSUPPLYCH AIN	BLCFINANCIAL
BCEFFECTIVEFTAXFRAUD	Pearson Correlation	.589 ^{**}	.268 ^{**}	.411 ^{**}
	Sig. (2-tailed)	.000	.007	.000
	N	99	100	99
BLCTRANSPERANCY	Pearson Correlation	.538 ^{**}	.305 ^{**}	.522 ^{**}
	Sig. (2-tailed)	.000	.002	.000
	N	101	102	101
BLCIMMUTABILITY	Pearson Correlation	.479 ^{**}	.323 ^{**}	.460 ^{**}
	Sig. (2-tailed)	.000	.001	.000
	N	100	100	99
BLCDECENTRIALIZED	Pearson Correlation	.416 ^{**}	.133	.288 ^{**}
	Sig. (2-tailed)	.000	.185	.004
	N	100	101	99
BLCTRACABILITY	Pearson Correlation	.419 ^{**}	.232 [*]	.408 ^{**}
	Sig. (2-tailed)	.000	.019	.000
	N	101	102	101
BLCADOPTIONDGT	Pearson Correlation	.356 ^{**}	.235 [*]	.275 ^{**}
	Sig. (2-tailed)	.000	.018	.005
	N	101	102	101
BLCCOST	Pearson Correlation	.178	.106	.121
	Sig. (2-tailed)	.076	.295	.234
	N	100	100	99
BLCLACKE	Pearson Correlation	.142	.185	.314 ^{**}
	Sig. (2-tailed)	.156	.063	.001
	N	101	102	100
BLCORGANIZEDISSUE	Pearson Correlation	.220 [*]	.188	.263 ^{**}
	Sig. (2-tailed)	.028	.059	.008
	N	100	101	100
BLCACCEPTANCE	Pearson Correlation	.235 [*]	.172	.328 ^{**}
	Sig. (2-tailed)	.019	.085	.001
	N	100	101	100
BLCIMMEDIATE	Pearson Correlation	.349 ^{**}	.086	.131
	Sig. (2-tailed)	.000	.394	.192
	N	100	101	100
BLC13	Pearson Correlation	.326 ^{**}	.218 [*]	.227 [*]
	Sig. (2-tailed)	.001	.028	.023
	N	101	102	101
BLC35	Pearson Correlation	.158	.119	.211 [*]
	Sig. (2-tailed)	.117	.240	.036
	N	99	100	99

Correlations

		BLCINFOSECURITY	BLCEFFECTIVEFTAXFRAUD	BLCTRANSPERANCY
BLCEFFECTIVEFTAXFRAUD	Pearson Correlation	.590 ^{**}	1	.846 ^{**}
	Sig. (2-tailed)	.000		.000
	N	99	101	101
BLCTRANSPERANCY	Pearson Correlation	.540 ^{**}	.846 ^{**}	1
	Sig. (2-tailed)	.000	.000	
	N	101	101	103
BLCIMMUTABILITY	Pearson Correlation	.464 ^{**}	.647 ^{**}	.630 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	99	99	101
BLCDECENTRALIZED	Pearson Correlation	.399 ^{**}	.566 ^{**}	.498 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	99	99	101
BLCTRACABILITY	Pearson Correlation	.420 ^{**}	.588 ^{**}	.651 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	101	101	103
BLCADOPTIONDGT	Pearson Correlation	.328 ^{**}	.549 ^{**}	.426 ^{**}
	Sig. (2-tailed)	.001	.000	.000
	N	101	101	103
BLCCOST	Pearson Correlation	.216 [*]	.264 ^{**}	.295 ^{**}
	Sig. (2-tailed)	.032	.008	.003
	N	99	99	101
BLCLACKE	Pearson Correlation	.186	.329 ^{**}	.351 ^{**}
	Sig. (2-tailed)	.064	.001	.000
	N	100	100	102
BLCORGANIZEDISSUE	Pearson Correlation	.210 [*]	.437 ^{**}	.406 ^{**}
	Sig. (2-tailed)	.036	.000	.000
	N	100	100	102
BLCACCEPTANCE	Pearson Correlation	.238 [*]	.379 ^{**}	.383 ^{**}
	Sig. (2-tailed)	.017	.000	.000
	N	100	100	102
BLCIMMEDIATE	Pearson Correlation	.298 ^{**}	.382 ^{**}	.322 ^{**}
	Sig. (2-tailed)	.003	.000	.001
	N	100	100	102
BLC13	Pearson Correlation	.333 ^{**}	.429 ^{**}	.355 ^{**}
	Sig. (2-tailed)	.001	.000	.000
	N	101	101	103
BLC35	Pearson Correlation	.219 [*]	.219 [*]	.212 [*]
	Sig. (2-tailed)	.029	.030	.034
	N	99	99	101

