

EXAMINING THE NEXUS BETWEEN DIGITALIZATION AND FINANCIAL CRIME: A STUDY OF EMERGING ECONOMIES

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ABSTRACT

This research aims to explore the relationship between digitalization and financial crime, with governance acting as a moderator. Financial crime is considered the dependent variable, digitalization the independent variable, and governance the moderating factor. Financial crime is measured by the Corruption Perceptions Index (CPI), while digitalization is assessed through two proxies: e-government and e-participation. The study uses quantitative panel data from 2008 to 2022. Econometric analysis reveals that digitalization has a significant and positive impact on financial crime. Both proxies of e-participation and e-governance demonstrate a positive and significant impact on financial crime. This indicates that digitalization without proper governance mechanisms can lead to misuse and harm the country's economy. Additionally, when governance is added as a moderator, the positive relationship between digitalization and financial crime persists but is notably weakened. The study highlights that technology will be beneficial only when supported by effective policies for its adoption and use.

Keywords: Digitalization, E-Participation, E-Governance, Financial Crime, Population Growth

INTRODUCTION

Financial crime refers to illegal practices committed by individuals or groups to get financial benefits. Financial crimes take many forms, including money laundering, corruption, bribery, insider trading, and cybercrime. A financial crime is viewed as an involuntary offense that results in financial loss (Okolie, 2019). Financial crime results in the diversion of funds that harm key infrastructure investment, restricting economic productivity, inhibiting connectivity, and inhibiting overall economic development. The Corruption Perceptions Index (CPI) of Transparency International is an annual assessment that measures public perceptions of corruption in various nations. The results highlight the harmful effects of corruption and fraud on

economic development, investment climate, and governance (Osmond et al., 2023). It happens when a person or a group carries out a prohibited activity with money, assets, or financial instruments for individual benefit, such as fraud, money laundering, or cybercrime. People habitually commit these crimes out of greed, a hunger for power, or to cover up other criminal acts, such as human trafficking, terrorism, and drug trafficking result in severe security concerns. This occurs when someone or a group of people hides illegal money and tries to make their dirty money, or make money obtained through illegal income look good (Khan et al. 2023). Money laundering is one of the most severe types of financial crime, where illegally gained money

passes through various layers to cover the true source of that illegal fund gain. Money laundering can be carried out with or without the knowledge of the business organization. This can be done using real-time or indirect information (Levi & Reuter, 2006). In addition to money laundering, there are a lot of other financial crimes like corruption, fraud, skimming, and Ponzi schemes that the financial criminals commit for their personal or organizational benefits. (Levi & Reuter, 2006).

Money laundering has become a major issue in the world, creating a challenge to financial stability. Most countries in the world are forced to cooperate in the universal battle against money laundering. Studies disclosed in the criminalization of money laundering, where it was demonstrated that, while assuming the usual behavior of criminals (Ferwerda, 2009). In addition, various fraud practices smooth the way for money laundering in a territory. Fraud can take various types, such as investment fraud, loan fraud, insurance scams, tax evasion, terrorist financing, bribery, and corruption. These cases focus on the need for strong internal controls and oversight. Edelhertz (1977) describes fraud as an illegal act or series of illegal acts committed by friendly resources and through disguise or surveillance to obtain money or property. The purpose varies from avoiding the payment or losing money or property to obtaining business or personal gain through disguise or surveillance. Fraud is a feature of every developed nation in the world, because most countries face severe fraud activities harming their economy. It is an important and growing threat to civilizations, regardless of the size and location of the industry and economy (Clayton et al., 2006). Financial fraud occurs in a social environment and leaves serious social concerns for the economy, corporations, and individuals. As a result, during the past twenty years, the total amount of fraudulent financial events occurring at the international level has been estimated at 3.89 trillion (USD 5.127 trillion), resulting in losses increasing by 56% since 2009. The global average rate of losses from fraud over the past two decades represents 6.05% of gross domestic product (Okoye & Gbegi, 2013).

The shadow economy is described as financial activities that are invisible to the certified jurisdiction on behalf of several reasons, including monetary, regulatory, and official ones. Crime and

shadow economic activities are elements of life around the world, and nearly all citizens are involved in trying to control these activities through education, punishment, or prosecution. The shadow economy is a main problem for governments in various countries, especially in developing countries, where up to 75% of manufacturing takes place underground as compared to only around 10% in developed countries (Schneider & Enste, 2000). However, the reasons and effects of alternative activities have been a focus of wide investigation (Gërçhani, 2004). Detailed knowledge of the factors of alternative activity will support policymakers in developing actual rules that fight illegal activities and encourage economic growth (Berdiev & Saunoris, 2016). The spread of the shadow economy is most likely due to the influence of institutional suits in the financial sectors (Bose et al., 2012). The financial sector assists businesses in important functions in an economy by giving them access to required credit and licenses and by detecting business dealings for taxable purposes. As a result, financial development increases the opportunity cost of production in the shadow economy by depressing the hurdles to attaining credit and thus offering an inducement to relaxed entrepreneurs to convert to acceptability (Blackburn, 2012).

