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The Impact of Government Efficiency on Entrepreneurship Development: The Mediating Role of Transparency, Accountability and Corruption Control

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ABSTRACT

This study investigates the impact of government efficiency on entrepreneurship development, with a particular focus on the mediating roles of transparency, accountability, and corruption control in Afghanistan. The primary objective is to elucidate how government efficiency can enhance entrepreneurial opportunities while simultaneously introducing unintended bureaucratic challenges that affect the overall entrepreneurial landscape.

Utilizing a quantitative approach, this research analyzes secondary data, encompassing key indicators related to government efficiency, corruption control, transparency, accountability, and entrepreneurship. The findings indicate that while improved government efficiency positively influences entrepreneurial opportunities, it also brings forth bureaucratic complexities that can hinder the entrepreneurial environment, particularly for women entrepreneurs.

This research underscores the necessity for effective governance that not only mitigates corruption but also simplifies regulatory frameworks for all entrepreneurs. By emphasizing mechanisms of transparency and accountability, policymakers can foster a supportive environment for entrepreneurship. Ultimately, this study aims to contribute to a more inclusive entrepreneurial ecosystem that promotes sustainable economic growth in Afghanistan, focusing on the broader conditions that encourage innovation and growth rather than imposing stringent regulations.

Keywords- Government Efficiency; Entrepreneurship Development; Transparency; Accountability; Corruption Control**.**

I. INTRODUCTION

Entrepreneurship is a vital driver of productivity and economic growth, particularly through micro and small enterprises that enhance employment opportunities, diversify products, and reduce costs. As noted by Abd Rashid et al. (2023), the long-term contributions of these businesses to economic development can be substantial, especially when they scale effectively. Entrepreneurs play a crucial role in fostering innovation and job creation, making the promotion of entrepreneurial activities essential for societal advancement (Gopan & Singh, 2024). However, the relationship between corruption and entrepreneurship presents significant challenges, as corruption is widely perceived as a major barrier that increases uncertainty and transaction costs, ultimately hindering growth (Wittberg et al., 2024).

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Government efficiency emerges as a pivotal factor influencing entrepreneurship development. Research by Mohamadi et al. (2017) indicates that the impact of corruption is contingent upon the efficiency of governmental institutions, suggesting that the effects of corruption on entrepreneurship vary with governance effectiveness. Farinha et al. (2020) further emphasize the critical role of effective government policies in enhancing entrepreneurial performance across economies, advocating for tailored approaches that consider institutional efficiency. Additionally, Umirzakovich (2024) highlights transparency and accountability as fundamental principles of corporate governance that foster stakeholder trust and ethical decision-making—essential for a positive corporate culture and long-term success. Awwad (2024) underscores the significance of these principles in public sector governance, positing that they influence economic growth and support entrepreneurship. By prioritizing transparency and accountability, a conducive environment for entrepreneurial activities can be established. Complementing this, Ameri et al. (2024) stress that improving government efficiency is crucial for nurturing educational innovation and entrepreneurial development. Their study investigates the effects of active learning and the Learning Office Program on entrepreneurial attitudes and intentions, reinforcing the notion that effective governance is vital for supporting these initiatives. Thus, enhancing government efficiency, alongside transparency and accountability, can significantly bolster both entrepreneurship and educational advancement.

Research indicates that the impacts of government efficiency on entrepreneurship development, mediated by corruption control, transparency, and accountability, are critical yet underexplored, particularly in Afghanistan, where research is notably limited.

Therefore, the objective of this study is to analyze how government efficiency affects entrepreneurship development by enhancing corruption control, transparency, and accountability in Afghanistan. Understanding these interactions is crucial for creating a supportive ecosystem for entrepreneurs. This research is significant as it aims to provide valuable insights into effective governance practices, offering policymakers and stakeholders a framework to enhance entrepreneurial activities.

Importantly, this study emphasizes that policymakers can leverage mechanisms of corruption control and increased transparency and accountability to foster an environment that encourages and supports entrepreneurship. Rather than imposing stringent conditions that may deter entrepreneurial motivation, the focus should be on creating favorable conditions that promote growth and innovation in Afghanistan. By doing so, the study aims to contribute to sustainable economic growth through a more vibrant entrepreneurial landscape.

II. RESEARCH BACKGROUND AND HYPOTHESIS DEVELOPMENT

Transparency and accountability are essential for building trust among entrepreneurs and creating a conducive environment for business growth (Efunniyi et al., 2024; Alonge et al., 2024). Government efficiency acts as a mediating variable, enhancing the positive effects of these factors on entrepreneurship development (Bani-Mustafa et al., 2024). Effective government institutions improve resource allocation and decision-making, while strong corruption control mechanisms reduce barriers to entrepreneurial activities (Sánchez-Vidal et al., 2024). In this section, the study will delve into the definitions of these variables and explore the logical and scientific relationships between independent and dependent variables through hypothesis development.

Government Efficiency, Corruption Control and Entrepreneurship Development

Corruption, defined by the World Bank as the abuse of public power for private benefit, significantly impacts entrepreneurial activities across nations (Tanzi, 1998; Macrae, 1982; Avnimelech et al., 2014). While extensive research highlights a positive correlation between corruption control and key economic indicators—such as foreign direct investment and income growth—the specific relationship between corruption control and entrepreneurship remains underexplored (Anokhin & Schulze, 2009). Emerging literature presents contrasting views; for instance, Dreher and Gassebner (2013) argue that corruption can facilitate entrepreneurship by easing bureaucratic hurdles through bribery. Conversely, Shleifer and Vishny (1993) assert that corruption generally undermines economic growth, particularly in contexts with weak governmental institutions (Mauro, 1995). Research by Dutta and Sobel (2016) indicates that although corruption may alleviate certain challenges, its overall impact on entrepreneurship is negative. Furthermore, Mohammadi Khyareh (2017) emphasizes that strong institutional quality reduces corruption and positively influences productive entrepreneurship.

Corruption raises risks within the value chain, leading entrepreneurs to rely on informal networks, which can restrict options and increase risks (Wittberg et al., 2024). Bagautdinova et al. (2013) observe that while entrepreneurial spirit exists in corrupt environments, it often manifests in informal ventures. Liu et al. (2019) find that lower corruption levels can promote entrepreneurship, while high corruption creates an inverted U-shaped relationship, suggesting that stronger marketization may mitigate adverse effects. Boudreaux et al. (2018) and Chowdhury et al. (2018) emphasize the negative effects of corruption on both macro and micro levels, highlighting how it shifts entrepreneurial focus toward destructive activities and complicates regulatory environments.

ISSN: 2583-4053

Volume-4 Issue-1 || February 2025 || PP. 1-18

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Overall, the relationship between corruption control and entrepreneurship development is complex. Studies indicate that effective governance and institutional quality play essential roles in moderating the impacts of corruption on entrepreneurial growth (Mohamadi et al., 2017; Park & Shin, 2022; Cieślik & Goczek, 2018). Addressing corruption is crucial for fostering a conducive environment for entrepreneurship and ensuring sustainable economic growth.

In this context, government efficiency acts as a key representative of political and economic authority, exerting a positive influence on entrepreneurship development through effective corruption control. Consequently, the primary research question is whether government efficiency—manifested through mechanisms of corruption control, transparency, and accountability—actively promotes and enhances entrepreneurship.

The objective of this study is to examine the effects of government efficiency on entrepreneurship development, particularly focusing on the mediating roles of corruption control, transparency, and accountability within this framework. It is hypothesized that government efficiency, in conjunction with corruption control, can create a favorable environment for entrepreneurs.

H1: Government efficiency, through effective corruption control, has a significant impact on the development of entrepreneurship.