Correlations

		BLCIMMUTABIL ITY	BLCDECENTRI AZED	BLCTRACABIL ITY
BLCEFFECTIVEFTAXFRAUD	Pearson Correlation	.647 ^{**}	.566 ^{**}	.588 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	99	99	101
BLCTRANSPERANCY	Pearson Correlation	.630 ^{**}	.498 ^{**}	.651 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	101	101	103
BLCIMMUTABILITY	Pearson Correlation	1	.459 ^{**}	.594 ^{**}
	Sig. (2-tailed)		.000	.000
	N	101	100	101
BLCDECENTRIAZED	Pearson Correlation	.459 ^{**}	1	.585 ^{**}
	Sig. (2-tailed)	.000		.000
	N	100	101	101
BLCTRACABILITY	Pearson Correlation	.594 ^{**}	.585 ^{**}	1
	Sig. (2-tailed)	.000	.000	
	N	101	101	103
BLCADOPTIONDGT	Pearson Correlation	.405 ^{**}	.478 ^{**}	.582 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	101	101	103
BLCCOST	Pearson Correlation	.083	.059	.218 [*]
	Sig. (2-tailed)	.412	.563	.028
	N	100	99	101
BLCLACKE	Pearson Correlation	.510 ^{**}	.396 ^{**}	.475 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	100	101	102
BLCORGANIZEDISSUE	Pearson Correlation	.365 ^{**}	.341 ^{**}	.389 ^{**}
	Sig. (2-tailed)	.000	.001	.000
	N	100	100	102
BLCACCEPTANCE	Pearson Correlation	.365 ^{**}	.487 ^{**}	.489 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	100	100	102
BLCIMMEDIATE	Pearson Correlation	.121	.364 ^{**}	.239 [*]
	Sig. (2-tailed)	.231	.000	.016
	N	100	100	102
BLC13	Pearson Correlation	.203 [*]	.283 ^{**}	.263 ^{**}
	Sig. (2-tailed)	.041	.004	.007
	N	101	101	103
BLC35	Pearson Correlation	.188	.194	.217 [*]
	Sig. (2-tailed)	.063	.055	.029
	N	99	99	101

Correlations

		BLCADOPTION DGT	BLCCOST	BLCLACKE
BCEFFECTIVEFTAXFRAUD	Pearson Correlation	.549 ^{**}	.264 ^{**}	.329 ^{**}
	Sig. (2-tailed)	.000	.008	.001
	N	101	99	100
BLCTRANSPERANCY	Pearson Correlation	.426 ^{**}	.295 ^{**}	.351 ^{**}
	Sig. (2-tailed)	.000	.003	.000
	N	103	101	102
BLCIMMUTABILITY	Pearson Correlation	.405 ^{**}	.083	.510 ^{**}
	Sig. (2-tailed)	.000	.412	.000
	N	101	100	100
BLCDECENTRIALIZED	Pearson Correlation	.478 ^{**}	.059	.396 ^{**}
	Sig. (2-tailed)	.000	.563	.000
	N	101	99	101
BLCTRACABILITY	Pearson Correlation	.582 ^{**}	.218 [*]	.475 ^{**}
	Sig. (2-tailed)	.000	.028	.000
	N	103	101	102
BLCADOPTIONDGT	Pearson Correlation	1	.316 ^{**}	.540 ^{**}
	Sig. (2-tailed)		.001	.000
	N	103	101	102
BLCCOST	Pearson Correlation	.316 ^{**}	1	.148
	Sig. (2-tailed)	.001		.142
	N	101	101	100
BLCLACKE	Pearson Correlation	.540 ^{**}	.148	1
	Sig. (2-tailed)	.000	.142	
	N	102	100	102
BLCORGANIZEDISSUE	Pearson Correlation	.265 ^{**}	.215 [*]	.432 ^{**}
	Sig. (2-tailed)	.007	.032	.000
	N	102	100	101
BLCACCEPTANCE	Pearson Correlation	.645 ^{**}	.192	.699 ^{**}
	Sig. (2-tailed)	.000	.055	.000
	N	102	100	101
BLCIMMEDIATE	Pearson Correlation	.388 ^{**}	.380 ^{**}	.296 ^{**}
	Sig. (2-tailed)	.000	.000	.003
	N	102	100	101
BLC13	Pearson Correlation	.447 ^{**}	.240 [*]	.176
	Sig. (2-tailed)	.000	.016	.078
	N	103	101	102
BLC35	Pearson Correlation	.433 ^{**}	.320 ^{**}	.362 ^{**}
	Sig. (2-tailed)	.000	.001	.000
	N	101	99	100

Correlations

		BLCORGANIZE DISSUE	BLCACCEPTAN CE	BLCIMMADIAT E
BLCEFFECTIVEFTAXFRAUD	Pearson Correlation	.437 ^{**}	.379 ^{**}	.382 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	100	100	100
BLCTRANSPERANCY	Pearson Correlation	.406 ^{**}	.383 ^{**}	.322 ^{**}
	Sig. (2-tailed)	.000	.000	.001
	N	102	102	102
BLCIMMUTABILITY	Pearson Correlation	.365 ^{**}	.365 ^{**}	.121
	Sig. (2-tailed)	.000	.000	.231
	N	100	100	100
BLCDECENTRALIZED	Pearson Correlation	.341 ^{**}	.487 ^{**}	.364 ^{**}
	Sig. (2-tailed)	.001	.000	.000
	N	100	100	100
BLCTRACABILITY	Pearson Correlation	.389 ^{**}	.489 ^{**}	.239 [*]
	Sig. (2-tailed)	.000	.000	.016
	N	102	102	102
BLCADOPTIONDGT	Pearson Correlation	.265 ^{**}	.645 ^{**}	.388 ^{**}
	Sig. (2-tailed)	.007	.000	.000
	N	102	102	102
BLCCOST	Pearson Correlation	.215 [*]	.192	.380 ^{**}
	Sig. (2-tailed)	.032	.055	.000
	N	100	100	100
BLCLACKE	Pearson Correlation	.432 ^{**}	.699 ^{**}	.296 ^{**}
	Sig. (2-tailed)	.000	.000	.003
	N	101	101	101
BLCORGANIZEDISSUE	Pearson Correlation	1	.434 ^{**}	.161
	Sig. (2-tailed)		.000	.109
	N	102	101	101
BLCACCEPTANCE	Pearson Correlation	.434 ^{**}	1	.391 ^{**}
	Sig. (2-tailed)	.000		.000
	N	101	102	101
BLCIMMEDIATE	Pearson Correlation	.161	.391 ^{**}	1
	Sig. (2-tailed)	.109	.000	
	N	101	101	102
BLC13	Pearson Correlation	.305 ^{**}	.292 ^{**}	.607 ^{**}
	Sig. (2-tailed)	.002	.003	.000
	N	102	102	102
BLC35	Pearson Correlation	.212 [*]	.387 ^{**}	.429 ^{**}
	Sig. (2-tailed)	.034	.000	.000
	N	100	100	100