Furthermore, the government can successfully use the financial sector to monitor tax transactions, and financial sector growth reduces the incidence of tax evasion and, therefore, moderates the extent of the shadow economy (Capasso & Jappelli, 2013). According to Global Financial Integrity (2019), 19% of the GDP of European countries is misplaced in the shadow economy. During the 10 years between 2008 and 2017, the value of illicit financial assets (commercial misappropriation, drug trafficking and manufacturing, gambling, smuggling, fraud, tax evasion, and) reached 8.7 trillion US dollars in the countries of the world (Arendt et al., 2019). Occasionally, people avoid doing business with funds based on private or confidential information that is not available to the public. In addition, cybercrime is a growing risk globally because individuals and organizations are becoming dependent on the Internet at an increasing rate (Alim et al. 2024). The use of the internet and other technologies has increased the risk of violence from cybercriminals across the world. These crimes depend on the use of

computer viruses, networks, or the internet, such as hacking, phishing, and identity theft; there is a need to explore the cybercrime scenario (Raghavan & Parthiban, 2014). It has also been argued that financial crime trends are increasing with technological adaptation, which makes digital fraud and cybercrimes more sophisticated and difficult to detect. Cybercrime is simply an extension of crime, but involves computers or digital networks, and it is intended to include new illegal activities (W. A. Al-Khater et al., 2020).

Cybercrime exists in various forms, including privacy invasion, identity theft, and cyber terrorism are defined and described due to their unique attributes. Finally, the detection techniques are also highlighted for each form of cybercrime for control (Shahzadi et al., 2025). Due to the highly digitalized nature of citizen data collection and storage, the personal information of individuals of a particular state or nationality is at greater risk than ever before. Using the United States as a case in point, citizens and some residents of the United States who are documented in the national database are given a Social Security Number instead of an identification number. This system of individual identification is used in taxation, healthcare, education, and employee documentation in some private organizations (Sharma & Gaherwal, 2017). Identity theft, thus, is very possible, as access to a person's Social Security number can yield a lot of information regarding the person's citizenship and facilitate the theft of their identity. This form of cybercrime, however, is not specific to the Social Security identification system, as it also applies to the access and theft of an individual's digitized credit card details. Obtaining credit card details or social security information can serve many malicious purposes, ranging from racking up huge bills in the names of unsuspecting victims to selling the information for financial gain (W. A. Al-Khater et al., 2020).

Literature Review

The study of Brici and Achim (2023) examined the influence of digitalization on financial crime. The study treated financial crime as a dependent variable, while digitalization is an independent variable. Using panel data covering the period 2015–2021. The study found that digitalization decreases financial crime. Similarly, the study of M.V. Achim et al. (2021) examined the influence

of technology on the level of economic and financial crime, corruption, shadow economy, and money laundering. The study treated economic and financial crime as a dependent variable, while technology is an independent variable. Using data for 185 countries over the 2012–2015 time periods and controlling for many important variables. The study found that increased technology reduced the size of economic and financial crime. The study of Brici et al. (2022) examined the influence of digitalization on economic and financial crimes such as corruption, shadow economies, money laundering, and cybercrime. The study treated economic and financial crime as a dependent variable while digitalization was an independent variable. The period of analysis starts in 2015 and ends in 2020 to cover the period before the pandemic, but also the period in which it manifested its effects. The results show that digitalization determines a decrease in economic and financial crime.

The study of Vaidean et al. (2021) examined the influence of economic and financial crimes on intelligence. The study treated intelligence as a dependent variable while economic and financial crimes were treated as independent variables. In this study used a cross-sectional sample of 182 countries was used for the time period of 2012–2017. The study found that intelligence positively impacted economic and financial crimes. The study of Ribeiro-Navarrete et al. (2024) examined the influence of sustainability efforts and the adoption of technology on digitalization. The study treated digitalization as a dependent variable, while of sustainability efforts and adoption of technology were independent variables using panel data covering the time period 2010 – 2022. The study found that sustainability efforts and the adoption of technology influenced digitalization positively. The study of Anton (2024) examined the influence of digitalization or digital transformation on entrepreneurial activity. The study treated entrepreneurial activity as a dependent variable while digitalization or digital transformation was an independent variable. Using panel data for the time period 2015 – 2020. The study found that digitalization or digital transformation positively impacted entrepreneurial activity. Digital transformation increases entrepreneurial activity. The study of Slinko et al. (2021) examined the influence of technological development, weak monitoring of financial institutions, and low

accountability for crimes on financial crime. The study treated financial crime as a dependent variable while technological development, weak monitoring of financial institutions, and low accountability for crimes were independent variables. Using panel data used for 2010 - 2020. The study found that technological development, weak monitoring of financial institutions, and low accountability for crimes had a positive influence on financial crime.

