

The Effects of ICT/e-Government on Migrant Workers' Remittance Inflows in Bangladesh: An Empirical Study

Ziauddin Ahmed¹ & Anchana NaRanong²

¹Researcher, Graduate School of Public Administration, National Institute of Development Administration (NIDA), Thailand. <https://orcid.org/0000-0001-9565-2973>

²Professor, Graduate School of Public Administration, National Institute of Development Administration (NIDA), Thailand. <https://orcid.org/0000-0002-7259-8780>

Correspondence: Ziauddin Ahmed, Graduate School of Public Administration, National Institute of Development Administration (NIDA), Thailand. Tel: 66-83-981-9802. E-mail: ziauddin.ahm@stu.nida.ac.th; zia_joy@hotmail.com

Received: November 3, 2022

Accepted: November 30, 2022

Online Published: December 5, 2022

doi:10.5539/jsd.v16n1p53

URL: <https://doi.org/10.5539/jsd.v16n1p53>

Abstract

This research article has explored and examined the effects of ICT/e-Government measures and some other significant socioeconomic factors on migrant workers' remittance inflows in Bangladesh; Sustainable development approach is very much related to the economic growth that can be achieved by higher remittance inflows and related factors such as ICT/e-Government measures. So far, the effects of Information and Communication Technology (ICT) and e-Government measures on remittance inflows have not been explored adequately in the case of Bangladesh. The literature review shows the effects of ICT/e-Government along with the unemployment rate, the inflation rate, institutional quality, the number of recruiting agencies, the number of banks and financial institutions, financial development, remittance transaction cost, cash incentives as well as the currency exchange rate on the remittance inflows of Bangladesh. The article has been examined using a mixed methods (MM) approach. Secondary data from the World Bank and other institutions were collected for regression analyses using model equations and SPSS. Additionally, a total of 12 people involved in 12 different organizations were interviewed for collecting qualitative data for the thematic analysis; the analysis was conducted using NVIVO. After testing the hypotheses and after triangulation of quantitative and qualitative studies, it has been found that the use of ICT/e-Government measures and some other factors have significant positive effects on the remittance inflows of Bangladesh. Nonetheless, the effects of the number of recruiting agencies and remittance transaction cost on the remittance inflows did not resonate with the research hypotheses. Research findings show that the National ICT Policy and Overseas Employment Policy may also play roles in remittance inflows.

Keywords: remittance inflows, use of ICT/e-Government, socioeconomic factors, Bangladesh, MM approach

1. Introduction

Sustainable development approach related recent studies have explored that there are relationships between remittance inflows and related factors such as economic growth, financial development, remittance transaction cost as well as ICT/e-Government measures (Kacou, Kassouri, Alola, & Altuntaş, 2022). Migrant workers' remittances are increasingly playing important roles in supporting economic growth, employment generation, and foreign currency earnings in some developing countries, as well as in Bangladesh. On the other hand, the government of Bangladesh highly emphasizes the use of Information and Communication Technology (ICT) and e-Government initiatives in order to achieve developmental goals for poverty reduction as well as to increase remittance earnings. A state-sponsored initiative called "Digital Bangladesh", an ambitious ICT vision aiming to attain a poverty-free and more inclusive society by 2041, was launched by the Government of Bangladesh. In this context, certain ICT-related acts and policies were formulated and amended from time to time to accelerate the digitization process for economic growth and social development (Aquaro et al., 2020; GOB, 2019, 2020). ITU (2018) and Aquaro et al. (2020) claim that the goal of the "Digital Bangladesh" initiative is to turn the country into a fully digitized nation by 2021 that has been extended to the year 2041.

On the other hand, Bangladesh's "Expatriates' Welfare and Overseas Employment Policy 2016" also vows to ensure the use of ICT and e-Government services for migrant worker management and remittance earnings in

formal channels (GOB, 2019). While the determinants and economic impact of remittances have been extensively researched, very little research has been conducted on the migrants' remittance inflows trend linking ICT/e-Government and some other very crucial factors. Nonetheless, Mallick (2017) demonstrates that remittances have so far proved resilient in the wake of the global financial crisis and are anticipated to provide a significant source of income for developing countries. This research has explored and examined the effects of the use of ICT/e-Government measures along with some other significant socio-economic factors on remittance inflows. This study particularly examines the role of ICT/e-Government measures on remittance inflows upon the implementation of ICT policy and Overseas Employment Policy of Bangladesh. Moreover, the effects of some other socioeconomic factors on the remittance inflows have also been explored. This research ultimately delivers policy recommendations to use ICT/e-Government measures more effectively to receive higher remittance inflows.

1.1 Problem Statement

It is obvious that migrant workers' remittances are one of the major components of the economy of Bangladesh, as with many other developing nations. It can be argued that the introduction of the use of ICT, along with the use e-Government measures, helps with the migrant workers' recruitment processes and remittance inflows by making these activities smooth, prompt, and almost errorless. Therefore, the number of Bangladeshi migrant workers has increased in recent years and the remittance inflows through banking channels have increased significantly. However, the Finance Minister of Bangladesh, Mr. AHM Mostafa Kamal, recently claimed that the migrant workers' remittances have increased possibly mainly due to the cash incentives at the rate of 2% on expatriate income. Therefore, whether it is the use of ICT or e-Government measures, cash incentives or any other factors that affect remittance inflows the most, is still debatable. Whether the use of ICT/e-Government has any impact on remittance inflows could be determined through detailed and suitable research. This can also be determined through a time series regression analysis.

Additionally, there are other issues that indicate that the impact of ICT/e-Government and other economic, political, institutional factors on remittance should be explored as follows:

- i) In most of the previous research on Bangladesh, in exploring these determinants of remittances, remittance transaction cost was not included. The analyses of the UN, the World Bank, and the IMF along with scholars, indicate that remittance transaction costs have a huge and statistically significant effect on official remittance inflows.
- ii) The relationship of remittance inflows with the number of recruiting agencies has never been researched in the context of Bangladesh.
- iii) Scholars suggest that financial development in the migrant's home country and the higher official exchange rate of foreign currency would help to increase remittance inflows. However, in the case of Bangladesh, very little research has been conducted so far on these issues.

The governments of different countries currently rely on technology especially on the use of ICT/e-Government as well as on fiscal tools to deliver public goods and services to achieve macroeconomic stability, efficiency in the allocation of resources, as well as economic growth. Nevertheless, previous studies have mainly focused on the relationship of remittance inflows with economic growth along with other macroeconomic tools whereas the role of ICT/e-Government has hardly been examined thoroughly in the case of Bangladesh. Scholars also have not emphasized the effect of institutional quality or governance together with ICT/e-Government on remittance inflows in Bangladesh.

1.2 Importance of the Problem

Migrants' remittance earning is the major financial source for Bangladesh's economy. Moreover, these remittances have exhibited huge impact on family welfare or improvement of living standard of households of Bangladesh. In 2019, remittance, accounting for 5.8 % of GDP, was the second-largest source of foreign currency of Bangladesh after exports (BB, 2020). Therefore, any research conducted on remittance inflows in Bangladesh may carry a great value for the policy makers. Much research has been conducted so far on the determinants of remittance inflows in terms of social, economic, and political factors, the effects of Information and Communication Technology (ICT) and e-Government on remittance inflows have not been explored in the case of Bangladesh.