Correlations

		BLC13	BLC35	BLC5	BLCTRAINING
BLCEFFECTIVEFTAXFRAUD	Pearson Correlation	.429 ^{**}	.219 [*]	.074	.430 ^{**}
	Sig. (2-tailed)	.000	.030	.467	.000
	N	101	99	100	100
BLCTRANSPERANCY	Pearson Correlation	.355 ^{**}	.212 [*]	.119	.419 ^{**}
	Sig. (2-tailed)	.000	.034	.234	.000
	N	103	101	102	102
BLCIMMUTABILITY	Pearson Correlation	.203 [*]	.188	.070	.474 ^{**}
	Sig. (2-tailed)	.041	.063	.487	.000
	N	101	99	100	100
BLCDECENTRALIZED	Pearson Correlation	.283 ^{**}	.194	.205 [*]	.242 [*]
	Sig. (2-tailed)	.004	.055	.041	.015
	N	101	99	100	100
BLCTRACABILITY	Pearson Correlation	.263 ^{**}	.217 [*]	.142	.416 ^{**}
	Sig. (2-tailed)	.007	.029	.156	.000
	N	103	101	102	102
BLCADOPTIONDGT	Pearson Correlation	.447 ^{**}	.433 ^{**}	.257 ^{**}	.527 ^{**}
	Sig. (2-tailed)	.000	.000	.009	.000
	N	103	101	102	102
BLCBLCOST	Pearson Correlation	.240 [*]	.320 ^{**}	.261 ^{**}	.226 [*]
	Sig. (2-tailed)	.016	.001	.009	.024
	N	101	99	100	100
BLCCLACKE	Pearson Correlation	.176	.362 ^{**}	.251 [*]	.529 ^{**}
	Sig. (2-tailed)	.078	.000	.011	.000
	N	102	100	101	101
BLCORGANIZEDISSUE	Pearson Correlation	.305 ^{**}	.212 [*]	.182	.217 [*]
	Sig. (2-tailed)	.002	.034	.068	.029
	N	102	100	101	101
BLCACCEPTANCE	Pearson Correlation	.292 ^{**}	.387 ^{**}	.289 ^{**}	.535 ^{**}
	Sig. (2-tailed)	.003	.000	.003	.000
	N	102	100	101	101
BLCIMMEDIATE	Pearson Correlation	.607 ^{**}	.429 ^{**}	.386 ^{**}	.199 [*]
	Sig. (2-tailed)	.000	.000	.000	.046
	N	102	100	101	101
BLC13	Pearson Correlation	1	.279 ^{**}	.282 ^{**}	.232 [*]
	Sig. (2-tailed)		.005	.004	.019
	N	103	101	102	102
BLC35	Pearson Correlation	.279 ^{**}	1	.525 ^{**}	.372 ^{**}
	Sig. (2-tailed)	.005		.000	.000
	N	101	101	101	101

Correlations

		BLCFRAMEORG ANIZED	BLCPARTENER SHIP	BLCPILOTPROJ ECT
BCEFFECTIVEFTAXFRAUD	Pearson Correlation	.519 ^{**}	.570 ^{**}	.547 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	101	99	101
BLCTRANSPERANCY	Pearson Correlation	.535 ^{**}	.494 ^{**}	.484 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	103	101	103
BLCIMMUTABILITY	Pearson Correlation	.392 ^{**}	.459 ^{**}	.408 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	101	99	101
BLCDECENTRALIZED	Pearson Correlation	.336 ^{**}	.457 ^{**}	.222 [*]
	Sig. (2-tailed)	.001	.000	.026
	N	101	99	101
BLCTRACABILITY	Pearson Correlation	.469 ^{**}	.519 ^{**}	.397 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	103	101	103
BLCADOPTIONDGT	Pearson Correlation	.410 ^{**}	.607 ^{**}	.533 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	103	101	103
BLCCOST	Pearson Correlation	.336 ^{**}	.227 [*]	.309 ^{**}
	Sig. (2-tailed)	.001	.024	.002
	N	101	99	101
BLCLACKE	Pearson Correlation	.419 ^{**}	.511 ^{**}	.403 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	102	100	102
BLCORGANIZEDISSUE	Pearson Correlation	.427 ^{**}	.280 ^{**}	.255 ^{**}
	Sig. (2-tailed)	.000	.005	.010
	N	102	100	102
BLCACCEPTANCE	Pearson Correlation	.423 ^{**}	.466 ^{**}	.397 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	102	100	102
BLCIMMEDIATE	Pearson Correlation	.183	.208 [*]	.346 ^{**}
	Sig. (2-tailed)	.066	.038	.000
	N	102	100	102
BLC13	Pearson Correlation	.163	.262 ^{**}	.394 ^{**}
	Sig. (2-tailed)	.100	.008	.000
	N	103	101	103
BLC35	Pearson Correlation	.359 ^{**}	.277 ^{**}	.388 ^{**}
	Sig. (2-tailed)	.000	.006	.000
	N	101	99	101