The study of Koeswayo et al. (2024) examined the influence of the corruption perception index (CPI) on public governance, such as voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption. The study treated public governance as a dependent variable, while the corruption perception index (CPI) was an independent variable. Using panel data for 180 countries over the 2012-2021 time periods and the Generalized Estimating Equations (GEE) method was used. This indicates that good governance practices could effectively reduce corruption. The study of Roman et al. (2023) examined the influence of the corruption index on the absorption rate of European funds. The study treated the absorption rate as a dependent variable while the corruption index was an independent variable. Using panel data covering the time period of 2014-2010. The study found that the corruption index influenced the absorption rate of European funds negatively. The study of Domashova and Politova (2021) examined the influence of socio-economic factors such as unemployment rate and inflation on the corruption perception index. The study treated the corruption perception index as a dependent variable while the socio-economic as independent variables. Using data for 180 countries covers the 2012-2019 time period. The study found that the corruption perception index significantly increased on socio-economic indicators.

The study of Tannenberg et al. (2021) examined the influence of corporate concerns on the corruption perception index. The study-related corruption perception index is a dependent variable, while a corporate concern is an independent variable. Using data covers the period 2001 - 2016. The study found that the corruption perception index had a strong impact on corporate interests. The study of Anthony-McMann et al. (2017) examined the influence of Electoral

Democracy on corruption. The study related corruption as a dependent variable while Electoral Democracy as an independent variable. We use the V-Dem dataset, which provides data for 173 countries from 1900 to 2012. There is a positive relationship between holding elections and corruption. The study of Trabelsi (2024) examined the influence of corruption on economic growth. The study treated economic growth as a dependent variable while corruption was an independent variable. Using panel data for 65 countries covers the period 1987 - 2021. The study found that corruption on economic growth. The study of Fraumeni & Liu (2021) examined the influence of Human Capital Index on GDP, Productivity, and Employment rate. The study treated GDP, Productivity, and Employment rate as dependent variables while the Human Capital Index was an independent variable. The panel data covers the period 2010 to 2020. The study found that the Human Capital Index influences GDP, Productivity, and Employment rate.

The study of Alomari (2020) examined the influence of E-government on money Laundering, compliance units. The study treated money laundering as a dependent variable, while E-government, being an independent variable, and the compliance unit were used as mediators. Data used for responses from 123 employees of the Central Bank of Jordan. The study found that E-government positively impacted both money laundering and the compliance unit. Also, the compliance unit had a positive mediating effect on the relationship between e-government and money laundering. The study of Giovanetti et al. (2023) examined the influence of corruption on the E-Government. The study treated E-Government as a dependent variable while corruption was an independent variable. Using panel data for 175 countries covers the 2003 - 2019 time period. This study empirically investigates the impact of e-Government on reducing corruption. The study of Bodescua et al. (2022) examined the influence of digital technology on money laundering. The study treated money laundering as a dependent variable while digital technology was an independent variable. Using panel data for the 162 countries covers the time period 2012 - 2020. The study found that a negative impact of digital technology on money laundering.

Methodology

The primary objective of the current study is to examine the relationship between digitalization and financial crime. Based on the discussion of prior research and our objective, we aim to elaborate on the relationship of the independent variable, i.e., digitalization including e-government, e-participation, and the dependent variable, financial crime. This study also aims to highlight the moderating effect of governance in the relationship between digitalization and financial crimes. Digitalization can challenge existing rules and values related to financial transactions, creating opportunities for new forms of financial crime (Wang, 2014). Digitalization can both enhance and weaken social control mechanisms. While technology can facilitate investigation and law implementation, it can also create unrecognizability and facilitate criminal activities (Janowitz, 1975). In countries with weak

institutional capacity characterized by corruption, lack of transparency, and ineffective enforcement, digitalization may unintentionally serve as a facilitator of financial crime (Achim et al., 2021). Institutions are the rules of the game in a society; their quality determines how economic and political actions unfold. In contrast, robust governance structures can leverage digital technologies for enhanced crime detection and prevention, thus turning a potential vulnerability into a strength (Kitsios et al., 2022). The economic opportunities presented by digitalization can influence the supposed costs and benefits of engaging in financial crime (Roman, 2002). The effectiveness of discouragement devices, such as law enforcement and regulatory sanctions, can be impacted by the rapid evolution of digital technologies (Cameron, 1988).