Research indicates that government efficiency and effective corruption control significantly impact entrepreneurship development. According to Tonoyan et al. (2010), the likelihood of engaging in corrupt practices is influenced by the inefficiency of financial and legal institutions and the lack of enforcement. When illegal business practices are perceived as commonplace, entrepreneurs may rationalize their corrupt actions. Furthermore, closed social networks involving family, friends, and bureaucrats can facilitate corruption by reducing the opportunism of contracting parties.

The relationship between government efficiency and economic performance is further underscored by Lu et al. (2021), who demonstrate a positive correlation between the Corruption Perceptions Index (CPI) and national dynamic energy efficiency. Their findings indicate that political governance factors—such as stability, bureaucratic quality, and legal frameworks—significantly impact both CPI and economic vitality, suggesting that improved governance creates a more conducive environment for entrepreneurship.

Rose-Ackerman (2005) elaborates on this by arguing that poor governance and corruption arise when political systems fail to balance private wealth and public power. In this context, corruption allows wealthy individuals to exploit public resources for personal gain, undermining public objectives. When corruption is endemic, it distorts public programs to benefit narrow interests rather than the community as a whole. Therefore, effective governance must address these systemic inefficiencies and prioritize public benefits over private profits.

Moreover, d'Agostino et al. (2016) explore the interaction between government spending and corruption, revealing that corruption negatively affects both military and investment spending, ultimately hindering economic growth. Their findings suggest that combating corruption can yield direct benefits and mitigate the adverse impacts of military expenditures. This reinforces the necessity of policies aimed at reducing corruption while effectively managing public spending.

The shift in public policy focus from small and medium-sized enterprises (SMEs) to broader entrepreneurship strategies, as discussed by Henrekson and Stenkula (2010), underscores the importance of institutional frameworks in fostering productive entrepreneurship. They highlight that reducing regulatory barriers and improving labor market regulations are essential for creating a vibrant entrepreneurial ecosystem.

Additionally, Nistotskaya et al. (2015) present a theoretical framework linking citizens' perceptions of government quality (QoG) to their willingness to engage in entrepreneurship. Their research shows that high QoG, characterized by impartiality and low corruption, correlates with higher rates of SMEs and a more equitable distribution of these businesses. This indicates that effective governance fosters a supportive environment for entrepreneurship, ultimately enhancing economic vitality.

Given the limited research on the interplay between government efficiency and corruption control in relation to entrepreneurship development, this study seeks to fill this gap by providing a comprehensive examination of how these elements interact to influence entrepreneurial activity. By elucidating these relationships, the research will contribute to the development of effective policies that foster an environment conducive to entrepreneurship in Afghanistan.

Government Efficiency, Transparency & Accountability and entrepreneurship Development

The role of government efficiency is increasingly recognized as a critical factor in entrepreneurship development, particularly through the mediating effects of transparency and accountability. Research indicates that these elements significantly influence entrepreneurial intentions, access to resources, and overall business performance (Doran et al., 2018; Chen et al., 2018; Agarwal, 2020; Galindo-Martín et al., 2020; Méndez-Picazo et al., 2021).

Haque (2020) emphasizes the necessity of robust accountability frameworks to enhance government efficiency and innovation. This perspective is supported by Xanthopoulou et al. (2023), who argue that effective accountability in public policies is essential for promoting entrepreneurship, as perceived corruption and a lack of transparency can severely hinder entrepreneurial intentions. In this context, government efficiency acts as an independent variable that can significantly shape the entrepreneurial landscape.

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Oana-Ramona et al. (2021) highlights that weak governance and limited citizen involvement negatively impact entrepreneurship. They stress the importance of enhancing accountability to create a more conducive environment for business growth, reinforcing the idea that government efficiency must be complemented by transparency and accountability for effective entrepreneurship development. Similarly, Kumar (2017) points out that public accountability significantly influences entrepreneurship development in India by improving resource allocation and training effectiveness.

Nugrahanti et al. (2023) further illustrate the importance of accountability within the context of micro, small, and medium-sized enterprises (MSMEs) in West Java, Indonesia. Their findings reveal that transparent practices enhance financial performance, demonstrating that accountability serves as a mediating factor between government efficiency and entrepreneurship outcomes. Additionally, Nyarku and Oduro (2018) investigate the adverse effects of bureaucratic hurdles and unstable policies on SME growth in Ghana, advocating for a supportive legal environment that fosters entrepreneurship through simplified loan conditions and increased transparency.

Gupta (2021) argues that increased transparency enhances accountability, thereby facilitating resource access for entrepreneurs and stimulating economic growth. This notion is further supported by Pouliot (2006), who emphasizes the necessity of improved transparency in the microfinance investment fund industry to build investor trust. The interplay between government efficiency and these mediating factors suggests that effective governance can lead to enhanced entrepreneurial activities.

Besson et al. (2023) explore the complexities of traditional accountability frameworks, which may misalign entrepreneurs' intentions with external expectations, while Birchall (2015) critiques the implications of e-transparency for public engagement, emphasizing the responsibilities of citizens in a data-driven economy. Together, these studies highlight the critical role of transparency and accountability in fostering entrepreneurship development. Thus, modern government efficiency necessitates a focus on these elements.

However, the role of government efficiency and its impact on entrepreneurship development in Afghanistan, particularly through transparency and accountability, has received limited attention from researchers. To address this research gap, the primary objective of this study is to examine how government efficiency influences entrepreneurship development via transparency and accountability. Our hypothesis is:

H2: There is a positive effect of government efficiency on entrepreneurship development through transparency and accountability.

This hypothesis suggests that enhanced transparency and accountability can significantly contribute to entrepreneurship development, ultimately leading to a more vibrant entrepreneurial ecosystem.

III. METHODOLOGY

This research aims to investigate the impact of government efficiency on entrepreneurship development, specifically examining the mediating roles of transparency, accountability, and corruption control. A quantitative approach is employed, utilizing econometric modeling with EViews 12 to facilitate a comprehensive examination of the research hypotheses.

According to table (1), Secondary data are collected from the World Bank database, focusing on indicators related to government efficiency, corruption control, and entrepreneurship development. Key indicators for measuring variables include:

Table (1): Indicators for Entrepreneurship Development, Corruption Control, Transparency, and Government Effectiveness

Indicators for Entrepreneurship development	
Start-up Procedures; Start-up Procedures, female; Start-up Procedures, male	Start-up procedures are those required to start a business, including interactions to obtain necessary permits and licenses and to complete all inscriptions, verifications, and notifications to start operations. Data are for businesses with specific characteristics of ownership, size, and type of production.
Women Business and the Law Index Score (scale 1-100)/WBLS	The index measures how laws and regulations affect women's economic opportunity. Overall scores are calculated by taking the average score of each index (Mobility, Workplace, Pay, Marriage, Parenthood, Entrepreneurship, Assets and Pension), with 100 representing the highest possible score.
Cost of business start-up procedures (% of GNI per capita)	Cost to register a business is normalized by presenting it as a percentage of gross national income (GNI) per capita.
New Business Density	New business density is defined as the number of newly registered companies with limited liability per 1,000 working-age adults (ages 15–64) per calendar year.
Indicators for Corruption Control:	
Control of Corruption:	Indicates the percentage of countries that perform better in

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Volume-4 Issue-1 || February 2025 || PP. 1-18

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Percentile Rank/CC_PR	controlling corruption compared to a specific country.
Control of Corruption: Estimate/CC_E	Represents a quantitative estimate of the level of corruption control in a country, derived from various data sources.
Control of Corruption: Number of Sources/CC_N	Indicates the number of different sources used to calculate the corruption control estimate, reflecting data diversity and reliability.
Indicators for Transparency and Accountability	
CPIA Ratings:	○ CPIA Transparency, Accountability, and Corruption in the Public Sector Rating (1 = low to 6 = high) ○ CPIA Structural Policies Cluster Average (1 = low to 6 = high) ○ CPIA Social Protection Rating (1 = low to 6 = high) ○ CPIA Macroeconomic Management Rating (1 = low to 6 = high) ○ CPIA Fiscal Policy Rating (1 = low to 6 = high) ○ CPIA Economic Management Cluster Average (1 = low to 6 = high) ○ CPIA Trade Rating (1 = low to 6 = high) ○ CPIA Public Sector Management and Institutions Cluster Average (1 = low to 6 = high) ○ CPIA Quality of Public Administration Rating (1 = low to 6 = high) ○ CPIA Gender Equality Rating (1 = low to 6 = high) ○ CPIA Policy and Institutions for Environmental Sustainability Rating (1 = low to 6 = high)
Indicators for Government Effectiveness	
Government Effectiveness: Estimate/GE_E	A quantitative measure reflecting the quality of public services and policy implementation in a country.
Government Effectiveness: Percentile Rank/GE_PR	Indicates the percentage of countries that perform better in government effectiveness compared to a specific country.
Government Effectiveness: Number of Sources/GE_N	Represents the number of distinct data sources used to calculate the effectiveness estimate, enhancing reliability.