As per the Goal 10.c of UN (2015) declared Sustainable Development Goals (SDGs) the remittance transaction cost should be reduced to less than 3% to increase migrant worker's remittance inflows. It is believed that the use of ICT/e-Government measures could help to reduce the transaction costs (remittance transaction costs). In the line of SDGs, policy priority of the Bangladesh Government implementation was to digitalization of public services along with the overseas employment and remittance earning; hence, Overseas Employment Policy 2016

of Bangladesh and ICT Policy 2018 were amended and promulgated (Aquaro et al., 2020; GOB, 2018, 2019, 2020). Therefore, this research has analyzed whether ICT and e-Government measures along with some other relevant socio-economic, political, and institutional factors affect remittance inflows in Bangladesh.

The World Bank (WB) estimates that “inward remittance flows to South Asia rose by about 5.2 percent in 2020 to \$147 billion, driven by surge in flows to Bangladesh and Pakistan.”(WB, 2021). Amid the Covid-19 pandemic expatriate Bangladeshis sent 36% more remittance in 2020-21 compared to the same period in 2019-20, when it was \$18.20 billion (BB, 2021). In the wake of the Covid-19 pandemic, the remittance inflows, one of the main barometers of Bangladesh’s economy, dipped from March to May of 2020 though it started increasing in the following months (Siddiqui, 2021a, 2022). Siddiqui (2021a) argues that the recent increase in remittance inflows might have taken place due the payment of incentive for sending using formal channel and lower transaction costs. The Finance Minister of Bangladesh AHM Mostafa Kamal also claims that “enviable growth in remittances has been possible mainly due to the continuation of cash incentives at the rate of 2 percent on expatriate income” (Kamal, 2021, p. 65). Moreover, Bangladesh Bank - BB (2021), the Central Bank of the country, has taken measures (incentives and agent banking) to streamline the legal or digital channels for encouraging migrants to send money to the country. While the other determinants and impact of other economic factors on remittances have been extensively researched, no empirical research was found on the impact of the incentives and the ICT/e-Government driven policy on remittance inflows trends in Bangladesh. Thus, this study has examined the effects of ICT/e-Government including some other crucial socioeconomic and institutional factors on migrants’ remittance inflow trends in Bangladesh and deliver policy implications for better policy outcomes.

1.3 Historical Background and Labor Migration from Bangladesh

Since the 18th century, migration and remittances have been some of the key factors of socio-economic development in Bangladesh (Siddiqui & Chowdhury, 2003). The frequent movement of poor people for work to other counties has become a main development issue. Historically, emigration from Bengal (present Bangladesh) has had a direct correlation with colonialism over the centuries and migration has been a common livelihood strategy of the people (Siddiqui, 2004; Siddiqui & Chowdhury, 2003). After the independence of Bangladesh, during the late 1970s, the labor markets in the Middle East offered a new scope for Bangladeshi skilled and unskilled migrant labor (BMET, 2022a; Islam, 2011). This expanded to the newly industrialized countries of South-East Asia in 1980-1990 (Siddiqui, 2004; Siddiqui & Chowdhury, 2003). Presently most permanent or long-term emigration is to the U.K., the U.S.A. or the E.U. countries and those individuals are professional and skilled migrants (Islam, 2011). From 1976 to 2020 more than 13.13 million Bangladeshi people have migrated overseas for employment (BMET, 2022a, 2022b). Siddiqui and Chowdhury (2003) explain that short-term contractual jobs in the Middle East and South East Asia have created opportunities for those that are unskilled or semi-skilled Bangladeshi people to migrate for overseas employment.

1.3.1 Workers’ Recruitment and Overseas Employment in Bangladesh

The Bangladesh government established a ministry called the Ministry of Expatriates’ Welfare and Overseas Employment (MoEWOE) on the 20th of December, 2001 (MoEWOE, 2022). The ministry possesses the power of implementing the Overseas Employment and Migration Act 2013 and the rules framed in 2002 under the Emigration Ordinance 1982; hence, this ministry is responsible to promote, to monitor, and to regulate the activities of the migration sector (Siddiqui & Abrar, 2019).

The Ministry of Expatriates’ Welfare and Overseas Employment is responsible for formulating policies, plans, enacting laws, rules and regulations, and developing projects, programs, and monitoring related to the management of overseas employment as follows (MoEWOE, 2022):

- Processing and examining applications for new recruiting licenses for private agencies or renewing existing ones (Siddiqui, 2011)
- Government approval/permission for sending overseas workers in favor of recruiting agencies (Siddiqui, Anas, Basar, & Lock, 2016)
- Functions relating to international conventions, establishing contracts with other countries for workers’ employment, and coordination with recruiting agencies regarding overseas employment (Siddiqui, 2021b)
- Maintaining databases of overseas employment companies and migrant workers (Siddiqui, 2022)

Above all, the “Overseas Employment Wing” of the Ministry looks after the activities related to international organizations as well as the above-mentioned activities (MoEWOE, 2022).

1.3.2 Policies of Bangladesh: The Overseas Employment Policy and The National ICT Policy

According to the Overseas Employment Policy of Bangladesh 2016, some important policy options are (GOB, 2019):

- The government supervises the activities of the recruiting agents under the licensing and conduct rules. The cost of migration will have to be reduced.
- Labor Welfare Wings of the MoEWOE (2022) is responsible for preparing the database of migrants with the help of the Ministry of ICT of Bangladesh.

As per the National ICT Policy of Bangladesh 2018, some important policy options are the following (GOB, 2018):

- The government would prepare to identify the international labor market by using the Labor Market Information System (LMIS).
- Digital government systems would be used to deliver all public services to the citizens of the country.
- The government would provide incentives for using digital transactions. E-payment and mobile payments must be encouraged with the help of the central bank (Bangladesh Bank) and the Ministry of Finance.

1.4 Literature Review: Hypotheses and Their Correspondence to Research Questions

The theoretical connections among ICT and/or e-Government and remittance inflows, in conjunction with other socio-economic, political, and institutional factors that affect remittance inflows, are discussed here in this section and other related sub-sections. The sub-sections are elaborated with empirical research, studies, opinion reports on ICT/e-Government theory, economic growth theories, macroeconomic theory of remittances, agency theory, the theory of transaction cost, property rights theory, institution, and institutional quality theory, democracy, public choice, and public value theories. These mentioned theories have been used to answer research questions. The main research question of this research is:

1) What are the effects of ICT or e-Government on migrants' remittance inflows in Bangladesh?

Other questions are:

- 2) What are the roles of recruiting agencies, banks and financial institutions, financial development, cash incentives, financial inclusion, and remittance transaction cost in the remittance inflows of Bangladesh?
- 3) How does the National ICT Policy and the Overseas Employment Policy of Bangladesh help to increase remittance inflows?

1.4.1 Remittance and ICT/e-Government: Definitions and Relationship

UN (2006, p. 4) defines total remittances as follows:

“Total remittances = personal remittances + social benefits, thus it would include personal remittances and social benefits directly to households from other institutional sectors, namely corporations, government and non-profit institutions serving households” (NPISHs) (UN, 2006, p. 4).