Result and Discussion

Table 1: Description of Variables

<i>Variable</i>	<i>Obs</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
<i>CPI</i>	632	34.3394	10.24347	13	74.5
<i>EGDI</i>	632	0.47316	0.16020	0	0.9473
<i>EPI</i>	632	0.35367	0.26191	0.011	1
<i>PG</i>	632	1.393856	1.246459	-4.238276	9.623606
<i>G</i>	632	-0.3895728	0.5782786	-2.224659	1.342963

Table 1 represents the descriptive statistics of the dataset. Six hundred thirty-two observations (623) are made into different categories in this context. Financial Crime proxied by Corruption Perception Index (CPI) has been used as the dependent variable in the current study. Its mean is 34.3394, and the standard deviation is 10.24347. The measuring values of CPI range from 13 to 74.5. Likewise, Digitalization proxied by the E-Government Development Index (EGDI) is considered an independent variable in the current study, the mean of which is 0.47316, and the standard deviation of 0.16020. The values are between 0 and 0.9473. Digitalization proxied by E-

Participation Index (EPI) is also considered an independent variable in the current study, with a mean of which is 0.35367 and a standard deviation of 0.2619. The values are between 0.011 and 1. Governance (G) is treated as a moderating variable in the current study, and its mean value is -0.3895728 with a standard deviation of 0.5782786, minimum value -2.224659, and maximum value 1.342963. Population Growth (PG) is the control variable considered in the study, which enhances the reliability and accuracy of the results. The mean value of which is 1.393856, with a standard deviation of 1.246459. The range for PG is from -4.238276 to 9.623606.

Table 2: Correlation Matrix

Variable	CPI	EGDI	EPI	PG	G
CPI	1.0000				
EGDI	0.4311*	1.0000			
EPI	0.3369*	0.7584*	1.0000		
PG	-0.2655*	-0.4858*	-0.2683*	1.0000	
G	0.7342*	0.5791*	0.4053*	-0.3067*	1.0000

Table 2 shows looking at the correlation matrix, it is clear that multicollinearity is not a problem in the dataset, as the independent variables largely have low T-values, which denote small correlation coefficients. This is a positive finding because it checks the assumption of independence between the variables to obtain high-level precision in conducting regression analysis. It would also mean

that the regression coefficient estimates would be easier to interpret, as well as more confident and accurate estimations free from multicollinearity. This enhances the credibility of the overall analysis since the model estimate is free from repercussions from high-scale correlations between two or more predictors.

Table 3: Levin-Lin-Chu Unit Root Test

Variables	Statistics	p-value	
CPI	Adjusted t*	-11.3436	0.0000***
EGDI	Adjusted t*	-9.2408	0.0000***
EPI	Adjusted t*	-11.8512	0.0000***
G	Adjusted t*	-9.4356	0.0000***
PG	Adjusted t*	-14.1347	0.0000***

Table 3, which is Levin-Lin-Chu Unit Root Test indicate that the result of variables is stationary because p value is less than 0.05 and Adjusted t* value is highly negative, which means that financial

crime (CPI), digitalization (EGDI, EPI), governance (G) and population growth (PG) are stable in long-term behavior and cannot drift randomly.

Table 4: IM-Pesaran-Shin Unit Root Test

Variables	Statistics	p-value	
CPI	Z-t-tilde-bar	-16.1428	0.0000***
EGDI	Z-t-tilde-bar	-16.2240	0.0000***
EPI	Z-t-tilde-bar	-16.1635	0.0000***
G	Z-t-tilde-bar	-17.9434	0.0000***
PG	Z-t-tilde-bar	-17.7181	0.0000***

Table 4 which is the IM-Pesaran-Shin Unit Root Test, indicates that the result of variables is stationary because p value is less than 0.05 and the Z-t-tilde-bar value is highly negative, which means that financial crime (CPI), digitalization (EGDI,

EPI), governance (G) and population growth (PG) are stable in long-term behavior and cannot drift randomly.

Table 5: Ordinary Least Squares (OLS)

<i>Variables</i>	<i>Model 1: E-Government Index</i>					
	<i>Without Interaction</i>					
<i>CPI</i>	Coef.	Std. Err.	Z	P> z	[95% Conf. Interval]	
					Lower	Upper
<i>EGDI</i>	0.57408	2.33831	0.25	0.000***	45.4688	65.0808
<i>PG</i>	-0.34150	0.25438	-1.34	0.003***	-0.2320	-0.0485
<i>_cons</i>	43.7738	2.79796	15.64	0.000***	38.2899	49.2577
	<i>With Interaction</i>					
<i>EGDI</i>	5.80564	2.47714	2.34	0.019***	46.2197	64.8637
<i>G</i>	6.02884	1.34360	4.49	0.000***	0.45599	0.71462
<i>EGDI*G</i>	14.1127	2.57388	5.48	0.001***	0.46310	1.68053
<i>PG</i>	-0.39950	0.248922	-1.60	0.109	-0.1206	0.05158
<i>_cons</i>	36.35196	1.51288	24.03	0.000***	39.9180	49.6875
<i>Variables</i>	<i>Model 2: E-Participation Index</i>					
	<i>Without Interaction</i>					
<i>CPI</i>	Coef.	Std. Err.	Z	P> z	[95% Conf. Interval]	
					Lower	Upper
<i>EPI</i>	13.11013	1.50496	8.71	0.000***	21.6545	33.2567
<i>PG</i>	-0.16174	0.04219	-3.83	0.000***	-0.2444	-0.07905
<i>_cons</i>	60.4773	1.37652	43.93	0.000***	57.7794	63.1752
	<i>With Interaction</i>					
<i>EPI</i>	3.21229	1.24614	2.58	0.000***	22.2124	33.5648
<i>G</i>	9.55039	0.806791	11.84	0.000***	0.03050	0.46375
<i>EPI*G</i>	9.09075	1.83373	4.96	0.000***	0.38565	1.30908
<i>PG</i>	-0.39847	0.23267	-1.71	0.087	-0.115	0.05824
<i>_cons</i>	38.18873	0.72393	52.75	0.000***	58.9345	64.2010