Source: World Bank dataset, https://data.worldbank.org/country/afghanistan

The data covers multiple years (2004 - 2023) to provide a longitudinal perspective, allowing for trend analysis and robust conclusions regarding causality. The analysis primarily focuses on Afghanistan.

IV. DATA ANALYSIS

i. Unit Root Tests:

Unit Root test /Stationarity test refers to a statistical property of a time series where its mean, variance, and autocorrelation structure remain constant over time. Testing for stationarity is crucial in econometric analysis, as non-stationary data can lead to unreliable and spurious results.

Table(2): Unit Root test/Stationarity Test Results

Indexes	Level Stationary			First Difference Stationarity				2nd Difference Stationarity		
	t- Sta.	Cr. V	P. V	t- Sta.	Cr. V	P. V		t- Sta.	Cr. V	P. V
GE_E	-1.68824	-3.673616	0.7164	-4.66141	-3.791172	0.0125	*	-	-	-
GE_PR	0.140442	-3.759743	0.9941	-3.84484	-3.791172	0.046	*	-	-	-
GE_N	0.560499	-3.710482	0.9984	-5.16439	-3.710482	0.0038	**	-	-	-
CC_PR	-2.75777	-3.673616	0.2274	-6.17971	-3.690814	0.0005	***			
CC_E	-1.68824	-3.673616	0.7164	-4.66141	-3.791172	0.0125	*			
CC_N	-0.84075	-3.673616	0.9427	-5.73283	-3.690814	0.0012	**			
STP_RF	-1.89143	-3.759743	0.6092	-3.4641	-3.098896	0.0263	*			
STP_RM	-1.44802	-3.081002	0.5311	-3.4641	-3.098896	0.0263	*			
STP_R	-1.17385	-3.098896	0.6539	-2.49444	-3.098896	0.1372		-4.28174	-3.11991	0.0068**
CSTP	-2.86958	-3.759743	0.1979	-2.80549	-3.828975	0.2202		-7.36468	-3.82898	0.0003**
WBLC	-1.50849	-3.02997	0.5077	-4.05385	-3.040391	0.0067	**			
NBD	-1.22891	-3.259808	0.6111	-0.60216	-4.450425	0.9302		-5.59594	-4.77319	0.0281**

ISSN: 2583-4053
Volume-4 Issue-1 || February 2025 || PP. 1-18
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NBR	-1.16638	-3.259808	0.6373		1.101952	-3.403313	0.9907		-6.96121	-3.40331	0.0013**
TS_BD	-2.19071	-3.081002	0.2168		-5.33401	-3.098896	0.001	**			
TAX_B	-9.15349	-3.933364	0.0001	**							
CPI_TAC	-0.68758	-3.02997	0.8271		-4.47214	-3.040391	0.0029	**			
CPIA_EMCA	0.624046	-3.081002	0.9851		-5.12448	-3.11991	0.0017	**			
CPIA_FPR	-0.6561	-3.081002	0.8292		-3.67424	-3.14492	0.0209	*			
CPIA_MMR	0.676753	-3.040391	0.9878		-1.6855	-3.052169	0.4203		-4.15987	-3.06559	0.0063**
CPIA_PIESR	-1.45E+00	-3.065585	0.5335		-4.77801	-3.081002	0.0022	**			
CPIA_PSMICA	-2.00876	-3.11991	0.2798		-4.43569	-3.11991	0.0053	**			
CPIA_QER	-0.98063	-3.081002	0.7315		-3.60555	-3.11991	0.0218	*			
CPIA_QPAR	-0.8543	-3.081002	0.7733		-3.60555	-3.11991	0.0218	*			
CPIA_SPCA	-1.5868	-3.081002	0.4645		-3.92427	-3.11991	0.0126	*			
CPIA_SPR	-2.06013	-3.040391	0.2612		-4.11776	-3.052169	0.0063	**			
CPIA_TAC	-0.68758	-3.02997	0.8271		-4.47214	-3.040391	0.0029	**			
CPIA_TR	-1.03923	-3.081002	0.7101		-4.59933	-3.11991	0.004	**			
VA_E	-3.05138	-3.02997	0.048	*							
VA_N	-2.74292	-3.673616	0.2323		-4.24931	-3.690814	0.0182	*			

The stationarity tests reveal that most variables are non-stationary at their original levels, as indicated by high p-values. After taking the first difference, some variables achieve stationarity, evidenced by lower p-values. Utilizing Ordinary Least Squares (OLS) regression in this context may produce unreliable and misleading results. Therefore, it is essential to employ alternative methods, such as Autoregressive Distributed Lag (ARDL) models, Error Correction Models (ECM), or Generalized Method of Moments (GMM), to ensure more accurate and robust findings when addressing non-stationary data.

Given that the ARDL method can simultaneously identify and estimate the short-term and long-term effects of variables, particularly when dealing with a larger number of indicators, this study employs the ARDL approach for analysis.

i. Econometric Modeling:

In this study, according to the basic model (basic equation), six models have utilized to analyze the relationship between government efficiency and entrepreneurship development. Each model incorporates a different index to measure the entrepreneurship development variable. The econometric model will be specified as follows

Basic Equation Model:

$$\boldsymbol{ED_t = \beta_0 + \beta_1 ED_{(t-1)} + \beta_2 GE_t + \beta_3 GE_{(t-1)} + \beta_4 (GE * CC)_t + \beta_5 (GE * CC)_{(t-1)} + \beta_6 (GE * T\&Acc)_t + \beta_7 (GE * T\&Acc)_{(t-1)} + \epsilon_t}$$

There are:

ED_t	Entrepreneurship Development (Dependent Variable)
GE_t	Government Efficiencies (Independent Variable)
CC	Corruption Control (Mediating Variable)
$Tr\&Acc$	Transparency& Accountability (Mediating Variable)

In overall, six fundamental models are based on the base model. Each indicator used to measure entrepreneurial development (ED) corresponds to a specific model. Other independent and mediating variables can also be measured using the previously introduced indicators in the table. The indicators of these variables are considered during the model testing phase, as briefly outlined below.