Page 24

Correlations

		FARUDSIGNIFICANTLY	FARUDMODERATLY	BLCNOIMPACT FRAUD
BCEFFECTIVEFTAXFRAUD	Pearson Correlation	.285 ^{**}	.340 ^{**}	-.095
	Sig. (2-tailed)	.004	.001	.351
	N	100	98	99
BLCTRANSPERANCY	Pearson Correlation	.248 [*]	.286 ^{**}	-.101
	Sig. (2-tailed)	.012	.004	.316
	N	102	100	101
BLCIMMUTABILITY	Pearson Correlation	.257 ^{**}	.372 ^{**}	.047
	Sig. (2-tailed)	.010	.000	.643
	N	100	99	99
BLCDECENTRALIZED	Pearson Correlation	.324 ^{**}	.349 ^{**}	.129
	Sig. (2-tailed)	.001	.000	.201
	N	100	98	100
BLCTRACABILITY	Pearson Correlation	.357 ^{**}	.393 ^{**}	-.024
	Sig. (2-tailed)	.000	.000	.812
	N	102	100	101
BLCADOPTIONDGT	Pearson Correlation	.354 ^{**}	.450 ^{**}	-.053
	Sig. (2-tailed)	.000	.000	.600
	N	102	100	101
BLCCOST	Pearson Correlation	.172	.145	-.077
	Sig. (2-tailed)	.087	.153	.450
	N	100	99	99
BLCLACKE	Pearson Correlation	.241 [*]	.415 ^{**}	.153
	Sig. (2-tailed)	.015	.000	.127
	N	101	99	101
BLCORGANIZEDISSUE	Pearson Correlation	.148	.275 ^{**}	.212 [*]
	Sig. (2-tailed)	.139	.006	.035
	N	101	99	100
BLCACCEPTANCE	Pearson Correlation	.289 ^{**}	.506 ^{**}	.114
	Sig. (2-tailed)	.003	.000	.260
	N	101	99	100
BLCIMMEDIATE	Pearson Correlation	.327 ^{**}	.176	.051
	Sig. (2-tailed)	.001	.082	.614
	N	101	99	100
BLC13	Pearson Correlation	.373 ^{**}	.197 [*]	.128
	Sig. (2-tailed)	.000	.049	.204
	N	102	100	101
BLC35	Pearson Correlation	.263 ^{**}	.366 ^{**}	.106
	Sig. (2-tailed)	.008	.000	.296
	N	101	98	99

Page 25

Correlations

		BLCINCREASEFRAUD
BLCEFFECTIVEFTAXFRAUD	Pearson Correlation	.003
	Sig. (2-tailed)	.974
	N	101
BLCTRANSPERANCY	Pearson Correlation	-.011
	Sig. (2-tailed)	.908
	N	103
BLCIMMUTABILITY	Pearson Correlation	-.054
	Sig. (2-tailed)	.588
	N	101
BLCDECENTRALIZED	Pearson Correlation	.077
	Sig. (2-tailed)	.442
	N	101
BLCTRACABILITY	Pearson Correlation	.059
	Sig. (2-tailed)	.551
	N	103
BLCADOPTIONDGT	Pearson Correlation	-.090
	Sig. (2-tailed)	.364
	N	103
BLCCOST	Pearson Correlation	.018
	Sig. (2-tailed)	.858
	N	101
BLCLACKE	Pearson Correlation	-.022
	Sig. (2-tailed)	.823
	N	102
BLCORGANIZEDISSUE	Pearson Correlation	.240 [*]
	Sig. (2-tailed)	.015
	N	102
BLCACCEPTANCE	Pearson Correlation	-.001
	Sig. (2-tailed)	.996
	N	102
BLCIMMEDIATE	Pearson Correlation	.258 ^{**}
	Sig. (2-tailed)	.009
	N	102
BLC13	Pearson Correlation	.259 ^{**}
	Sig. (2-tailed)	.008
	N	103
BLC35	Pearson Correlation	.047
	Sig. (2-tailed)	.643
	N	101