Information and communication technology (ICT) is considered as a tool to help citizens with having access to the desired information and services, and that ensures quality, effective, and efficient public services provided by the government in a transparent way (Emara & Zhang, 2021). The development of ICT in UN member states is measured through an index called the ICT Development Index (IDI), an index published annually by the International Telecommunication Union since 2007 (ITU, 2009).

On the other hand, the World Bank (WB, 2015) defines e-Government as follows:

“E-Government refers to the use by government agencies of information technologies (such as Wide Area Networks, the internet, and mobile computing) that can transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions” (WB, 2015).

Additionally, e-Government is a way to deliver services to citizens and businesses as well as to other forms of government. Regarding “new public management” (NPM), some post-NPM market-driven approaches, namely “joined-up government” and “whole-of-government” have led national governments to adopt collaborative ICT environments vis-à-vis e-Government through hierarchical strengthening of the center (Klievink & Janssen, 2009; Ojo, Janowski, & Estevez, 2011; Sagarik, Chansukree, Cho, & Berman, 2018; Tengratanaprasert, 2022). The UN

(2022) uses the E-Government Development Index (EGDI) to present the state of the e-Government development of the United Nations member states.

UN (2022) argues that e-Government is traditionally considered as the use of ICTs for improving the efficiency of government agencies and providing government services online. Emara and Zhang (2021) explore the notion that an increase in the Digital Ecosystem development index or adoption of ICT measures leads to an increase in remittance inflows.

Scholars demonstrate the presence of statistically significant positive effects of ICT and digitization on the remittance earnings (Emara & Zhang, 2021; Katz & Callorda, 2018; Vu, 2011).

Hypothesis 1 (H₁): The use of ICT/e-Government is positively and significantly linked with remittance inflows in Bangladesh.

1.4.2 Economic Growth Theories, Economic Performance and Remittance Inflows

In classical economic growth theory, economic growth is measured by using the GDP, where a higher GDP requires more input or factors of production (Perkins, Radelet, Lindauer, & Block, 2013, p. 91). Neoclassical growth theory, which was proposed by Solow and expanded by Harrod-Domar, indicates that output growth results from one or more of three factors: increases in labor quantity and quality (through population growth and education); increases in capital (through savings and investment); and improvements in technology (Todaro & Smith, 2015). However, neoclassical growth theory assumes that “the rate of technological progress is determined by a scientific process that is separate from, and independent of, economic forces, and it implies that economists can take the long-run growth rate as given exogenously from outside the economic system.” (Perkins et al., 2013; Todaro & Smith, 2015). Endogenous growth theory postulates that human capital development can stimulate economic growth in two ways, as a spill-over effect and as a learning-by-doing effect. As an instance, education has a spill-over effect as it creates positive externalities (Todaro, 2006). Funke and Strulik (2000) have extended the endogenous growth model comprising physical and human capital and estimated intermediate goods. They have claimed that developing countries require three distinct stages through which the goal of economic development will be achieved, e.g., physical factor accumulation, accumulation of skills, and producing a variety of goods through higher investment in research and development (Funke & Strulik, 2000). Moreover, it is found that the higher financial development leads to higher remittance inflows (Russell, 1986). Pv and Loruswannarat (2018) argue that the government should adopt sustainable and holistic approach to implement innovation related policies including the use of technology.

Along with GDP growth, the indicators of economic performance that may affect economic growth and remittance inflows are inflation rate, unemployment rate, exchange rate, cash incentives, etc. (Asad, Haider Hashmi, & Yousaf, 2016; Freund & Spatafora, 2008; Oladipo, 2020). According to the usual definition, exchange rate refers to the value of a country's money in relation to another country's money (Ghosh, 2002). Mallick (2017) argues that remittance inflows play the role of inflation control, as these played the stability role for the recipient countries during the global financial crisis of 2008-2010. Begum and Sutradhar (2012) show that domestic inflation plays a major role in boosting the remittance inflows for Bangladesh.

Hypothesis 2 (H₂): Unemployment rate is positively and significantly related to remittance inflows in Bangladesh.

Remittances are often seen as a short-cut to development, enabling developing countries to acquire scarce capital by sending workers abroad that would have been unemployed or underemployed at home (Martin & Sirkeci, 2017). Stratan and Chistruga (2012) opine that remittance has a significant influence on the labor market by reducing unemployment in worker sending countries.

Hypothesis 3 (H₃): Inflation rate is positively and significantly related to remittance inflows in Bangladesh.

1.4.3 New Institutional Theory, Institutional Quality and Remittances

New institutional theory describes the integration of the concept of institutions and good governance including economic growth and stability (Nabli & Nugent, 1989). North (1990, pp. 3-4) mentions that “institutions are the rules that are followed by humans to interact in the society set by themselves.” Moreover, he argues that variations in institutions can explain most of economic performances, across both time and space (North, 1990). In many previous studies, the creation and development of good institutions are emphasized as necessary conditions for economic growth (Gagliardi, 2008; Presbitero, 2006).

The institution, institutional arrangements, and institutional structures are important for monitoring economic activities whereas institutional quality and their measurement are problematic to explain (Gagliardi, 2008; Presbitero, 2006; Yifu Lin & Nugent, 1995). Although it is very difficult to find the best institutions and measures to measure institutional quality, the Worldwide Governance Indicators (WGI) produced by the World Bank can be

considered as acceptable measures (Kaufmann, Kraay, & Mastruzzi, 2010; Presbitero, 2006).

The World Bank (WB, 2022c) demonstrates institutional quality (INST) by using the Worldwide Governance Indicators (WGI), where six indicators are measured on a scale of -2.5 to +2.5; those six indicators are indicators for control of corruption, government effectiveness (GEF), political stability and absence of violence/terrorism (POS), regulatory quality (RQ), rule of law, and voice and accountability (VAA) (Kaufmann et al., 2010; WB, 2022c). However, in this research, 3 indicators (GEF, POS, RQ) have been considered as the proxies of Institutional quality (INST) whereas VAA has been considered as a proxy of Democracy (DE).

Ahmed and Martínez-Zarzoso (2016) argue that the political stability indicators from the World Governance Indicators, as a proxy for institutional quality, have a positive impact on remittance inflows with other predictor variables. Agbegha (2006) explores that political stability promotes remittance growth.

On the other hand, Anarfo, Amewu, and Dzeha (2020) propose that migrant remittances inflows would be strengthened by the effectiveness of local government authorities, financial institutions, and central governments in reforming public policy. Moreover, Nepal, Park, and Lee (2020) argue that the quality of institutions or regulatory quality should be ensured first, so that they can accelerate investment activities, and thus the remittance inflows will be increased.

Hypothesis 4 (H₄): Institutional quality in terms of either of government effectiveness, regularity quality, or political stability is positively and significantly related to remittance inflows in Bangladesh.

1.4.4 Agency Theory: Number of Recruiting Agencies and Remittance Inflows

In the institutional approach of agency theory, it is assumed that institutions are required to address agent actions-behaviors to meet primary preferences (Mitnick, 1975, 2021). Nevertheless, the economic approach of agency theory explains the challenges of finding the most effective compensation for the agents. Sikiru (2021) argues that agency theory has been criticized for assuming that human responsibility and freedom logically conflict with causal determinism.