1st Eq. Model: Using STP_R as Dependent Variable

$$STP\_R_t = \beta_0 + \beta_1 STP\_R_{(t-1)} + \beta_2 GE_t + \beta_3 GE_{(t-1)} + \beta_4 (GE * CC)_t + \beta_5 (GE * CC)_{(t-1)} + \beta_6 (GE * T\&Acc)_t + \beta_7 (GE * T\&Acc)_{(t-1)} + \epsilon_t$$

2nd Eq. Model: Using STP_RF as Dependent Variable

$$STP\_RF_t = \beta_0 + \beta_1 STP\_RF_{(t-1)} + \beta_2 GE_t + \beta_3 GE_{(t-1)} + \beta_4 (GE * CC)_t + \beta_5 (GE * CC)_{(t-1)} + \beta_6 (GE * T\&Acc)_t + \beta_7 (GE * T\&Acc)_{(t-1)} + \epsilon_t$$

3rd Eq. Model: Using STP_RM as Dependent Variable

ISSN: 2583-4053
Volume-4 Issue-1 || February 2025 || PP. 1-18
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$$STP\_RM_t = \beta_0 + \beta_1 STP\_RM_{(t-1)} + \beta_2 GE_t + \beta_3 GE_{(t-1)} + \beta_4 (GE * CC)_t + \beta_5 (GE * CC)_{(t-1)} + \beta_6 (GE * T\&Acc)_t + \beta_7 (GE * T\&Acc)_{(t-1)} + \epsilon_t$$

4th Eq. Model: Using CSTP as Dependent Variable

$$CSTP_t = \beta_0 + \beta_1 CSTP_{(t-1)} + \beta_2 GE_t + \beta_3 GE_{(t-1)} + \beta_4 (GE * CC)_t + \beta_5 (GE * CC)_{(t-1)} + \beta_6 (GE * T\&Acc)_t + \beta_7 (GE * T\&Acc)_{(t-1)} + \epsilon_t$$

5th Eq. Model: Using NBD as Dependent Variable

$$NBD_t = \beta_0 + \beta_1 NBD_{(t-1)} + \beta_2 GE_t + \beta_3 GE_{(t-1)} + \beta_4 (GE * CC)_t + \beta_5 (GE * CC)_{(t-1)} + \beta_6 (GE * T\&Acc)_t + \beta_7 (GE * T\&Acc)_{(t-1)} + \epsilon_t$$

6th Eq. Model: Using WBLS as Dependent Variable

$$\log (WBLS)_t = \beta_0 + \beta_1 WBL_{(t-1)} + \beta_2 GE_t + \beta_3 GE_{(t-1)} + \beta_4 (GE * CC)_t + \beta_5 (GE * CC)_{(t-1)} + \beta_6 (GE * T\&Acc)_t + \beta_7 (GE * T\&Acc)_{(t-1)} + \epsilon_t$$

There are;

STP_R_t; STP_RF_t *and* STP_RM_t; $CSTP_t$; NBD_t; WBLS $\longrightarrow$ *Dep.Variables for Entrepreunership Dev.*

GE_t: $\longrightarrow$ *Indep.Variable,* *The indecators are*: Government Effectiveness: Estimate (GE_E
Government Effectiveness: Percentile Rank (GE_P)
Government Effectiveness: Number of Sources (GE_N

CC_t: $\longrightarrow$
Mediating Variable The indecators are:, Control of Corruption: Percentile Rank (CC_P)
Control of Corruption: Estimate (CC_E)

Control of Corruption: Number of Sources (CC_N)

$T\&Acc_t$:
$\longrightarrow$ *Mediating Variable, The indecators are*: CPIA transparency, accountability, and corruption in the public sector rating (1=low to 6=high)

CPIA structural policies cluster average (1=low to 6=high)
CPIA_.... Other T& Acc indicators

ii. Determining Control Variables (CV):

In this research, given the large number of indicators, preliminary tests have been conducted to differentiate which variables have a significant impact and which do not. As a result, alongside the key variables, some variables have been included based on the omitted variable test, while others have been excluded from the model. The excluded variables have been considered as control variables, providing future researchers with a valuable reference for measuring key variables and assisting in the prioritization of indicators. This approach allows for a refined analysis focused on the most relevant factors. The specified variables are listed in the accompanying table, clarifying how government efficiency interacts with various elements to influence entrepreneurship development.

Table (2): List of Control Variables in the Model

	first Model		2nd Model		3rd Model	
Control Variables	**t St.**	**Pr.**	**t St.**	**Pr.**	**t St.**	**Pr.**
CC_E	-0.60793	0.5862	0.91066	0.3928		
CPIA_EMCA	-0.85559	0.4551	0.159597	0.8784	-0.02293	0.9824
CPIA_FPR	0.098827	0.9303	-0.57875	0.5838	-0.56059	0.5926
CPIA_MMR	0.164019	0.8848	0.200691	0.8476	0.256043	0.8081
CPIA_PIESR	0.354042	0.7571	-0.69768	0.5115	-0.53244	0.6172
CPIA_PSMICA	0.929528	0.4507	0.000503	0.9996	-0.15589	0.8822
CPIA_SPCA	-0.73287	0.5167	1.211764	0.2712	0.657797	0.5351
CPIA_TR	1.329279	0.2758	-0.12652	0.9029	0.338201	0.7467
VA_E	0.046265	0.9673	1.238501	0.2554	1.177547	0.2836
VA_N	-0.81149	0.5023	-0.3363	0.7465	0.396023	0.7058
GE_N	0.589319	0.5971	0.303442	0.7718	0.303442	0.7718
GE_E	-2.66405	0.0761	1.035051	0.3405	1.035051	0.3405

ISSN: 2583-4053
Volume-4 Issue-1 || February 2025 || PP. 1-18
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CPIA_QPAR	0.303442	0.7718	1.561339	0.1695	1.117178	0.3008
TAX_B	3.604	0.337	-0.72625	0.4913	-0.72625	0.4913
	4th Model		**5th Model**		**6th Model**	
Control Variables	**t St.**	**Pr.**	**t St.**	**Pr.**	**t St.**	**Pr.**
CC_E	0.599456	0.5911	4.687213	0.0094	-2.29237	0.6617
CPIA_EMCA	-0.32062	0.7695	-0.28232	0.8042	-1.74214	0.1564
CPIA_FPR	0.526727	0.6348	-0.73126	0.5407	-0.97988	0.3826
CPIA_MMR	-0.25946	0.8121	0.815249	0.5006	1.35079	0.2481
CPIA_PIESR	-0.85457	0.4828	-0.03419	0.9758	-0.92104	0.3926
CPIA_PSMICA	0.896784	0.4645	0.376047	0.743	-1.99477	0.1026
CPIA_SPCA	-0.65912	0.5776	0.669227	0.5723	-1.85292	0.1231
CPIA_TR	-0.28304	0.8037	-1.98462	0.1182	-0.11206	0.9144
VA_E	0.032682	0.9769	0.657073	0.558	-4.25431	0.0081
VA_N	0.308047	0.7872	0.092213	0.9323	-1.87274	0.12
GE_N	1.156491	0.3312	4.687213	0.0094	-1.41369	0.2072
GE_E	Consider in Base. Model		Consider in Base. Model		-2.29237	0.0617
CPIA_QPAR	-0.83632	0.4644	-2.43056	0.0719	0.522304	0.6202
TAX_B	1.516568	0.2266	-0.1749	0.8697	0.667618	0.5292

iii. Analysis of Autocorrelation Test Results:

The results of the Autocorrelation Test for six different models are summarized in the table below. The null hypothesis states that there is no serial correlation up to one lag.

Table(3): Autocorrelation Test Results Using the Breusch-Godfrey Test

Model	F-statistic	Prob. F (1, df)	Obs*R-squared	Prob. Chi-Square(1)
1st	0.108058	0.764	0.48674	0.4854
2nd	1.443529	0.2686	2.564441	0.1093
3rd	0.293979	0.6165	1.026946	0.3109
4th	0.203434	0.6961	1.38489	0.2393
5th	0.564704	0.4769	1.418347	0.2337
6th	0.847344	0.3928	2.227461	0.1356

The analysis reveals that all models exhibit p-values for both the F-statistic and the Chi-Squared statistic that exceed the conventional significance level of 0.05. For instance, the first model shows an F-statistic of 0.108058 with a p-value of 0.764, indicating no evidence of serial correlation. Similar patterns are observed across the other models; for example, the second model has a p-value of 0.2686, and the third model displays a p-value of 0.6165.