Correlations

		AGE	EDU	PROFESION
BLC5	Pearson Correlation	.260 ^{**}	.021	-.132
	Sig. (2-tailed)	.008	.833	.185
	N	102	102	102
BLCTRAINING	Pearson Correlation	.067	-.170	-.178
	Sig. (2-tailed)	.500	.087	.073
	N	102	102	102
BLCFRAMEORGANIZED	Pearson Correlation	.001	-.130	-.139
	Sig. (2-tailed)	.995	.190	.161
	N	103	103	103
BLCPARTENERSHIP	Pearson Correlation	-.086	-.222 [†]	-.019
	Sig. (2-tailed)	.394	.026	.852
	N	101	101	101
BLCPILOTPROJECT	Pearson Correlation	-.024	-.161	-.145
	Sig. (2-tailed)	.812	.105	.145
	N	103	103	103
FARUDSIGNIFICANTLY	Pearson Correlation	.101	-.103	.080
	Sig. (2-tailed)	.314	.305	.422
	N	102	102	102
FARUDMODERATLY	Pearson Correlation	.098	-.051	.001
	Sig. (2-tailed)	.332	.616	.992
	N	100	100	100
BLCNOIMPACTFRAUD	Pearson Correlation	.026	.024	-.128
	Sig. (2-tailed)	.796	.815	.201
	N	101	101	101
BLCINCREASEFRAUD	Pearson Correlation	.093	.121	-.100
	Sig. (2-tailed)	.348	.222	.314
	N	103	103	103

Correlations

		SPESIFIEDPRIV ATE	PRIVATESIZE	JOBROLE
BLC5	Pearson Correlation	.063	.165	-.054
	Sig. (2-tailed)	.666	.258	.600
	N	50	49	98
BLCTRAINING	Pearson Correlation	.296 [*]	.125	-.114
	Sig. (2-tailed)	.039	.397	.265
	N	49	48	98
BLCFRAMEORGANIZED	Pearson Correlation	.265	.029	-.051
	Sig. (2-tailed)	.063	.845	.616
	N	50	49	99
BLCPARTENERSHIP	Pearson Correlation	.054	-.139	-.318 ^{**}
	Sig. (2-tailed)	.713	.346	.001
	N	49	48	97
BLCPILOTPROJECT	Pearson Correlation	-.020	-.131	-.136
	Sig. (2-tailed)	.893	.370	.179
	N	50	49	99
FARUDSIGNIFICANTLY	Pearson Correlation	-.130	-.111	-.056
	Sig. (2-tailed)	.374	.452	.585
	N	49	48	98
FARUDMODERATLY	Pearson Correlation	-.058	-.063	-.073
	Sig. (2-tailed)	.698	.679	.478
	N	48	46	96
BLCNOIMPACTFRAUD	Pearson Correlation	.195	.330 [*]	-.077
	Sig. (2-tailed)	.174	.021	.453
	N	50	49	97
BLCINCREASEFRAUD	Pearson Correlation	.199	.319 [*]	-.044
	Sig. (2-tailed)	.166	.026	.664
	N	50	49	99

Correlations

		EXPERIENCE	BLOPOPULAR	BLCUNDESTAN D
BLC5	Pearson Correlation	.003	.040	.133
	Sig. (2-tailed)	.977	.695	.191
	N	99	101	98
BLCTRAINING	Pearson Correlation	.054	.154	.399 ^{**}
	Sig. (2-tailed)	.592	.125	.000
	N	99	101	98
BLCFRAMEORGANIZED	Pearson Correlation	.004	.092	.359 ^{**}
	Sig. (2-tailed)	.968	.355	.000
	N	100	102	99
BLCPARTENERSHIP	Pearson Correlation	-.179	.047	.311 ^{**}
	Sig. (2-tailed)	.078	.640	.002
	N	98	100	97
BLCPILOTPROJECT	Pearson Correlation	-.029	.179	.262 ^{**}
	Sig. (2-tailed)	.775	.072	.009
	N	100	102	99
FARUDSIGNIFICANTLY	Pearson Correlation	.019	.077	.185
	Sig. (2-tailed)	.850	.444	.068
	N	99	101	98
FARUDMODERATLY	Pearson Correlation	.024	.062	.290 ^{**}
	Sig. (2-tailed)	.816	.542	.004
	N	97	99	96
BLCNOIMPACTFRAUD	Pearson Correlation	-.041	.145	.104
	Sig. (2-tailed)	.688	.150	.306
	N	98	100	98
BLCINCREASEFRAUD	Pearson Correlation	.005	.217 [*]	.107
	Sig. (2-tailed)	.958	.029	.291
	N	100	102	99

Correlations

		BLCWILLINGUS NG	BLCSUPPLYCH AIN	BLCFINANCIAL
BLC5	Pearson Correlation	.067	.137	.141
	Sig. (2-tailed)	.506	.173	.163
	N	100	101	100
BLCTRaining	Pearson Correlation	.268 ^{**}	.261 ^{**}	.418 ^{**}
	Sig. (2-tailed)	.007	.008	.000
	N	100	101	100
BLCFRAMEORGANIZED	Pearson Correlation	.254 [*]	.205 [*]	.475 ^{**}
	Sig. (2-tailed)	.011	.039	.000
	N	101	102	101
BLCPARTENERSHIP	Pearson Correlation	.298 ^{**}	.309 ^{**}	.384 ^{**}
	Sig. (2-tailed)	.003	.002	.000
	N	99	100	99
BLCPILOTPROJECT	Pearson Correlation	.223 [*]	.277 ^{**}	.415 ^{**}
	Sig. (2-tailed)	.025	.005	.000
	N	101	102	101
FARUDSIGNIFICANTLY	Pearson Correlation	.299 ^{**}	.298 ^{**}	.242 [*]
	Sig. (2-tailed)	.003	.002	.015
	N	100	101	100
FARUDMODERATLY	Pearson Correlation	.322 ^{**}	.218 [*]	.239 [*]
	Sig. (2-tailed)	.001	.030	.018
	N	99	99	98
BLCNOIMPACTFRAUD	Pearson Correlation	-.206 [*]	-.059	-.029
	Sig. (2-tailed)	.039	.558	.777
	N	100	101	99
BLCINCREASEFRAUD	Pearson Correlation	-.002	-.116	-.122
	Sig. (2-tailed)	.988	.247	.223
	N	101	102	101