A recruiting agency is generally a state-level contact point for a foreign employer or foreign recruiting agency (Rahman, 2012). The recruitment agencies in terms of both public (G2G) and private (B2B) agencies have become embedded as important actors in transnational labor mobility (Kovacheva, Popivanov, & Burcea, 2019). A study conducted by Paul, Alam, and Islam (2019) shows that 98% of the successful migration of workers was facilitated by private recruiting agencies (B2B process); successful migration ensures remittance inflows in the recipient country.

On the other hand, Ruhunage (2006) finds that Sri Lanka Bureau of Foreign Employment (SLBFE) streamlined the activities of recruitment agencies and hence, the number of institutes increased rapidly. As a result, the demand for a migrant workforce increased, which led to an increase in remittance inflows. If there are few agencies or some recruiting agencies monopolize recruitment activities, price elasticity of demand is low or the remittance inflows will decrease (Balkenhol, 2006). Hence, increasing the number of private recruitment agencies sometimes has played a significant role in intensifying labor migration and higher remittance inflows (Baruah, 2006)

Rahman (2011) identifies four main players in the migrant workers' recruitment in Bangladesh: BMET, BOESL (the state own recruiting agency), private recruiting agencies, and migrant networks; they all work in a semi-coherent system that governs and facilitates the migration of labor and find jobs for the workforce in a higher number (Rahman, 2011). Hence, it can be concluded that the higher number of recruiting agencies can generate higher job opportunities in destination countries and thus the remittance inflows may increase.

However, the monopoly of some recruiting agencies in the process of recruitment creates problems such as the recruitment of Bangladeshi workers for Malaysia in 2018, which was monopolized by 10 recruiting agencies in Bangladesh and created faulty migration and higher costs (Siddiqui, Sultana, Nasrin, & Akhter, 2019). Additionally, middlemen are in most cases involved in sourcing workers for the recruiting agencies (Siddiqui, 2020).

Hypothesis 5 (H₅): The number of public and private recruiting agencies is positively and significantly related to remittance inflows in Bangladesh.

1.4.5 Financial Development, Banks and Financial Institutions, Exchange Rate, and Remittance Inflows

Financial development is expressed by the private credit provided to the private sector (Gueta & Sridi, 2017; WB, 2022a). Sikiru (2021, p. 41) also defines financial development as the credit to private sector that is used as "proxy and it is measured by the share of domestic credit to private sector in GDP". An empirical study conducted by Gueta and Sridi (2017) on 15 countries of the Middle-East and North Africa (MENA) region shows a significant and positive relationship, explaining that financial development attracts more remittances (Gueta & Sridi, 2017).

Additionally, Aggarwal, Demirgüç-Kunt, and Pería (2011) argue that greater financial development may lead to higher remittance inflows since either financial development facilitates remittance inflows or a higher ratio of remittance inflows are measured in the case of receiving remittance money through formal banking channels or financial institutions.

Scholars have found that remittance inflows increase with the increase of number of bank branches per inhabitant (Paul et al., 2019). Scholars argue that banks receive remittances as a reliable form of income and may open more financial opportunities to recipients (Ratha, 2006). Anarfo et al. (2020) consider that most households with formal accounts receive remittances through formal channels, which increases remittance inflows. In a study on Pakistan, the Philippines, and Bangladesh, Amjad, Irfan, and Arif (2013) demonstrate that remittance inflows can be increased by adding more and more branches of banks, financial institutions, post offices, and/or exchange companies in different physical locations. The Finance Minister of Bangladesh AHM Mostafa Kamal claims that “the widespread expansion of agent banking has created a positive impact on the flow of remittances” (Kamal, 2021, p. 104). Hence, it can be concluded that a higher number of bank branches has a positive impact on remittance inflows.

Aggarwal et al. (2011) stated that the official remittance inflows transmitted through banks, as well as through non-bank financial and/or informal mechanisms (using apps of social media platforms), cause increase in remittance inflows. Migrant workers transfer their remittance money through formal banking channels if they find it cheaper and more convenient, and it usually requires increasing numbers of banking outlets along with competition and technological support, which includes mobile phones and ICT-based digitized platforms (Martin & Sirkeci, 2017).

Hypothesis 6 (H₆): The number of banks and financial institutions, along with their branches, is positively and significantly related to remittance inflows in Bangladesh.

On the other hand, Amjad et al. (2013) argue that the depreciation of the local currency leads to an increase in remittance inflows. Additionally, Ahmed and Martínez-Zarzoso (2016) also argue that remittance inflows can decrease or increase with the home country local exchange rate (EXR). In Bangladesh, the significant depreciation of the local currency (Bangladesh Taka) since mid-2011 led to high remittance inflows (Amjad et al., 2013).

1.4.6 Transaction Cost Theory: Cash Incentives, Remittance Transaction Cost, and Remittance Inflows

According to Williamson (1979), “transaction costs” are the costs of governing a nation and running the economic systems. He argues that transaction costs are linked with market exchange, which are determinants of the market price and the costs of negotiating and agreeing contracts (Williamson, 1979). Moreover, Coase (1937) argues that transaction costs arise through the transfer of goods and services by the use of different technological interfaces. Remittance transaction cost (RTC) is the result of sending remittances to the country of the origin of the migrant workers. On the other hand, cash incentive (INC) is another form of transaction cost.

Ruiz, Shukralla, and Vargas-Silva (2009) argue that the steady reduction in the cost of transferring remittance money and growth in the migrant workers indicates that remittance inflows will continue to increase. Moreover, Vasconcelos, Ponsot, Terry, and Vásquez (2017) opine that the introduction of electronic-based or ICT-based transactions instead of a cash-based system have the potential to reduce transaction costs considerably. Nonetheless, Ahmed and Martínez-Zarzoso (2016) argue that the ICT-enabled transfer of remittances may cause higher transaction costs, whereas financial development and lower transaction costs may increase remittance inflows.

Hypothesis 7 (H₇): Remittance transaction cost is negatively and significantly related to remittance inflows in Bangladesh.

On the other hand, Siddiqui (2021a) considers that remittance inflows are continuously increasing as the government of Bangladesh has been offering incentives since 01 July 2019 in order to encourage migrants to send remittances through formal channels. In an empirical study on Pakistan, the Philippines, and Bangladesh, Amjad et al. (2013) stated that in 2009, the Pakistan government announced that banks’ expenses would be refunded at prescribed rates in order to attract remittance inflows using formal channels. These scholars find that this event was a direct incentive for the remittance senders and encouraged them to use formal banking channels for sending their remittances (Amjad et al., 2013). Hence, incentives offered by the government ensure higher remittance inflows.

Hypothesis 8 (H₈): Cash incentive is positively and significantly related to remittance inflows in Bangladesh.

1.4.7 Democracy, Voice and Accountability, and Population Growth

Remittance inflows are accompanied by pro-democratic political norms (Maydom, 2017). It is believed that

remittances are associated with greater non-electoral political participation because recipients perceive themselves to have higher levels of economic security (Maydom, 2017). Rother (2009) finds that the political system of two higher remittance recipient countries (India, the Philippines) are democracies; nonetheless, the degree of democracy is contested politically as well as academically. He further argues that “Hong Kong appears to be the most clear-cut case: the pattern of higher agreement to democratic values could be caused by the exposure of migrants to a lively collection of migrant organizations” (Rother, 2009).