This consistent outcome across all models suggests that there is no significant serial correlation present in any of the models tested. Consequently, the results indicate that the underlying assumptions regarding independence of residuals are satisfied, enhancing the reliability and credibility of the model estimates. Overall, the absence of serial correlation reinforces the validity of the models used in this analysis, allowing for more robust conclusions to be drawn from the data.

iv. Analysis of Heteroscedasticity test result:

Heteroscedasticity refers to the presence of non-constant variance in the residuals of a regression model, which can lead to inefficient estimates and affect hypothesis testing. Testing for heteroscedasticity is crucial because it ensures the reliability of the regression results.

The results of the Breusch-Pagan and White tests for heteroscedasticity in different models are summarized in the following table:

Table(4): Heteroscedasticity test result

Model	Breusch-Pagan Test		White Test	
	F-statistic	Prob.	F-statistic	Prob.
1st	0.359153	0.9069	0.532311	0.8015

ISSN: 2583-4053

Volume-4 Issue-1 || February 2025 || PP. 1-18

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Model	Breusch-Pagan Test		White Test	
2nd	0.725257	0.6424	0.929369	0.5221
3rd	2.6595	0.1469	1.084386	0.4912
4th	2.48232	0.2461	1.796533	0.3456
5th	0.735584	0.6816	0.563863	0.8048
6th	1.821282	0.2195	2.071243	0.173

Breusch-Pagan Test result: In all models, the p-values are significantly higher than 0.05, indicating that we fail to reject the null hypothesis of homoscedasticity (constant variance). This suggests that there is no evidence of heteroscedasticity in the residuals.

White Test result: Similar to the Breusch-Pagan test, the p-values for all models exceed 0.05, reinforcing the conclusion that the residuals do not exhibit non-constant variance.

In over all, both tests indicate that the models do not suffer from heteroscedasticity, ensuring that the assumptions of the regression analysis are satisfied. This enhances the credibility and reliability of the model estimates and subsequent inference.

v. Analysis of Cointegration Test result:

Cointegration tests are essential in time series analysis as they determine whether a long-term equilibrium relationship exists between non-stationary variables. Establishing cointegration is critical because it allows for valid inference and modeling of relationships in the presence of integrated (non-stationary) series. In this research, the F-Bounds Test is employed to assess the presence of a long-term relationship among the variables, ensuring that the results of the ARDL model are robust and meaningful. The results of the F-Bounds Test for various models are summarized in the table below:

Table(5): Cointegration Test result

Model	F-statistic	Significance	I(0)	I(1)
1st Model	38.00004	5%	2.39	3.38
2nd Model	9.715266	5%	2.56	3.49
3rd Model	8.775417	5%	2.39	3.38
4th Model	66.82925	5%	2.39	3.38
5th Model	29.23418	5%	2.27	3.28
6th Model	13.06429	5%	2.27	3.28

Using a significance level of 5%, we compare the F-statistic of each model with the critical values for I(0) and I(1):

1st Model: The ARDL (1, 0, 1, 1, 0, 1) model shows that the changes are influenced by past values and various interactions among other variables. The F-statistic of 38.00004 significantly exceeds the critical value for I (1) (3.38), providing strong evidence of cointegration and confirming the existence of a long-run relationship among the variables.

2nd Model: The selected model ARDL (1, 1, 0, 0, 0), F are influenced by its past values and some variable interactions. The F-statistic of 9.715266 exceeds the critical value for I(1) (3.49), indicating evidence of cointegration and a long-run relationship among the variables.

3rd Model: The ARDL (1, 1, 0, 0, 1, 1) model shows that changes are influenced by past values and interactions among the variables. The F-statistic of 8.775417 exceeds the critical value for I(1) (3.38), indicating evidence of cointegration and confirming the existence of a long-run relationship among the variables.

4th Model: The ARDL (1, 1, 0, 0, 1, 1) model indicates that current changes are influenced by past values and interactions among variables. The F-statistic of 8.775417 exceeds the critical value of 3.38, confirming a significant long-run relationship among the variables, meaning they are connected and will return to a stable equilibrium over time.

5th Model: The ARDL (1, 0, 1, 1, 0, 1, 0) model shows that changes are influenced by past values and interactions among variables. With an F-statistic of 29.23418, which exceeds the critical value, there is strong evidence of a long-run relationship. Significant influences include a negative effect from the lagged dependent variable and positive impacts from other variables, indicating a stable interconnection over time.

6th Model: The ARDL (1, 0, 0, 1, 0, 1, 1) model indicates that changes in the dependent variable are influenced by past values and interactions among variables. The F-statistic of 13.06429 exceeds the critical value, providing strong evidence of a long-run relationship. Key findings include a significant negative effect from the lagged dependent variable and positive impacts from other factors, suggesting a stable interconnection among them over time.

vi. Model Stability:

Model stability is crucial for ensuring the reliability of regression results, as it confirms that the estimated relationships remain consistent over time. In this analysis, stability tests such as the CUSUM and CUSUMSQ tests were conducted to evaluate whether the parameters of the ARDL models are stable within the specified time frame. The results indicate that all models exhibit stability, reinforcing the validity of the long-term relationships identified.

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Volume-4 Issue-1 || February 2025 || PP. 1-18

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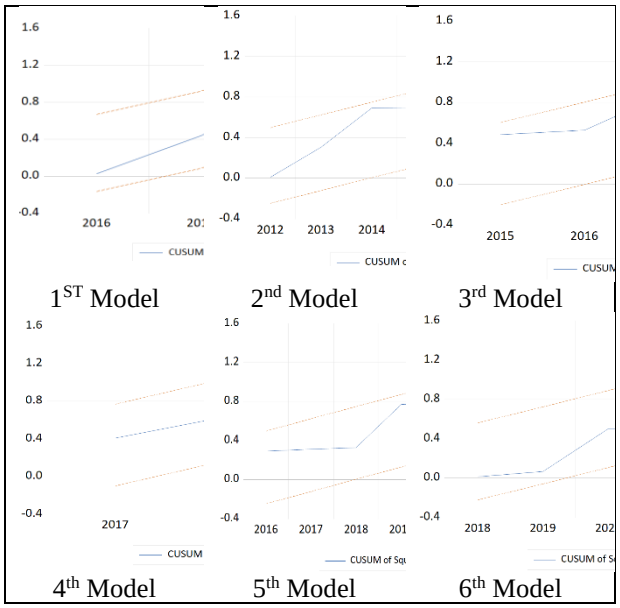

Figure (1) Stability test result

The CUSUM and CUSUMSQ stability tests for the six models illustrate that all models maintain stable parameters over the observed period. Each model's plots demonstrate that the cumulative sum of residuals remains within the 5% significance bounds, indicating no structural breaks. This stability reinforces the reliability of the long-term relationships identified in the ARDL analysis.

vii. Analyze Model Results

The analysis is utilized an ARDL model, which effectively examines long-term relationships among non-stationary time series variables. The results reveal strong evidence of long-term relationships across all models, as indicated by the significant F-statistics from the F-Bounds Test. Each model demonstrates cointegration, suggesting that the variables consistently move together over time and that changes in one variable have enduring effects on the others. In the following, the examination of the six models will be further discussed, highlighting their specific implications and contributions to the overall analysis.

1st Model: The ARDL model analysis for the dependent variable (business registration procedures: STP_R) reveals significant insights into the effects of government effectiveness and related factors.