Table 5 presents without moderation. Digitalization proxied by E-Government Development Index (EGDI) has a positive coefficient of 0.57408 and a p-value of 0.000, which indicates that E-Government Development Index (EGDI) has a positive and insignificant correlation with the dependent variable. Population Growth (PG) also delivers a negative impact, with a coefficient of -0.34150 and a p-value of 0.003. Considering the interactive role of governance, digitalization proxied by E-Government Development Index (EGDI) has a positive coefficient of 5.80564 and a p-value of 0.019, which indicates that E-Government Development Index (EGDI) has a positive and

significant nexus with the corruption perception index, thereby minimizing financial crime. Governance (G) also delivers a positive impact, with a positive coefficient of 6.02884 and a p-value of 0.000. E-Government Development Index with Governance (EGDIG) has a positive coefficient of 14.1127 and a p-value of 0.001, showing a positive relationship with the dependent variable. Population Growth (PG) also has a negative coefficient of -0.39950 and a p-value of 0.109, respectively. Furthermore, digitalization proxied by E-Participation Index (EPI) has a positive coefficient of 13.11013 and a p-value of 0.000, which indicates that E-Participation Index (EPI) has a positive and significant relationship with the

corruption perception index. Population Growth (PG) also delivers a negative impact, with a coefficient of -0.16174 and a p-value of 0.000. Considering governance as an interactive term, the results highlight that digitalization, proxied by E-Participation Index (EPI), has a positive 3.21229 and significant 0.000 relationship with corruption perception index, confirming that digitalization significantly reduces financial crime. The interactive term governance (G) significantly impacts corruption perception index positively,

9.55039, and significantly 0.000. E-Participation Index with Governance (EPIG) has a positive 9.09075 and significant 0.000 nexus with the corruption perception index, showing that digitalization with strong governance significantly reduces financial crime. Additionally, population Growth (PG) has a negative -0.02881 and significant 0.087 relationship with the corruption perception index.

Table 6: Random Effect Model

Variables	Model 1: E-Government Index					
	<i>Without Interaction</i>					
	Coef.	Std. Err.	Z	P> z	[95% Conf. Interval]	
					Lower	Upper
<i>CPI</i>						
<i>EGDI</i>	26.66504	2.63934	10.10	0.000***	45.4688	65.0808
<i>PG</i>	-0.536933	0.33523	-1.60	0.109	-0.2320	-0.04852
<i>_cons</i>	22.44523	1.576569	14.24	0.000***	38.2899	49.2577
	<i>With Interaction</i>					
<i>EGDI</i>	5.80564	2.47714	2.34	0.019***	46.2197	64.8637
<i>G</i>	6.02884	1.34360	4.49	0.000***	0.45599	0.71462
<i>EGDI*G</i>	14.1127	2.57388	5.48	0.000***	0.46310	1.68053
<i>PG</i>	-0.39950	0.24892	-1.60	0.109	-0.1206	0.05158
<i>_cons</i>	36.35196	1.512885	24.03	0.000***	39.9180	49.6875
Variables	Model 2: E-Participation Index					
	<i>Without Interaction</i>					
	Coef.	Std. Err.	Z	P> z	95% Conf. Interval	
					Lower	Upper
<i>CPI</i>						
<i>EPI</i>	3.21229	1.24614	2.58	0.000***	21.6545	33.2567
<i>PG</i>	-1.57241	0.31516	-4.99	0.000***	-0.2444	-0.07905
<i>_cons</i>	32.55642	0.87732	37.11	0.000***	57.7794	63.1752
	<i>With Interaction</i>					
<i>EPI</i>	11.05772	1.53342	7.21	0.010***	22.2124	33.5648
<i>G</i>	9.55039	0.80679	11.84	0.000***	0.03050	0.46375
<i>EPI*G</i>	9.090752	1.83373	4.96	0.000***	0.38565	1.30908
<i>PG</i>	-0.39847	0.232677	-1.71	0.087	-0.1158	0.05824
<i>_cons</i>	38.18873	0.723932	52.275	0.000***	58.9345	64.2010