Moreover, Abbas, Masood, and Sakhawat (2017) argue that migrant workers send higher remittances to their home country if there is a democratic government in the country. Additionally, UNDP (2002) argues that in “democracy” people have the right to “participate” in the management of public affairs and government must be “accountable” to the people. Catrinescu, Leon-Ledesma, Piracha, and Quillin (2009) argue that accountable political institutions help to increase remittance inflows in the presence of other factors. On the other hand, Amjad et al. (2013) propose that the higher the population size or population growth, the higher is the number of migrant workers and hence the higher remittance inflows.

1.4.8 Summary of the Hypotheses and Model Specifications

Considering the above discussion, the following hypotheses and model equations have been constructed based on the variables of interest and the control variables grounded from the theoretical review and empirical evidence.

Hypothesis 1 (H₁): The use of ICT/e-Government is positively and significantly linked with remittance inflows in Bangladesh.

Hypothesis 2 (H₂): Unemployment rate is positively and significantly related to remittance inflows in Bangladesh.

Hypothesis 3 (H₃): Inflation rate is positively and significantly related to remittance inflows in Bangladesh.

Hypothesis 4 (H₄): Institutional quality in terms of either of government effectiveness, regularity quality, or political stability is positively and significantly related to remittance inflows in Bangladesh.

Hypothesis 5 (H₅): The number of public and private recruiting agencies is positively and significantly related to remittance inflows in Bangladesh.

Hypothesis 6 (H₆): The number of banks and financial institutions, along with their branches, is positively and significantly related to remittance inflows in Bangladesh.

Hypothesis 7 (H₇): Remittance transaction cost is negatively and significantly related to remittance inflows in Bangladesh.

Hypothesis 8 (H₈): Cash incentive is positively and significantly related to remittance inflows in Bangladesh.

Two separate sets of hypotheses (for IDI and EGDI separately), along with two separate sets of model equations (for dependent variable REM), have been constructed upon the availability of secondary data in order to address the research questions. The natural logarithm of REM has been adopted to maintain normality. The model equations for the DV natural logarithm of remittance inflows (LnREM) with some IVs, where a is “a” constant, and b_1 to b_7 are coefficients of each independent variable with the dependent variable; the ICT index and e-Government index (EGDI) were used separately as a proxy of each other, are as follows:

Using IDI as the Main Predictor variable

$$\text{Model 1: LnREM} = a + b_1\text{IDI} + b_2\text{UNR} + b_3\text{IFR} + b_4\text{GEF} + b_5\text{PPRA} + b_6\text{POPG} + b_7\text{DE} + e$$

$$\text{Model 2: LnREM} = a + b_1\text{IDI} + b_2\text{UNR} + b_3\text{IFR} + b_4\text{POS} + b_5\text{BFI} + b_6\text{VAA} + e$$

$$\text{Model 3: LnREM} = a + b_1\text{IDI} + b_2\text{UNR} + b_3\text{IFR} + b_4\text{RQ} + b_5\text{FD} + b_6\text{INC} + e$$

$$\text{Model 4: LnREM} = a + b_1\text{IDI} + b_2\text{UNR} + b_3\text{IFR} + b_4\text{GEF} + b_5\text{FD} + b_6\text{RTC} + b_7\text{DE} + e$$

$$\text{Model 5: LnREM} = a + b_1\text{IDI} + b_2\text{UNR} + b_3\text{IFR} + b_4\text{POS} + b_5\text{EXR} + b_6\text{VAA} + e$$

Using EGDI as the main predictor variable

$$\text{Model 6: LnREM} = a + b_1\text{EGDI} + b_2\text{UNR} + b_3\text{IFR} + b_4\text{GEF} + b_5\text{PPRA} + b_6\text{POPG} + b_7\text{DE} + e$$

$$\text{Model 7: LnREM} = a + b_1\text{EGDI} + b_2\text{UNR} + b_3\text{IFR} + b_4\text{POS} + b_5\text{BFI} + b_6\text{VAA} + e$$

$$\text{Model 8: LnREM} = a + b_1\text{EGDI} + b_2\text{UNR} + b_3\text{IFR} + b_4\text{RQ} + b_5\text{FD} + b_6\text{INC} + e$$

$$\text{Model 9: LnREM} = a + b_1\text{EGDI} + b_2\text{UNR} + b_3\text{IFR} + b_4\text{GEF} + b_5\text{FD} + b_6\text{RTC} + b_7\text{DE} + e$$

$$\text{Model 10: LnREM} = a + b_1\text{EGDI} + b_2\text{UNR} + b_3\text{IFR} + b_4\text{POS} + b_5\text{EXR} + b_6\text{VAA} + e,$$

Table 1. Variables for the regression analysis

Dependent Variable (DV)	Variables of Interests (IV)	Control Variable (IV)
Remittance Inflows (LnREM)	i. ICT (IDI) ii. E-Government (EGDI) iii. Institutional Quality (INST): Regulatory Quality (RQ) (proxy), Government Effectiveness (GEF) (proxy), Political Stability (POS) (proxy) iv. Public and Private Recruiting Agencies (PPRA) v. Banks and Financial Institutions (BFI) vi. Cash Incentive (INC) vii. Remittance Transaction Cost (RTC)	i. Financial Development (FD) ii. Exchange Rate (EXR) iii. Democracy (DE) iv. Voice and Accountability (VAA) (Proxy) v. Unemployment Rate (UNR) vi. Inflation Rate (IFR) vii. Population Growth (POPG)

2. Methodology

This research shows the relationship particularly between ICT/e-Government and remittance inflows in Bangladesh by using primary data for qualitative (QUAL) and secondary data for the quantitative (QUAN) or regression analysis separately. These designs have allowed the researcher to quantify, analyze, and compare the results of quantitative part with the qualitative interviews.

The same unit of analysis has been used for both QUAL and QAUN data analyses. The unit of analysis is the organization, which includes Public and private Agencies/Institutions/Offices/Wings. From each organization one of the respondents was interviewed. The heads of the organizations, bureaucrats, executives, bankers, owners and/or relevant managers were interviewed using the MM approach. Reasons for choosing the Unit of Analysis: i) These agencies, institutions, and offices are mainly responsible for migrant worker recruitment, service delivery using ICT/e-Government, and facilitating remittance inflows in Bangladesh and networking with other public agencies. ii) These agencies, institutions, and offices are subject to in - depth analysis in the WDI/WGI, IMF, Bangladesh Bank Annual/Quarterly and other reports produced by the World Bank, IMF, Bangladesh Bank (BB), and other agencies. Interviews were also conducted based on the research questions and objectives to be compared with corresponding data available in the abovementioned reports.