Table (6): ARDL 1ST Model Results for business registration procedures (STP_R) as the Dependent Variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
STP_R(-1)	0.766446	0.065435	11.71309	0.0072
GE_PR	-0.157614	0.050611	-3.114198	0.0895
GE_PR(-1)	-0.215744	0.019546	-11.03760	0.0081
GE_E	-0.193652	0.056695	-3.415683	0.0761
GE_E(-1)	0.288414	0.049745	5.797820	0.0285
GE_PR*CC_PR	0.006016	0.000598	10.05466	0.0097
GE_PR(-1)*CC_PR(-1)	-0.003096	0.000584	-5.301274	0.0338
GE_PR*CC_N	-0.025608	0.001618	-15.82843	0.0040
GE_PR(-1)*CC_N(-1)	0.017578	0.002075	8.473520	0.0136
GE_PR*CPIA_TAC	0.176308	0.029087	6.061435	0.0262
GE_PR(-1)*CPIA_TAC(-1)	0.019704	0.008941	2.203748	0.1584
C	0.646337	0.126721	5.100470	0.0364
R-squared	0.999760	F-statistic		756.1324
Adjusted R-squared	0.998437	Prob(F-statistic)		0.001321
		Durbin-Watson stat		2.205365

The lagged coefficient of STP_R is 0.766446 (t-statistic: 11.71309, p-value: 0.0072), indicating that past influences significantly affect current registration processes. An increase in government effectiveness (GE_PR) is associated with a negative coefficient of -0.157614 (t-statistic: -3.114198, p-value: 0.0895), suggesting that higher efficiency facilitates startup registration. The lagged effect of GE_PR (-1) is -0.215744 (t-statistic: -11.03760, p-value: 0.0081), confirming the negative impact of past government efficiency.

The positive coefficient for GE_E (-1) is 0.288414 (t-statistic: 5.797820, p-value: 0.0285), indicating that prior government efficiency positively influences current registration. Interactions with corruption control reveal that the coefficient for GE_PR * CC_PR is 0.006016 (t-statistic: 10.05466, p-value: 0.0097), suggesting that enhanced corruption control may introduce new restrictions. This implies that increasing government efficiency through effective corruption control could limit opportunities for starting various types of businesses.

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Volume-4 Issue-1 || February 2025 || PP. 1-18
https://doi.org/10.55544/jrasb.4.1.1

Conversely, the coefficient for GE_PR * CC_N is -0.025608 (t-statistic: -15.82843, p-value: 0.0040), reinforcing the notion that higher efficiency facilitates registration procedures. Additionally, the coefficient for GE_PR * CPIA_TAC is 0.176308 (t-statistic: 6.061435, p-value: 0.0262), indicating that improvements in transparency may impose restrictions on the registration process, thereby hindering entrepreneurs from launching new businesses that oppose government policy.

The R-squared value is 0.999760, and the adjusted R-squared is 0.998437, demonstrating that the model explains nearly all of the data variance. The F-statistic of 756.1324 (p-value: 0.001321) confirms the model's significance.

Overall, the analysis demonstrates that government effectiveness and its interactions with corruption control significantly impact business registration processes, suggesting that increased efficiency may lead to smoother registration procedures.

2Nd Model: In analyzing the data by gender, the results concerning the registration procedures for female entrepreneurs reveal that the lagged coefficient for STP_RF(-1) is 0.620586 (t-statistic: 3.054248, p-value: 0.0224), suggesting that past values significantly influence current registration processes.

Table (7): ARDL 2nd Model Results for start-up procedures to register a business for females (STP_RF) as the Dependent Variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LOG(STP_RF(-1))	0.620586	0.203188	3.054248	0.0224
GE_PR	0.520517	0.168756	3.084433	0.0215
GE_E	0.430617	0.161131	2.672458	0.0369
GE_PR*CC_PR	0.004473	0.001493	2.996404	0.0241
GE_PR(-1)*CC_PR(-1)	-0.000842	0.000661	-1.274289	0.2497
GE_PR*CC_N	-0.011018	0.001797	-6.131295	0.0009
GE_PR*CPIA_TAC	-0.006929	0.012407	-0.558456	0.5967
GE_PR(-1)*CPIA_TAC(-1)	-0.010451	0.003067	-3.406977	0.0144
C	1.101897	0.380984	2.892242	0.0276
R-squared	0.974699	F-statistic		28.89282
Adjusted R-squared	0.940964	Prob(F-statistic)		0.000306
		Durbin-Watson stat		2.335797

The positive coefficient for government effectiveness (GE_PR) is 0.520517 (t-statistic: 3.084433, p-value: 0.0215), indicating that increased government efficiency may complicate the registration processes for startups. Similarly, the coefficient for government efficiency (GE_E) is 0.430617 (t-statistic: 2.672458, p-value: 0.0369), suggesting that higher efficiency may impose additional restrictions on these processes.

Moreover, the interaction term GE_N * CC_PR exhibits a positive coefficient of 0.004473 (t-statistic: 2.996404, p-value: 0.0241), indicating that the combination of governance effectiveness and corruption control can significantly impact startup registration procedures. Conversely, the interaction GE_PR * CC_N reveals a negative coefficient of -0.011018 (t-statistic: -6.131295, p-value: 0.0009), reinforcing the notion that high government efficiency may reduce complexity in the registration stages. Additionally, the interaction term GE_PR * CPIA_TAC presents a negative coefficient of -0.006929 (t-statistic: -0.558456, p-value: 0.5967), suggesting that transparency measures may facilitate registration. Furthermore, the interaction GE_PR * CPIA_TAC shows a negative coefficient of -0.010451 (t-statistic: -3.406977, p-value: 0.0144), implying that increased government efficiency can indeed facilitate the registration processes.

The model demonstrates a high goodness of fit, with an R-squared value of 0.974699, indicating that approximately 97.47% of the variability in LOG(STP_RF) is explained by the model. The adjusted R-squared value of 0.940964 further supports the robustness of these findings. The F-statistic of 28.89282 (p-value: 0.000306) confirms the overall significance of the model.

Overall, the analysis suggests that while increasing government effectiveness may improve registration processes, enhancing efficiency—whether directly or through improved transparency, accountability, or corruption control—can alleviate the complexities of registering startups for women. This insight is particularly relevant, as the investment prospects for various types of businesses may benefit from government registration processes that are characterized by higher efficiency, coupled with greater corruption control and transparency.

3rd Model: If we analyze the registration processes for businesses targeting men, the results indicate that the lagged coefficient for STP_RM (-1) is 2.457283 (t-statistic: 2.601366, p-value: 0.0482), suggesting that past government effectiveness positively influences current procedures in a significant manner. Similarly, the coefficient for Government Effectiveness

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Volume-4 Issue-1 || February 2025 || PP. 1-18

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(GE_PR) stands at 4.351851 (t-statistic: 2.435869, p-value: 0.0590). This positive value implies that an increase in government effectiveness complicates registration processes, aligning with the notion that higher efficiency leads to greater bureaucratic barriers.

Table (8): ARDL 3rd Model Results for start-up procedures to register a business for males (STP_RM) as the Dependent Variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
STP_RM(-1)	2.457283	0.944612	2.601366	0.0482
GE_PR	4.351851	1.786570	2.435869	0.0590
GE_PR(-1)	-0.976352	0.401130	-2.434004	0.0591
GE_PR*CC_PR	0.078051	0.031545	2.474259	0.0562
GE_PR*CC_N	-0.086686	0.023632	-3.668174	0.0145
GE_PR*CPIA_TAC	-1.579877	0.727915	-2.170414	0.0821
GE_PR(-1)*CPIA_TAC(-1)	0.667724	0.300075	2.225186	0.0766
GE_PR*CC_E	0.196212	0.155589	1.261089	0.2629
GE_PR(-1)*CC_E(-1)	0.394622	0.234370	1.683756	0.1530
C	-7.320158	4.980764	-1.469686	0.2016

R-squared	0.966050	F-statistic	15.80823
Adjusted R-squared	0.904939	Prob(F-statistic)	0.003631

In contrast, the lagged effect of government effectiveness (GE_PR(-1)) shows a negative coefficient of -0.976352 (t-statistic: -2.434004, p-value: 0.0591), indicating that past government effectiveness may have a significant positive impact on facilitating the registration of startups in the current era.