Table 6 highlights the findings of the random effect model with and without the interaction of governance. The result shows that the coefficient value of digitalization, proxied by the E-Government Development Index (EGDI), is 26.66504 and is statistically significant at 0.000. This indicates that for each one-unit increase in digitalization, the corruption perception index (CPI) increases by 26.66504, which shows a significant decline in financial crime, because an increase in CPI means a decrease in financial crime. Moreover, the result also unveils that the interactive term governance enhances the positive relationship between digitalization and corruption perception index. Digitalization through E-Government enhances transparency in the administrative process, thereby reducing opportunities for illegal practices. In addition, digitalization reduces face-to-face interactions and strengthens access to information, enabling citizens and authorities to detect illegal activities earlier and eliminate them (Seiam and Salman, 2024; Alam et al., 2023; Khan et al., 2021). Furthermore, the current study also used the E-participation index as a proxy for digitalization to uncover the nexus between digitalization and financial crime. Findings of the study present that digitalization through E-participation has a positive and significant impact on the corruption perception index. E-participation enhances openness, transparency, and citizen engagement in the public decision-making process. This reduces the hidden transactions and minimizes financial crime in a territory. Furthermore, through e-participation, the government commences penalties and reduces information asymmetries, which further enhance transparency and minimize illegal practices. In addition, digitalization through e-participation also keeps digital records that improve traceability, making it easier for the regulators to detect and eliminate irregularities and illegal financial practices (Vasist et al., 2025; Merhi & Ahluwalia, 2025). E-government initiatives leverage ICT to make the use of financial services easy for citizens, government, and business entities, thereby enhancing communication and information symmetry. The influence of e-participation is further strengthened in the presence of good governance. This ultimately increases the corruption perception within the territory and minimizes financial crime.

Conclusion

The main goal of this study is to examine the relationship between digitalization and financial crime, focusing on the moderating role of governance in 79 countries. These countries are developing nations, while developed countries are excluded due to a lack of data. The study considers financial crime as the dependent variable, digitalization as the independent variable, and governance as the moderating variable. Additionally, it identifies population growth as a control variable. This research uses a quantitative approach and relies on secondary data. The data spans fifteen years, from 2008 to 2022. Data is collected from highly reliable and authentic online sources to ensure validity and accuracy. The analysis employs econometric methods such as descriptive statistics, correlation matrix, ordinary least squares regression, Hausman test, and random effects models to thoroughly investigate the factors influencing financial crime across different countries. Based on extensive literature and theoretical frameworks, the anticipated results suggest that digitalization, measured through various indices, can significantly help reduce financial crimes, including money laundering, cyber fraud, and tax evasion. However, the impact of digitalization varies depending on the context. The presence or absence of good governance greatly affects how effective digital tools are in fighting financial crime. This study systematically investigates the rationale for financial crime and the role of digitalization and governance in achieving the objectives and hypotheses put forward in this study. The outcomes support stronger regulatory frameworks, cyber fraud systems, and institutional controls to minimize the risks of financial crime in a digitalized environment. But governance in these countries is strong. In parallel, these elements lay out the course for attaining long-term financial stability and sustainable economic growth by reducing the risks of financial crime in the digital era.

REFERENCES

- Achim, M. V., Borlea, S. N., & Văidean, V. L. (2021). Does technology matter for combating economic and financial crime? A panel data study. *Technological and economic development of the economy*, 27(1), 223-261.