2.1 Conceptualization and Operationalization of Variables for Quantitative Analysis

For secondary data collection and regression analysis the variables have been conceptualized and operationalized as follows:

Table 2. Conceptualization and operationalization

Variable	Conceptualization	Operationalization
Remittance Inflows (REM) or Natural log (LnREM)	Remittances that are sent by international labor migrants to the country of origin (IOM, 2009). “Total remittances = personal remittances + social benefits, thus it would include personal remittances and social benefits directly to households from other institutional sectors, namely corporations, government and non-profit institutions serving households” (NPISHs) (UN, 2006, p. 4).	Total remittances received per annum through formal banking channel and that are monitored and published by BB, BMET, WDI
Use of ICT (IDI)	“Information and Communication Technology” (ICT) is considered as a tool to help citizens have access to the desired information and services, that ensure quality, effective, and efficient public services provided by the government in a transparent way (Emara & Zhang, 2021).	ICT Development Index yearly measured and published by ITU

e-Government (EGDI)	“E-government is commonly conceptualized as governments’ use of information and communication technologies (ICTs) combined with organizational change to improve the structures and operations of government” (Field, Muller, & Lau, 2003, pp. 22-23).	The e-Government that is measured by the UN and named as EGDI.
Private and Public Recruiting Agency (PPRA)	A recruiting agency is generally a state-level contact point for a foreign employers or foreign recruiting agency (Rahman, 2012). Public and private agencies responsible for recruitment of migrant workers (BMET, 2022a; Islam, 2011).	Number of recruiting agencies currently working in Bangladesh, calculated per 1,000
Institutional Quality (INST)	Six indicators are indicators measured against the control of corruption (CC), government effectiveness (GEF), political stability and absence of violence/terrorism (POS), regulatory quality (RQ), rule of law (RL), and voice and accountability (VAA) (WB, 2022c). How rules are applied to run these institutions in a country (Lartey & Mengova, 2016).	This index is a set of six different indices published by WDI per year. Some indices are separately used in different models for regression. VAA would be used as a proxy for democracy.
Banking and FIs (BFI)	Formal financial institutions that are involved in remittance management and that are measured by the central bank when those remittances are channelled through formal financial institutions (Aggarwal et al., 2011)	Number of bank and FIs and branches per 1,000 inhabitants (Paul et al., 2019)
Financial Development (FD)	“Credit to private sector is used as proxy and it is measured by the share of domestic credit to private sector in GDP” (WB, 2022a).	It is measured by the ratio of domestic deposits to GDP (Freund & Spatafora, 2008).
Unemployment Rate (UNR)	“Unemployment refers to the share of the labor force that is without work but available for and seeking employment. Definitions of labor force and unemployment differ by country” (WB, 2022b).	Yearly unemployment rate measured by BBS, Macrotrend
Inflation Rate (IFR)	Inflation is measured as the annual percentage change in the consumption price index (CPI) (Giuliano & Ruiz-Arranz, 2009). A steady rise in the general price of goods and services in a nation (Ikpesu, Akinola, & A. Ikpesu, 2020).	Yearly change in CPI rate in percentage measured by WDI, BB
Cash Incentives (INC)	Compensation for the migrant works sending remittance using formal channels instead of informal ones (Ferreira, Lahr, Ramos, & Castro, 2020)	Two percent cash incentives offered by Bangladesh Bank per remittance above USD 100 transaction using formal channels
Remittance Transaction Cost (RTC)	Cost of money or remittance transfers through different mechanisms (Velasco Arellano, 2021)	Cost of remittances including bank charge and other expenses. It is available as WDI. Moreover, it has been expressed on a 5-point Likert scale.
Exchange Rate (EXR)	The price of a country's money in relation to another country's money (Ghosh, 2002).	Yearly average value of Bangladeshi currency for 1 USD
Democracy (DE)	Democratic process related to economic growth (Barro, 1999). It is related to the definition of democracy as per the EIU. Democracy in terms of a group of five categories: 1) electoral process and pluralism, 2) civil liberties, 3) functioning of government, 4) political participation, and 5) political culture (Kekic, 2007).	However, the cumulative score declared by EIU per year has been used.
Population Growth (POPG)	“Annual population growth rate for year t is the exponential rate of growth of midyear population from year t-1 to t, expressed as a percentage. Population growth is a weighted average measure” (WB, 2022b).	Yearly population growth declared by BBS

2.2 Qualitative Approach

This approach has been applied to explore the reasons and meanings behind the findings from the quantitative analysis and to analyze some of the variables that may not have been considered fully through the quantitative approach. While the quantitative approach of the research has focused mainly on the perceptions regarding recruitment, the use of ICT/e-Government, and remittance inflows in its qualitative approach, the research focus has been mainly on the personal experiences of the policy professionals and heads of the organizations or managers that are working in the Ministry of Expatriates' Welfare and Overseas Employment of Bangladesh, its agencies and recruiting agencies, and the Ministry of ICT, the Ministry of Finance and the Central Bank and other banks, along with some field-level officers and agency personnel. Policy professionals that are working in the Ministry of Expatriates' Welfare and Overseas Employment of Bangladesh, its agencies, and the Ministry of ICT, the Ministry of Finance and the Central Bank were asked if they could provide more comprehensive responses than the field-level officers and agency personnel. For the qualitative data collection, a semi-structured questionnaire was used.

2.3 Sampling Procedures for Qualitative Data Collection

As the unit of analysis was the organization, a purposive sample was used. Qualitative data were collected using the in-depth interview technique. Participants were selected from the same groups for which the quantitative secondary data were collected, though only a few of the participants that were involved in recruitment, remittance inflows, or ICT/e-Government-related decision-making or policy management processes were interviewed. A total of 12 participants located in Dhaka city were interviewed and data were collected as per the table below.

Table 3. Qualitative data collection plan

Group No.	Organizations	Access	No. of Participants (12)	Method (Purposive Sampling)
1	Ministry, BMET or DEMO, Public and Private Recruiting agencies	Insider (Ministry Official)	4 (1 from each organization)	In-depth interview with semi-structured questionnaire. Face-to-face/ telephone interview.
2	ICTD, DoICT and 2 field offices	Insider (Department of ICT official)	4 (1 from each organization)	In-depth interview with semi-structured questionnaire. Face-to-face interview.
3	Central Bank, Banks	Insider (central bank official)	2 (1 from each)	In-depth interview with semi-structured questionnaire. Face-to-face interview.
4	Ministry of Finance	Insider (Ministry of Finance official)	2	In-depth interview with semi-structured questionnaire. Face-to-face interview.

2.4 Qualitative Interview Questions

A semi-structured questionnaire was used to collect the data. However, some of the demographic data was collected for the descriptive analysis. Nonetheless, Babbie (2010) proposes that questions should be open-ended, easy to understand, non-controversial, and neutral. A semi-structured questionnaire is a better option for thematic analysis in a qualitative study and prompts and probes that are prepared in advance should be used to support questions. There is common agreement within the research community that the success of interviews largely depends on the rapport between the researcher and interviewee (Teddlie & Tashakkori, 2009).

2.5 Qualitative Data Collection Procedures: Criteria and Protocols

Formal approval from the Ethics Committee in Human Research, at the National Institute of Public Administration, Thailand was obtained before conducting the interviews. Before the interviews, one or more "gatekeepers" from each group or insiders were contacted through which each of the 12 selected participants were contacted by email, phone, and/or with internet calls to set the interview place, date, and time. The sites of the interviews were preferably the participants' own office premises as this was helpful for them to see official documents if necessary to answer any question (if any of them were likely to see their policy documents).