Correlations

		BLCINFOSECURITY	BLCEFFECTIVEFTAXFRAUD	BLCTRANSPERANCY
BLC5	Pearson Correlation	.144	.074	.119
	Sig. (2-tailed)	.152	.467	.234
	N	100	100	102
BLCTRAINING	Pearson Correlation	.355 ^{**}	.430 ^{**}	.419 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	100	100	102
BLCFRAMEORGANIZED	Pearson Correlation	.407 ^{**}	.519 ^{**}	.535 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	101	101	103
BLCPARTENERSHIP	Pearson Correlation	.364 ^{**}	.570 ^{**}	.494 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	99	99	101
BLCPILOTPROJECT	Pearson Correlation	.407 ^{**}	.547 ^{**}	.484 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	101	101	103
FARUDSIGNIFICANTLY	Pearson Correlation	.344 ^{**}	.285 ^{**}	.248 [*]
	Sig. (2-tailed)	.000	.004	.012
	N	100	100	102
FARUDMODERATLY	Pearson Correlation	.261 ^{**}	.340 ^{**}	.286 ^{**}
	Sig. (2-tailed)	.010	.001	.004
	N	98	98	100
BLCNOIMPACTFRAUD	Pearson Correlation	-.128	-.095	-.101
	Sig. (2-tailed)	.207	.351	.316
	N	99	99	101
BLCINCREASEFRAUD	Pearson Correlation	-.078	.003	-.011
	Sig. (2-tailed)	.437	.974	.908
	N	101	101	103

Correlations

		BLCIMMUTABIL ITY	BLCDECENTRI AZED	BLCTRACABILI TY
BLC5	Pearson Correlation	.070	.205 [*]	.142
	Sig. (2-tailed)	.487	.041	.156
	N	100	100	102
BLCTRAINING	Pearson Correlation	.474 ^{**}	.242 [*]	.416 ^{**}
	Sig. (2-tailed)	.000	.015	.000
	N	100	100	102
BLCFRAMEORGANIZED	Pearson Correlation	.392 ^{**}	.336 ^{**}	.469 ^{**}
	Sig. (2-tailed)	.000	.001	.000
	N	101	101	103
BLCPARTENERSHIP	Pearson Correlation	.459 ^{**}	.457 ^{**}	.519 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	99	99	101
BLCPILOTPROJECT	Pearson Correlation	.408 ^{**}	.222 [*]	.397 ^{**}
	Sig. (2-tailed)	.000	.026	.000
	N	101	101	103
FARUDSIGNIFICANTLY	Pearson Correlation	.257 ^{**}	.324 ^{**}	.357 ^{**}
	Sig. (2-tailed)	.010	.001	.000
	N	100	100	102
FARUDMODERATLY	Pearson Correlation	.372 ^{**}	.349 ^{**}	.393 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	99	98	100
BLCNOIMPACTFRAUD	Pearson Correlation	.047	.129	-.024
	Sig. (2-tailed)	.643	.201	.812
	N	99	100	101
BLCINCREASEFRAUD	Pearson Correlation	-.054	.077	.059
	Sig. (2-tailed)	.588	.442	.551
	N	101	101	103

Correlations

		BLCADOPTION DGT	BLCCOST	BLCLACKE
BLC5	Pearson Correlation	.257 ^{**}	.261 ^{**}	.251 [*]
	Sig. (2-tailed)	.009	.009	.011
	N	102	100	101
BLCTRaining	Pearson Correlation	.527 ^{**}	.226 [*]	.529 ^{**}
	Sig. (2-tailed)	.000	.024	.000
	N	102	100	101
BLCFRAMEORGANIZED	Pearson Correlation	.410 ^{**}	.336 ^{**}	.419 ^{**}
	Sig. (2-tailed)	.000	.001	.000
	N	103	101	102
BLCPARTENERSHIP	Pearson Correlation	.607 ^{**}	.227 [*]	.511 ^{**}
	Sig. (2-tailed)	.000	.024	.000
	N	101	99	100
BLCPILOTPROJECT	Pearson Correlation	.533 ^{**}	.309 ^{**}	.403 ^{**}
	Sig. (2-tailed)	.000	.002	.000
	N	103	101	102
FARUDSIGNIFICANTLY	Pearson Correlation	.354 ^{**}	.172	.241 [*]
	Sig. (2-tailed)	.000	.087	.015
	N	102	100	101
FARUDMODERATLY	Pearson Correlation	.450 ^{**}	.145	.415 ^{**}
	Sig. (2-tailed)	.000	.153	.000
	N	100	99	99
BLCNOIMPACTFRAUD	Pearson Correlation	-.053	-.077	.153
	Sig. (2-tailed)	.600	.450	.127
	N	101	99	101
BLCINCREASEFRAUD	Pearson Correlation	-.090	.018	-.022
	Sig. (2-tailed)	.364	.858	.823
	N	103	101	102