The interaction term for government effectiveness through corruption control (GE_PR * CC_PR) presents a positive coefficient of 0.078051 (t-statistic: 2.474259, p-value: 0.0562), suggesting that improved corruption control in conjunction with government effectiveness may lead to more complex registration processes. Conversely, the interaction term GE_PR * CC_N has a negative coefficient of -0.086686 (t-statistic: -3.668174, p-value: 0.0145). This indicates that high government effectiveness, coupled with high levels of corruption control, may facilitate the registration process, supporting the hypothesis that high efficiency can simplify bureaucratic procedures. Confirming this hypothesis, the coefficient for the interaction term involving government effectiveness through a increase in transparency and accountability (GE_PR * CPIA_TAC) is -1.579877 (t-statistic: -2.170414, p-value: 0.0821), indicating that a increase in government effectiveness may facilitate registration processes. Additionally, the lagged interaction term GE_PR (-1) * CPIA_TAC (-1) shows a positive coefficient of 0.667724 (t-statistic: 2.225186, p-value: 0.0766), suggesting that past transparency initiatives may meaningfully influence current registration processes.

The model exhibits a high fit, with an R-squared value of 0.966050, indicating that approximately 96.61% of the variability in STP_RM is explained by the model. The adjusted R-squared value of 0.904939 further supports the robustness of the findings. The F-statistic of 15.80823 (p-value: 0.003631) confirms the overall significance of the model.

4th Model: The ARDL model analysis for the cost of business start-up procedures (CSTP) reveals key insights about governance indicators. The selected model, ARDL (1, 1, 1, 1, 1, 1), shows that the coefficient for CSTP (-1) is -0.533988 (p = 0.0081), indicating that past costs influence current costs.

Table (9): ARDL 4th Model Results for Cost of Business Start-up Procedures (CSTP)as the Dependent Variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
CSTP(-1)	-0.533988	0.084810	-6.296294	0.0081
GE_PR	283.6728	28.41498	9.983214	0.0021
GE_PR(-1)	82.51219	11.60360	7.110911	0.0057
GE_PR*CC_PR	0.694859	0.297023	2.339410	0.1013
GE_PR(-1)*CC_PR(-1)	-0.366491	0.369732	-0.991234	0.3946
GE_PR*CC_N	-2.132872	0.819829	-2.601605	0.0803
GE_PR(-1)*CC_N(-1)	-3.181261	1.288878	-2.468240	0.0902

ISSN: 2583-4053
Volume-4 Issue-1 || February 2025 || PP. 1-18
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GE_PR*CPIA_TAC	-126.7332	15.24024	-8.315696	0.0036
GE_PR(-1)*CPIA_TAC(-1)	11.21327	2.877465	3.896926	0.0300
GE_PR*CC_E	9.861939	4.582704	2.151991	0.1205
GE_PR(-1)*CC_E(-1)	48.48611	6.141414	7.894942	0.0042
C	35.74008	12.23469	2.921208	0.0614
R-squared	0.994083	F-statistic		45.81900
Adjusted R-squared	0.972387	Prob(F-statistic)		0.004635

The variable GE_PR (Government Effectiveness) has a positive coefficient of 283.6728 (p = 0.0021), suggesting that higher government effectiveness significantly impacts business start-up costs. This is further supported by the interaction term GE_PR * CC_PR (0.694859, p = 0.1013), which indicates that government effectiveness, through better control of corruption, has a positive effect on business start-up costs. Additionally, increased government effectiveness in controlling corruption leads to lower business costs, as evidenced by the negative coefficient for GE_PR * CC_N (-2.132872, p = 0.0803). The significant negative coefficient for GE_PR * CPIA_TAC (-126.7332, p = 0.0036) underscores that improved transparency and accountability reduce start-up costs.

Overall, the model explains 99.4% of the variability in CSTP (R-squared = 0.994083) and is statistically significant (F-statistic = 45.81900, p = 0.004635). Enhancing government effectiveness through improved corruption control is crucial for reducing business start-up costs, ultimately benefiting entrepreneurs.

5th model: The ARDL model for the dependent variable NBD provides several insights, with a significant lagged coefficient NBD (-1) of 0.496136 (p-value: 0.0432), indicating that past values positively influence current outcomes.

Table(10): ARDL 5th Model Results for new business density (NBD) as the Dependent Variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
NBD(-1)	0.496136	0.219558	2.259707	0.0432
GE_PR	-0.056139	0.058358	-0.961984	0.3550
GE_PR*CC_PR	0.000788	0.001253	0.629255	0.5410
GE_PR*CC_N	-0.000901	0.001525	-0.590393	0.5659
GE_PR*CPIA_TAC	0.029924	0.024444	1.224175	0.2444
GE_PR(-1)*CPIA_TAC(-1)	-0.006089	0.004700	-1.295462	0.2195
C	0.187306	0.076916	2.435184	0.0314
R-squared	0.577502	F-statistic		2.733749
Adjusted R-squared	0.366253	Prob(F-statistic)		0.065232

However, the coefficient for government effectiveness (GE_PR) is -0.056139 and not statistically significant (p-value: 0.3550), suggesting a minimal immediate impact on NBD. Interaction terms involving GE_PR, such as GE_PR * CC_PR and GE_PR * CC_N, also lack significance, with p-values of 0.5410 and 0.5659, respectively. The interaction GE_PR * CPIA_TAC shows a potential positive effect (0.029924) but is not statistically significant (p-value: 0.2444**)**. The constant term is significant at 0.187306 (p-value: 0.0314). The model explains approximately 57.75% of the variability in NBD (R-squared: 0.577502) with a marginally significant F-statistic of 2.733749 (p-value: 0.065232). Overall, while the model captures some dynamics of NBD, the lack of significant relationships for most variables suggests potential data issues or the need for a more comprehensive model. Additionally, due to the lack of data availability in several years and the dispersion of the data, the model lacks meaningful significance; thus, it is essential for researchers to address these research gaps in the future.

6th model: The ARDL model results for the Women Business and the Law Index Score (WBLS) reveal significant insights into the factors influencing this index.

The lagged variable LOG (WBLS (-1)) has a coefficient of 0.489235, indicating a strong positive relationship with current values (p-value: 0.0098), suggesting persistence in the index over time. Government effectiveness (GE_PR) is positively associated with WBLC, with a coefficient of 0.331006 and a significant p-value of 0.0113, highlighting its crucial role in enhancing the index.

ISSN: 2583-4053

Volume-4 Issue-1 || February 2025 || PP. 1-18

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Table(11): ARDL 6th Model Results for the Women Business and the Law Index Score (WBLS)as the Dependent Variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LOG(WBLS(-1))	0.489235	0.131494	3.720595	0.0098
GE_PR	0.331006	0.091759	3.607344	0.0113
GE_PR(-1)	-0.046105	0.031508	-1.463285	0.1937
GE_E	0.112619	0.033238	3.388282	0.0147
GE_E(-1)	-0.029762	0.025927	-1.147921	0.2947
GE_PR*CC_PR	-0.001424	0.001505	-0.945930	0.3807
GE_PR(-1)*CC_PR(-1)	0.003094	0.001110	2.787522	0.0317
GE_PR*CC_N	-0.022210	0.004409	-5.037997	0.0024
GE_PR*CPIA_TAC	0.037361	0.032790	1.139396	0.2980
GE_PR*CPIA_QER	-0.074109	0.015062	-4.920096	0.0027
GE_PR(-1)*CPIA_QER(-1)	-0.014643	0.014195	-1.031588	0.3420
C	1.151233	0.257361	4.473223	0.0042

R-squared	0.984834	F-statistic	35.42068
Adjusted R-squared	0.957030	Prob(F-statistic)	0.000148

The lagged effect of GE_PR is negative but not statistically significant (p-value: 0.1937), suggesting limited influence from past values. The variable GE_E also shows a significant positive impact (0.112619, p-value: 0.0147), reinforcing the importance of government efficiency. Interaction terms reveal complex dynamics; GE_PR * CC_N has a significant negative coefficient of -0.022210 (p-value: 0.0024), suggesting that higher government effectiveness in conjunction with corruption control negatively impacts WBLC. Conversely, the interaction GE_PR * CPIA_QER(CPIA gender equality rating) is significant and negative (-0.074109, p-value: 0.0027), indicating potential challenges in this area. The model boasts a high R-squared of 0.984834, meaning it explains approximately 98.48% of the variation in WBLC, with an adjusted R-squared of 0.957030, and a robust F-statistic of 35.42068 (p-value: 0.000148), confirming the model's overall significance. These findings underscore the critical interplay between government effectiveness, corruption control, and their influence on the legal environment for women in business.