- Al-Khater, K. M., Hegazi, T. M., Al-Thani, H. F., Al-Muhanna, H. T., Al-Hamad, B. W., Alhuraysi, S. M., Alsfyani, W. A., Alessa, F. W., Al-Qwairi, A. O., & Al-Qwairi, A. O. (2020). Time of appearance of ossification centers in carpal bones: A radiological retrospective study on Saudi children. *Saudi Medical Journal*, 41(9), 938.
- Al-Khater, W. A., Al-Maadeed, S., Ahmed, A. A., Sadiq, A. S., & Khan, M. K. (2020). Comprehensive review of cybercrime detection techniques. *IEEE Access*, 8, 137293-137311.
- Al-Rousan, M., Safwat, M., & al Rousan, S. (2020). The Social Welfare in the Succession of Omar Bin Al-Khattab (A Historical Approach). *International Journal of Humanities and Social Science*, 10(1), 97-102.
- Alm, J. (2021). Tax evasion, technology, and inequality. *Economics of Governance*, 22(4), 321-343.
- Alam, T., Aftab, M., Abbas, Z., Ugli, K. M. M., & Bokhari, S. A. A. (2023). Impact of e-government initiatives to combat corruption mediated by behavioral intention: A quantitative analysis from emerging economies. *Sustainability*, 15(3), 2694.
- Alomari, A. (2022). Meta-heuristic-based guidance model for node localization in wireless sensor networks. *Computers and Electrical Engineering*, 104, 108437.
- Arendt, D., Bertucci, P. Y., Achim, K., & Musser, J. M. (2019). Evolution of neuronal types and families. *Current opinion in neurobiology*, 56, 144-152.
- Arner, D. W., Barberis, J., & Buckley, R. P. (2016). 150 years of Fintech: An evolutionary analysis. *Jassa*(3), 22-29.
- Atayah, O. F., & Alshater, M. M. (2021). Audit and tax in the context of emerging technologies: A retrospective analysis, current trends, and future opportunities. *International Journal of Digital Accounting Research*, 21.
- Berdiev, A. N., & Saunoris, J. W. (2016). Financial development and the shadow economy: A panel VAR analysis. *Economic Modelling*, 57, 197-207.
- Blackburn, W. R. (2012). *The sustainability handbook: The complete management guide to achieving social, economic, and environmental responsibility*. Routledge.
- Bondarenko, A., Wolska, M., Heindorf, S., Blübaum, L., Ngomo, A.-C. N., Stein, B., Braslavski, P., Hagen, M., & Potthast, M. (2022). CausalQA: A benchmark for causal question answering. Proceedings of the 29th International Conference on Computational Linguistics,
- Bondarenko, K., Boyarsky, A., Korochkin, A., Neronov, A., Semikoz, D., & Sokolenko, A. (2022). Account of the baryonic feedback effect in γ -ray measurements of intergalactic magnetic fields. *Astronomy & Astrophysics*, 660, A80.
- Bose, N., Capasso, S., & Andreas Wurm, M. (2012). The impact of banking development on the size of shadow economies. *Journal of Economic Studies*, 39(6), 620-638.
- Brem, A., Viardot, E., & Nylund, P. A. (2021). Implications of the coronavirus (COVID-19) outbreak for innovation: Which technologies will improve our lives? *Technological forecasting and social change*, 163, 120451.
- Brennen, J. S., & Kreiss, D. (2016). Digitalization. *The international encyclopedia of communication theory and philosophy*, 1-11.
- Capasso, S., & Jappelli, T. (2013). Financial development and the underground economy. *Journal of Development Economics*, 101, 167-178.
- Cefis, E., & Marsili, O. (2019). Good times, bad times: innovation and survival over the business cycle. *Industrial and Corporate Change*, 28(3), 565-587.
- Clayton, M., Golden, T., & Skalak, S. (2006). A Guide to Forensic Accounting Investigation. In: New Jersey: John Wiley & Sons, Inc.
- Shahzadi, K., Alim, W., & Khan, S. N. (2025). Do the fraud triangle components fuel complex financial fraud? A study of nonfinancial firms in Pakistan. *Journal of Financial Crime*, 32(1), 207-220.
- Edelhertz, H. (1977). *The investigation of white-collar crime: A manual for law enforcement agencies*. Office of Regional Operations, Law Enforcement Assistance Administration, US
- Elbahnasawy, N. G. (2021). Can e-government limit the scope of the informal economy? *World Development*, 139, 105341.

- Alim, W., Naseem, M., Ghaffar, A., Sohail, M., Din, A., & Shah, S. M. (2024). Examining the Influential Role of Family CEO and Investment on Tunneling: A Bound Test Approach. *Journal of Asian Development Studies*, 13(3), 1278-1292.
- Ferwerda, J. (2009). The economics of crime and money laundering: Does anti-money laundering policy reduce crime? *Review of Law & Economics*, 5(2), 903-929.
- Friedman, H. S. (2005). Department of Justice.
- Gee, J., & Button, M. (2019). The financial cost of fraud 2019: The latest data from around the world.
- Gërxhani, K. (2004). Tax evasion in transition: Outcome of an institutional clash? Testing Feige's conjecture in Albania. *European Economic Review*, 48(4), 729-745.
- Gogolin, G. (2010). The digital crime tsunami. *Digital investigation*, 7(1-2), 3-8.
- Hamilton, R., & Stekelberg, J. (2017). The effect of high-quality information technology on corporate tax avoidance and tax risk. *Journal of Information Systems*, 31(2), 83-106.
- Haruna, E. U., & Alhassan, U. (2022). Does digitalization limit the proliferation of the shadow economy in African countries? An in-depth panel analysis. *African Development Review*, 34, S34-S62.
- Ibrahim, I., & Abdulazeez, A. (2021). The role of machine learning algorithms for diagnosing diseases. *Journal of Applied Science and Technology Trends*, 2(01), 10-19.
- Ibrahim, S., Nnamani, D., & Okosun, O. (2021). Types of Cybercrime and Approaches to Detection. *IOSR Journal of Computer Engineering*, 23(5), 24-26.
- Index, C. P. (2022). Transparency international, corruption perceptions index. URL: <https://www.transparency.org/cpi2021>.
- Jahankhani, H., Al-Nemrat, A., & Hosseinian-Far, A. (2014). Cybercrime classification and characteristics. In *Cybercrime and cyber terrorism investigator's Handbook* (pp. 149-164). Elsevier.
- Kitsios, F., Mitsopoulou, E., Moustaka, E., & Kamariotou, M. (2022). User-Generated Content behavior and digital tourism services: A SEM-neural network model for information trust in social networking sites. *International Journal of Information Management Data Insights*, 2(1), 100056.
- Khan, A., Krishnan, S., & Dhir, A. (2021). Electronic government and corruption: Systematic literature review, framework, and agenda for future research. *Technological Forecasting and Social Change*, 167, 120737.
- Kravet, T., & Muslu, V. (2013). Textual risk disclosures and investors' risk perceptions. *Review of Accounting Studies*, 18(4), 1088-1122.
- Lanková, D., Nováková, A., Svobodová, V., Hajšlová, J., Novotný, T., Dibusz, K., & Nič, M. (2019). Extensive literature search and selection for relevance of studies related to the chemistry and toxicity of glycoalkaloids and quinolizidine alkaloids in food and feed-Final Report. *EFSA Supporting Publications*, 16(11), 1348E.
- Levi, M., & Reuter, P. (2006). Money laundering. *Crime and justice*, 34(1), 289-375.
- Li, Z., & Zhang, Y. (2008). An efficient and user-friendly method for the synthesis of hexagonal-phase NaYF₄: Yb, Er/Tm nanocrystals with controllable shape and upconversion fluorescence. *Nanotechnology*, 19(34), 345606.
- Levi, M. and M. Soudijn (2020). "Understanding the laundering of organized crime money." *Crime and Justice* 49(1): 579-631
- Marcum, C. D., & Higgins, G. E. (2019a). *Cybercrime*. Springer.
- Marcum, C. D., & Higgins, G. E. (2019b). Examining the effectiveness of academic scholarship on the fight against cyberbullying and cyberstalking. *American journal of criminal justice*, 44, 645-655.
- Marcum, C. D., & Higgins, G. E. (2019c). Examining the effectiveness of academic scholarship on the fight against cyberbullying and cyberstalking. *American journal of criminal justice*, 44(4), 645-655.
- Merhi, M. I., & Ahluwalia, P. (2025). The role of e-participation, human capital, and corruption-free on environmental performance. *Information Systems Frontiers*, 27(3), 1045-1060.
- Okolie, E. (2019). Effects of Economic and Financial Crimes on Sustainable Development: Nigerian Experience. *AFJCLJ*, 4, 22.
- Okoye, E. I., & Gbegi, D. O. (2013). An evaluation of the effect of fraud and related financial crimes on the Nigerian economy. *Okoye*,