Then, in-depth interviews were also conducted if face-to-face interviews could not be conducted due to the

pandemic situation, and phones calls and/or over-the-internet/video calls were applied. The interviews were mainly recorded using a tape recorder and prior written consent was received from the participant. If the interview could not be recorded for any reason, then the interview was written down. However, notes were always taken. Interview protocols were maintained that “enabled a person to take notes during the interview about the responses of the interviewee” (Creswell, 2013, p. 126).

No video recording was conducted, and no photograph of any participant was captured. However, privacy, confidentiality, and anonymity were never breached, even though all of the participants were between 25 to 59 years of age.

2.6 Qualitative Data Analysis: Thematic Analysis

Thematic analysis was applied for the qualitative data analysis. Holliday (2002) proposes that “the process of making sense of, sifting, organizing, cataloguing, selecting, determining themes, processing the data” (Holliday, 2002, p. 98); hence, qualitative data analysis comprised the whole range of processes and procedures undertaken by the researcher with the purpose of moving from the raw interviewed data or audio-recorded data to the qualitative data for making inferences.

2.7 Triangulations and Interferences

The following techniques were applied to integration of two independent approaches (Quantitative and Qualitative) for ensuring the homogeneity of mixed methods research: i) Integration of the quantitative and qualitative findings into the final discussion and drawing inferences that reflect both. ii) Integration of findings from quantitative study into the interview protocol of its qualitative study.

3. Analyses, Discussions and Results

3.1 Tests of 5 Assumptions of the Models Before Regression Analyses

The following techniques were applied to confirm that the data fulfilled all of the assumptions of the regression analysis:

i) Normality and linearity were tested using a histogram, normal P-P Plot of standardized regression residuals, and a scatterplot of standardized regression residual and standardized residual predicted value. The Kolmogorov-Smirnov test and/or Shapiro-Wilk test having a p-value greater than 0.05 shows normality. Skewness should not exceed ± 1.0 , and better be within ± 0.5 . The Kurtosis should not exceed ± 3.0 . Nonetheless, Hair, Black, Babin, and Anderson (2019) suggests that the most commonly used critical value of kurtosis and skewness test is (± 2.5). ii) For the multicollinearity test, the general accepted level is a tolerance value up to .10, corresponding to a VIF of 10 (Hair et al., 2019). iii) The correlation matrix has been used to investigate whether the variables have strong correlations. The measures of central tendency and the correlation matrix were conducted before conducting the regression analyses. iv) The Durbin-Watson test and the Breush-Pagan test were carried out to check the presence of autocorrelation (serial correlation) and heteroscedasticity respectively. For the Durbin-Watson test, the value = 2.00 is considered as having no autocorrelation, a test value < 2.00 is a positive autocorrelation, a test value > 2.00 is a negative autocorrelation. However, the Durbin-Watson test value between 1.50 and 2.50 is considered as having no autocorrelation, whereas the values particularly higher than 3.0 or smaller than 1.0 are a clear indication of the presence of autocorrelation (Profillidis & Botzoris, 2019). On the other hand, the Breush-Pagan test having a p-value greater than 0.05 is considered as a regression model having homoscedasticity.

Table 4. Test of assumptions of model for regression analyses

Model	Normality and Linearity Test	Multicollinearity Test	Autocorrelation (Serial Correlation) Test	Heteroscedasticity Test	Decision
Model 1	Accepted	No Multicollinearity	Slightly negative	No Heteroscedasticity	Accepted
Model 2	Accepted	No Multicollinearity	No Autocorrelation	No Heteroscedasticity	Accepted
Model 3	Accepted	No Multicollinearity	No Autocorrelation	No Heteroscedasticity	Accepted
Model 4	Accepted	No Multicollinearity	No Autocorrelation	No Heteroscedasticity	Accepted
Model 5	Accepted	No Multicollinearity	No Autocorrelation	No Heteroscedasticity	Accepted
Model 6	Accepted	No Multicollinearity	Positive Autocorrelation	No Heteroscedasticity	Rejected
Model 7	Accepted	No Multicollinearity	No Autocorrelation	No Heteroscedasticity	Accepted
Model 8	Accepted	No Multicollinearity	No Autocorrelation	No Heteroscedasticity	Accepted
Model 9	Accepted	No Multicollinearity	No Autocorrelation	No Heteroscedasticity	Accepted
Model 10	Accepted	No Multicollinearity	No Autocorrelation	No Heteroscedasticity	Accepted

3.2 Bivariate Correlation Between Variables

Table 5. Correlation matrix for remittance inflows and independent variables

	LnREM	IDI	EGDI	GEF	RQ	POS	VAA	DE	PPRA	BFI	FD	IFR	EXR	UNR	RTC	POPG	INC
LnREM	1.00																
IDI	.873**	1.00															
EGDI	.881**	.913**	1.00														
GEF	0.38	0.25	0.37	1.00													
RQ	.562*	0.39	.562*	.672**	1.00												
POS	.824**	.874**	.828**	0.35	0.35	1.00											
VAA	-0.39	-0.747**	-0.636**	-0.06	0.04	-.613**	1.00										
DE	-0.18	-0.11	-0.21	-.564*	-.573*	-0.08	-0.02	1.00									
PPRA	.767**	.930**	.942**	0.22	0.37	.817**	-.792**	-0.02	1.00								
BFI	.893**	.973**	.872**	0.32	.484*	.841**	-.639**	-0.18	.850**	1.00							
FD	.914**	.860**	.819**	0.43	.675**	.772**	-0.37	-0.32	.718**	.938**	1.00						
IFR	-0.14	-0.502*	-0.32	0.29	0.33	-0.45	.752**	-0.35	-.525*	-0.39	-0.10	1.00					
EXR	.900**	.935**	.871**	0.26	0.40	.820**	-.626**	-0.11	.836**	.948**	.896**	-0.28	1.00				
UNR	.521*	.584*	.563*	-0.07	0.06	0.43	-.553*	-0.10	.555*	0.46	0.28	-0.44	0.47	1.00			
RTC	-0.42	-0.588*	-0.38	0.07	-0.02	-.493*	.491*	-.524*	-.537*	-.590*	-0.44	.584*	-.547*	-0.19	1.00		
POPG	-0.934**	-0.789**	-0.913**	-.565*	-.701**	-.784**	0.36	0.34	-.769**	-.785**	-.834**	0.04	-.791**	-.501*	0.24	1.00	
INC	.569*	.686**	.704**	-0.07	-0.05	.629**	-.675**	0.39	.802**	.551*	0.35	-.634**	.588*	.606**	-.527*	-.537*	1.00

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

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

3.3 Outcomes of Regression Analyses

A comparatively fit model (Model 1) has shown that the use of ICT or ICT development, the democratic system in the country (Bangladesh), and the constant have exerted significant and positive relationships with annual remittance inflows at the 99% confidence level. Nonetheless, government effectiveness, the number of recruiting agencies, and population growth rate have shown significant and negative relationships at the 95% confidence level, whereas unemployment rate does not have any significant relationship.