Overall, the analysis of six ARDL models demonstrates a significant impact of government efficiency on Entrepreneurship Development (ED). Model 1 reveals that the lagged coefficient for business registration procedures (STP_R) is notably positive, indicating that past influences substantially shape current registration processes. Specifically, the government effectiveness variable (GE_PR) shows a negative correlation, suggesting that higher government efficiency may facilitate startup registrations. This finding highlights the intricate relationship between governance and the regulatory environment for businesses. The results emphasize that while effective governance can enhance entrepreneurial opportunities, it may also introduce bureaucratic challenges that could hinder startup processes.

Table (12): Estimation Results of Models with Various Explanatory Variables

	1st Model $ED_{STP\_R_t}$		2nd Model $ED_{STP\_RF_t}$		3rd Model $ED_{STP\_RM_t}$		4th Model ED_{CSTP_t}		5th Model ED_{NBD_t}		6th Model ED_{WBLS_t}	
	t	p-value	t	p-value	t	p-value	t	p-value	t	p-value	t	p-value
STP_R (-1)	11.713	0.007										
STP_RF(-1)			3.054	0.022								
STP_RM(-1)					2.601	0.048						
CSTP(-1)							(6.296)	0.008				
NBD (-1)									2.260	0.043		
LOG(WBLC(-1))											3.721	0.010
Ge_pr	(3.114)	0.090	3.084	0.022	2.436	0.059	9.983	0.002	(0.962)	0.355	3.607	0.011

ISSN: 2583-4053

Volume-4 Issue-1 || February 2025 || PP. 1-18

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Ge_pr (-1)	(11.03)	0.008	2.290	0.106	(2.434)	0.059	7.111	0.006			(1.463)	0.194
Ge_E	(3.416)	0.076	2.672	0.037	3.449	0.180	0.075	0.952	0.158	0.878	3.388	0.015
Ge_E (-1)	5.798	0.029	1.681	0.191	2.149	0.277	0.512	0.699			(1.148)	0.295
GE_PR*CC_PR	10.055	0.010	2.996	0.024	2.474	0.056	2.339	0.101	0.629	0.541	(0.946)	0.381
GE_PR*CC_PR(-1)	(5.301)	0.034	(1.274)	0.250	(1.655)	0.346	(0.991)	0.395			2.788	0.032
GE_PR*CC_N	(15.82)	0.004	(6.131)	0.001	(3.668)	0.015	(2.602)	0.080	(0.563)	0.585	(5.038)	0.002
GE_PR*CC_N(-1)	8.474	0.014	(0.913)	0.429	1.269	0.425	(2.468)	0.090				
GE_PR*CPIA_TAC	6.061	0.026	(0.558)	0.597	(2.170)	0.082	(8.316)	0.004	1.224	0.244	1.139	0.298
GE_PR*CPIA_TAC (-1)	2.204	0.158	(3.407)	0.014	2.225	0.077	3.897	0.030	(1.295)	0.220		
GE_PR*CPIA_QER											(4.920)	0.003
GE_PR (-1) *CPIA_QER(-1)											(1.032)	0.342
C	5.100	0.036	2.892	0.028	(1.470)	0.202	2.921	0.061	2.435	0.031	4.473	0.004
R-squared	1.000		0.975		0.966		0.994		0.578		0.985	
Adjusted R-squared	0.998		0.941		0.905		0.972		0.366		0.957	
F-statistic	756.132		28.893		15.808		45.819		2.734		35.421	
Prob(F-statistic)	0.001		0.000		0.004		0.005		0.065		0.000	
Durbin-Watson stat	2.205		2.336		2.318		1.960		1.594		1.956	

Focusing on gender dimensions, Models 2 and 6 shed lights on the specific barriers faced by women entrepreneurs. In Model 2, which examines business registration for women, the positive coefficient for GE_PR indicates that increased government efficiency can complicate registration processes. This suggests that women may encounter unique challenges in navigating regulatory frameworks. Model 6 further illustrates this dynamic through the Women Business and the Law Index Score (WBLS), where government effectiveness positively influences women's entrepreneurial environment. However, the negative interaction with gender equality measures indicates that despite improvements in governance, significant challenges remain. Collectively, these insights underscore the necessity for targeted policies that address the specific needs of women entrepreneurs, ensuring that government efficiency translates into equitable opportunities for all.

V. DISCUSSION AND CONCLUSION

The findings of this study highlight the intricate relationship between government efficiency, corruption control, transparency, and entrepreneurship development in Afghanistan. The analysis utilizing an ARDL model demonstrates that government effectiveness significantly impacts various aspects of entrepreneurship, including business registration processes and start-up costs. Specifically, while higher government efficiency is generally associated with smoother registration procedures, it can also introduce complexities that may hinder entrepreneurial activities, particularly for women.

The results from the first model suggest that past government effectiveness positively influences current registration processes. This aligns with the literature that emphasizes the role of effective governance in creating a conducive environment for entrepreneurship (Mohamadi et al., 2017; Farinha et al., 2020). However, the positive coefficients associated with government effectiveness indicate that enhanced efficiency may also lead to increased bureaucratic hurdles. This duality underscores the need for a balanced approach to governance that promotes efficiency while minimizing unnecessary regulatory barriers.

Gender-specific analyses in Models 2 and 6 reveal that women entrepreneurs face distinct challenges within the entrepreneurial ecosystem. The positive coefficients associated with government effectiveness in these models suggest that while government initiatives may support women's entrepreneurship, they also complicate the registration process. Thus, it is crucial to develop targeted policies that address these challenges, ensuring that improvements in governance translate into equitable opportunities for all entrepreneurs.

Moreover, the interaction terms between government effectiveness and corruption control reveal

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Volume-4 Issue-1 || February 2025 || PP. 1-18

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complex dynamics. The findings suggest that while effective corruption control can enhance the positive effects of government efficiency, it may also impose additional restrictions that limit entrepreneurial opportunities. This highlights the necessity for policymakers to prioritize transparency and accountability, fostering an environment that encourages innovation and entrepreneurship without imposing overly stringent conditions.

Overall, the analysis indicates that enhancing government efficiency, alongside robust corruption control and transparency measures, is essential for fostering a vibrant entrepreneurial landscape in Afghanistan. The significant R-squared values across models emphasize the explanatory power of these relationships, suggesting that effective governance is a critical driver of entrepreneurship development.

In conclusion, this study provides valuable insights into the role of government efficiency in influencing entrepreneurship development in Afghanistan. The findings underscore the importance of effective governance as a key determinant of entrepreneurial success, highlighting the need for a supportive regulatory environment that facilitates business growth. While government effectiveness can enhance entrepreneurial opportunities, it is vital to address the bureaucratic complexities that may arise.

The research contributes to the existing literature by elucidating the interactions between government efficiency, corruption control, transparency, and entrepreneurship. The study highlights the necessity for targeted policies that cater to the specific needs of different entrepreneurial groups, particularly women. By prioritizing transparency and accountability, policymakers can create a conducive environment that encourages entrepreneurial activities and supports sustainable economic growth.

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