- Emmanuel Ikechukwu, and Gbegi, DO (2013). *An Evaluation of the Effect of Fraud and Related Financial Crimes on the Nigerian Economy. Kuwait Chapter of Arabian Journal of Business and Management Review*, 2(7), 81-91.
- Osmond, N., Donald, E., & Akamike, O. (2023). Impact of Fraud and Financial Crimes on the Nigerian.
- Raghavan, A., & Parthiban, L. (2014). The effect of cybercrime on a Bank's finances. *International Journal of Current Research & Academic Review*, 2(2), 173-178.
- Sadgali, I., Sael, N., & Benabbou, F. (2019). Performance of machine learning techniques in the detection of financial fraud. *Procedia computer science*, 148, 45-54.
- Schneider, F., & Enste, D. (2000). Shadow economies around the world size, causes, and consequences.
- Seiam, D. A., & Salman, D. (2024). Examining the global influence of e-governance on corruption: a panel data analysis. *Future Business Journal*, 10(1), 29.
- Sharma, R. S., & Gaherwal, R. (2017). Comparative Study and Analysis of Unique Identification Number and Social Security Number. *International Journal of Scientific Research in Computer Science and Engineering*, 5(1), 27-30.
- Smith, P. J., & Farole, D. (2011). US Department of Justice.
- Strango, C. (2021). Does digitalisation in public services reduce tax evasion?
- Suri, T., & Jack, W. (2016). The long-run poverty and gender impacts of mobile money. *Science*, 354(6317), 1288-1292.
- Tsutskiridze, M., & Bereza, A. (2020). The impact of e-government on the level of corruption. *Baltic Journal of Economic Studies*, 6(2), 93-99.
- Ünvan, Y. A. (2020). Financial performance analysis of banks with TOPSIS and fuzzy TOPSIS approaches. *Gazi University Journal of Science*, 33(4), 904-923.
- Vasist, P. N., Krishnan, S., Teo, T. S., & Azad, N. (2025). E-participation and corruption: Unravelling the role of power dynamics and disinformation. *Information & Management*, 62(5), 104139.
- Wu, F., Xiao, A., Zhang, J., Moniz, K., Endo, N., Armas, F., Bushman, M., Chai, P. R., Duvallet, C., & Erickson, T. B. (2021). Wastewater surveillance of SARS-CoV-2 across 40 US states from February to June 2020. *Water Research*, 202, 117400.
- Reurink, A. (2018). Finance crime. Oxford Research Encyclopedia of Criminology and Criminal Justice.
- Khan, S. N., Alim, W., Ghaffar, A., & Sohail, M. (2023). Why do Anti-Corruption Agencies Fail in Pakistan? A Phenomenological Study. *Journal of Business and Social Review in Emerging Economies*, 9(03), 181-190.