Correlations

		BLCORGANIZE DISSUE	BLCACCEPTAN CE	BLCIMMADIAT E
BLC5	Pearson Correlation	.182	.289 ^{**}	.386 ^{**}
	Sig. (2-tailed)	.068	.003	.000
	N	101	101	101
BLCTRAINING	Pearson Correlation	.217 [*]	.535 ^{**}	.199 [*]
	Sig. (2-tailed)	.029	.000	.046
	N	101	101	101
BLCFRAMEORGANIZED	Pearson Correlation	.427 ^{**}	.423 ^{**}	.183
	Sig. (2-tailed)	.000	.000	.066
	N	102	102	102
BLCPARTENERSHIP	Pearson Correlation	.280 ^{**}	.466 ^{**}	.208 [*]
	Sig. (2-tailed)	.005	.000	.038
	N	100	100	100
BLCPILOTPROJECT	Pearson Correlation	.255 ^{**}	.397 ^{**}	.346 ^{**}
	Sig. (2-tailed)	.010	.000	.000
	N	102	102	102
FARUDSIGNIFICANTLY	Pearson Correlation	.148	.289 ^{**}	.327 ^{**}
	Sig. (2-tailed)	.139	.003	.001
	N	101	101	101
FARUDMODERATLY	Pearson Correlation	.275 ^{**}	.506 ^{**}	.176
	Sig. (2-tailed)	.006	.000	.082
	N	99	99	99
BLCNOIMPACTFRAUD	Pearson Correlation	.212 [*]	.114	.051
	Sig. (2-tailed)	.035	.260	.614
	N	100	100	100
BLCINCREASEFRAUD	Pearson Correlation	.240 [*]	-.001	.258 ^{**}
	Sig. (2-tailed)	.015	.996	.009
	N	102	102	102

Correlations

		BLC13	BLC35	BLC5	BLCTRAINING
BLC5	Pearson Correlation	.282 ^{**}	.525 ^{**}	1	.213 [*]
	Sig. (2-tailed)	.004	.000		.032
	N	102	101	102	101
BLCTRAINING	Pearson Correlation	.232 [*]	.372 ^{**}	.213 [*]	1
	Sig. (2-tailed)	.019	.000	.032	
	N	102	101	101	102
BLCFRAMEORGANIZED	Pearson Correlation	.163	.359 ^{**}	.136	.690 ^{**}
	Sig. (2-tailed)	.100	.000	.174	.000
	N	103	101	102	102
BLCPARTENERSHIP	Pearson Correlation	.262 ^{**}	.277 ^{**}	.158	.669 ^{**}
	Sig. (2-tailed)	.008	.006	.115	.000
	N	101	99	100	100
BLCPILOTPROJECT	Pearson Correlation	.394 ^{**}	.388 ^{**}	.089	.718 ^{**}
	Sig. (2-tailed)	.000	.000	.374	.000
	N	103	101	102	102
FARUDSIGNIFICANTLY	Pearson Correlation	.373 ^{**}	.263 ^{**}	.207 [*]	.325 ^{**}
	Sig. (2-tailed)	.000	.008	.038	.001
	N	102	101	101	102
FARUDMODERATLY	Pearson Correlation	.197 [*]	.366 ^{**}	.138	.519 ^{**}
	Sig. (2-tailed)	.049	.000	.172	.000
	N	100	98	99	99
BLCNOIMPACTFRAUD	Pearson Correlation	.128	.106	.170	-.111
	Sig. (2-tailed)	.204	.296	.090	.272
	N	101	99	100	100
BLCINCREASEFRAUD	Pearson Correlation	.259 ^{**}	.047	.121	-.236 [*]
	Sig. (2-tailed)	.008	.643	.227	.017
	N	103	101	102	102

Correlations

		BLCFRAMEORGANIZED	BLCPARTENERSHIP	BLCPILOTPROJECT
BLC5	Pearson Correlation	.136	.158	.089
	Sig. (2-tailed)	.174	.115	.374
	N	102	100	102
BLCTRAINING	Pearson Correlation	.690 ^{**}	.669 ^{**}	.718 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	102	100	102
BLCFRAMEORGANIZED	Pearson Correlation	1	.677 ^{**}	.682 ^{**}
	Sig. (2-tailed)		.000	.000
	N	103	101	103
BLCPARTENERSHIP	Pearson Correlation	.677 ^{**}	1	.704 ^{**}
	Sig. (2-tailed)	.000		.000
	N	101	101	101
BLCPILOTPROJECT	Pearson Correlation	.682 ^{**}	.704 ^{**}	1
	Sig. (2-tailed)	.000	.000	
	N	103	101	103
FARUDSIGNIFICANTLY	Pearson Correlation	.337 ^{**}	.410 ^{**}	.446 ^{**}
	Sig. (2-tailed)	.001	.000	.000
	N	102	100	102
FARUDMODERATLY	Pearson Correlation	.415 ^{**}	.401 ^{**}	.439 ^{**}
	Sig. (2-tailed)	.000	.000	.000
	N	100	99	100
BLCNOIMPACTFRAUD	Pearson Correlation	-.107	-.166	-.133
	Sig. (2-tailed)	.286	.100	.185
	N	101	99	101
BLCINCREASEFRAUD	Pearson Correlation	-.110	-.180	-.135
	Sig. (2-tailed)	.270	.072	.172
	N	103	101	103

Correlations

		FARUDSIGNIFICANTLY	FARUDMODERATLY	BLCNOIMPACTFRAUD
BLC5	Pearson Correlation	.207 [*]	.138	.170
	Sig. (2-tailed)	.038	.172	.090
	N	101	99	100
BLCTRAINING	Pearson Correlation	.325 ^{**}	.519 ^{**}	-.111
	Sig. (2-tailed)	.001	.000	.272
	N	102	99	100
BLCFRAMEORGANIZED	Pearson Correlation	.337 ^{**}	.415 ^{**}	-.107
	Sig. (2-tailed)	.001	.000	.286
	N	102	100	101
BLCPARTENERSHIP	Pearson Correlation	.410 ^{**}	.401 ^{**}	-.166
	Sig. (2-tailed)	.000	.000	.100
	N	100	99	99
BLCPILOTPROJECT	Pearson Correlation	.446 ^{**}	.439 ^{**}	-.133
	Sig. (2-tailed)	.000	.000	.185
	N	102	100	101
FARUDSIGNIFICANTLY	Pearson Correlation	1	.575 ^{**}	.083
	Sig. (2-tailed)		.000	.412
	N	102	99	100
FARUDMODERATLY	Pearson Correlation	.575 ^{**}	1	.053
	Sig. (2-tailed)	.000		.602
	N	99	100	98
BLCNOIMPACTFRAUD	Pearson Correlation	.083	.053	1
	Sig. (2-tailed)	.412	.602	
	N	100	98	101
BLCINCREASEFRAUD	Pearson Correlation	.133	-.063	.570 ^{**}
	Sig. (2-tailed)	.181	.533	.000
	N	102	100	101

Correlations

		BLCINCREASEFRAUD
BLC5	Pearson Correlation	.121
	Sig. (2-tailed)	.227
	N	102
BLCTRAINING	Pearson Correlation	-.236 [*]
	Sig. (2-tailed)	.017
	N	102
BLCFRAMEORGANIZED	Pearson Correlation	-.110
	Sig. (2-tailed)	.270
	N	103
BLCPARTENERSHIP	Pearson Correlation	-.180
	Sig. (2-tailed)	.072
	N	101
BLCPILOTPROJECT	Pearson Correlation	-.135
	Sig. (2-tailed)	.172
	N	103
FARUDSIGNIFICANTLY	Pearson Correlation	.133
	Sig. (2-tailed)	.181
	N	102
FARUMODERATLY	Pearson Correlation	-.063
	Sig. (2-tailed)	.533
	N	100
BLCNOIMPACTFRAUD	Pearson Correlation	.570 ^{**}
	Sig. (2-tailed)	.000
	N	101
BLCINCREASEFRAUD	Pearson Correlation	1
	Sig. (2-tailed)	
	N	103

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

تقنية البلوك تشين للحد من التهرب الضريبي في فلسطين

ريما رأفت محمد عودة

أسماء لجنة الإشراف:

الدكتور محمد صالح محمود عبيد

الدكتور رامي محمد عوض هدرج

الدكتور أحمد عويس

الدكتور فراس مرار

ملخص

إن الإحباط من محاولات التهرب الضريبي التقليدية في ظل الثورة التكنولوجية سيؤدي إلى نتائج قد لا تكون مرضية أو معقولة أو مشكوك فيها، وذلك بسبب تراجع تحصيل ضريبة القيمة المضافة، والتأخير في سداد الضرائب المستحقة، وعدم الكفاءة، والفواتير الوهمية. لذلك، فإن السعي إلى تحقيق نسبة معقولة من الموثوقية والدقة في معدل دوران الإيرادات الضريبية سيشكل دخلاً حقيقياً للخزينة العامة. إن الحد من التهرب الضريبي يؤثر على أهم اهتمامات المسؤولين عن اتخاذ القرارات المتعلقة بتحصيل الضرائب في وزارة المالية الفلسطينية، لما له من دور أساسي في توفير حياة كريمة للمواطنين والمساهمة في تحسين الخدمات العامة على المستوى المطلوب. رصد ظاهرة التهرب الضريبي بما يتماشى مع التكنولوجيا الناشئة من خلال أحد الاتجاهات الحالية وهي تقنية blockchain وهي تقنية أساسية في الضرائب، من خلال مناهج نوعية وكمية تتكون من جمع البيانات واختيار المشاركين والمقابلات وجمع البيانات والتقارير المالية ومراجعة الوثائق وبناء أقسام الاستبيان وتصميم العينة وموثوقية البيانات وصلاحياتها وتحليلها ومعالجتها واستكشافها وتصورها. تم استخدام SPSS و Microsoft Excel لوصف الوضع الحالي لتحصيل الضرائب في ظل نظام إدارة الإيرادات التقليدي (RMS) واقتراح نموذج دفع الضرائب (PBTP) لوزارة المالية في فلسطين بناءً على تقنية blockchain. تشير نتائج هذه الدراسة إلى أنه يمكن نشر (PBTP) في الإدارة الضريبية نظراً لميزاته المهمة المتعلقة باللامركزية والثبات وآلية الإجماع والعقود الذكية وسوف يرفع مستوى فرض القيود من أجل ضمان الامتثال الضريبي وتحقيق الفوائد لإيراداتنا الوطنية.

الكلمات المفتاحية: بلوكشين، لامركزية، دفتر الأستاذ الموزع، الإحتيال، الضرائب