In another fit model (Model 2), the constant predictor, inflation rate, and voice and accountability have shown significant and positive relationships with annual remittance inflows at the 95% confidence level. Though it is a good model, the use of ICT does not have a significant relationship. On the other hand, unemployment rate and political stability have a positive and significant relationship with remittance inflows at the 90% confidence level. In a similar fit model (Model 7) in which EGDI was used as a predictor variable instead of IDI, the constant predictor, unemployment rate, political stability, the number of banks and FIs, and voice and accountability have

significant and positive relationships with annual remittance inflows at the 95% confidence level. The inflation rate has not shown a relationship. Nonetheless, at the 90% confidence level, the use of e-Government also has a significant relationship with remittance inflows.

A fit model (Model 3) in which the ICT development index was considered as a predictor variable, and unemployment rate, financial development, cash incentives, and the constant predictor have shown significant and positive relationships with remittance inflows at the 99% confidence level. This model has shown that the use of ICT, inflation rate, and regulatory quality do not have a significant relationship with remittance inflows. A similar fit model (Model 8), in which the e-Government development index was considered as a predictor variable instead of IDI, unemployment rate, inflation rate, financial development, cash incentives, and the constant predictor have shown significant and positive relationships with remittance inflows at the 95% confidence. Nonetheless, the use of e-Government itself and regulatory quality do not have significant relationships.

In one more model (Model 4), unemployment rate, government effectiveness, remittance transaction cost, financial development, the democratic system of Bangladesh, and the constant predictor have shown significant and positive relationships with remittance inflows at the 95% confidence level. This model is a good one though no significant relationship was shown between the use of ICT and inflation rate with remittance inflows. Nonetheless, remittance transaction cost should have a negative relationship with remittance inflows. On the other hand, another model (Model 9), where the e-Government development index was a predictor variable, unemployment rate, government effectiveness, remittance transaction cost, financial development, and the democratic system of Bangladesh have shown significant and positive relationships with remittance inflows at the 99% confidence level. Nonetheless, the use of e-Government and inflation rate do not have significant relationship with remittance inflows. Moreover, remittance transaction cost should have a negative relationship with remittance inflows of Bangladesh.

In another fit model (Model 5), the constant predictor, ICT development, unemployment rate, and voice and accountability have shown significant and positive relationships with annual remittance inflows at the 95% confidence level. Nonetheless, this fit model has shown that at the 90% confidence level, political stability also has a significant relationship with remittance inflows, although the exchange rate does not have any significant relationship. On the other hand, another similar fit model (Model 10) has shown that the use of e-Government along with the constant predictor, unemployment rate, exchange rate, and voice and accountability have shown significant and positive relationships with annual remittance inflows; nonetheless, inflation rate does not have a significant relationship, whereas at the 90% confidence level, political stability also has a significant relationship.

3.4 Demographic Profile of the Qualitative Interviewees

A total of 12 people were interviewed using a semi-structured questionnaire and using the interview plan mentioned in Table 3. It is shown in Table 6 that the percentage of male and female interviewees was the same. Forty-one-point seven percent of the interviewees were between 41 and 50 years, and only one person was below 30 years of age. Seventy-five percent were direct government employees involved at the policy implementation level.

Table 6. Demographic profiles of the interviewees

Attribute	Demographic Criterion	Frequency	Percent
Sex of the Respondent			
Sex	Male	6	50.0
	Female	6	50.0
Age of the Respondent			
Age Group	Between 25 years and 30 years	1	8.3
	Between 31 years and 40 years	4	33.3
	Between 41 years and 50 years	5	41.7
	Between 51 years and 59 years	2	16.7
Job Responsibility			
Job Responsibility	Senior bureaucrat (head of the office/wing)	2	16.7
	Mid-level/junior bureaucrat	4	33.3
	Government officer (such as Programmer, Assistant programmer, Assistant Director)	3	25.0
	High Level Executive/ Bank Executive	2	16.7
	Manager of Private agency	1	8.3
Organization			
Type of	Ministry/division/wing	4	33.3
Organization	Central Bank	1	8.3
	BMET/ BOESL/ DEMO	2	16.7
	Department/Field offices of ICT	3	25.0
	Private bank	1	8.3
	Private agency/Private organization	1	8.3
Total		12	100.0

3.5 Hypothesis Testing

After analyzing the regression equations, the following results have been derived for the hypotheses based on literature review and the available data in secondary sources

Table 7. Results of the hypothesis tests

Hypothesis	Description	Result	Remarks
H ₁	The use of ICT/e-Government is positively and significantly linked with remittance inflows in Bangladesh.	Accepted	IDI was mostly accepted, and EDGI was accepted partially.
H ₂	The unemployment rate is positively and significantly related to remittance inflows in Bangladesh.	Conditionally Accepted	It is positive with other predictors.
H ₃	Inflation rate is positively and significantly related to remittance inflows in Bangladesh.	Conditionally Accepted	It is positive with other predictors.
H ₄	Institutional quality in terms of either government effectiveness, regularity quality, or political stability is positively and significantly related to remittance inflows in Bangladesh.	Partially Accepted	Regularity quality was not accepted.
H ₅	The number of public and private recruiting agencies is positively and significantly related to remittance inflows in Bangladesh.	Rejected	It shows a negative relationship.
H ₆	The number of banks and financial institutions along with branches is positively and significantly related to remittance inflows in Bangladesh.	Conditionally Accepted	It shows a significant relationship with significant e-Government, political stability, and voice and accountability.
H ₇	Remittance transaction cost is negatively and significantly related to remittance inflows in Bangladesh.	Rejected	It shows a significant positive relationship.
H ₈	Cash incentive is positively and significantly related to remittance inflows in Bangladesh	Accepted	

3.6 Triangulation between QUAN and QUAL Findings

Triangulations between QUAN and QUAL has been conducted to compare the findings of the separate studies; this would ultimately help to answer the research questions.

Table 8. Triangulation between QUAN and QUAL

QUAL	QUAN	QUAN Findings confirmed by the Interviewees
Use of ICT/e-Government	IDI has direct positive effect on the remittance inflows though EGDI do not have relationship in the most the cases.	Confirmed
Government Effectiveness	It has shown negative relationship when number of recruiting agencies was employed as a predictor variable though it has shown positive relationship for other cases.	Confirmed
Political Stability	It shows positive relationship with remittance inflows.	Confirmed
Regulatory Quality	This predictor variable was considered with financial development and cash incentive, and it did not show significant relationship.	Not tested
Number of Recruiting Agencies	Number of recruiting agencies along with government effectiveness and population growth negative relationships with remittance inflows. This result goes against the claim in the hypothesis.	Confirmed
No. of banks and FIs	This predictor variable has positive effect on remittance inflows in presence of the effects of e-Government, political stability and voice and accountability.	Confirmed
Financial Development	Positive effects on remittance inflows in presence of predictor variable either cash incentive or remittance transaction cost.	Confirmed
Cash incentives	Positive effect on remittance inflows in presence of significant value of financial development.	Confirmed
Remittance Transaction Cost	Shown Positive relationships with remittance inflows in presence of significant value of financial development. Have not satisfied the hypothesis.	Confirmed
Exchange Rate	This predictor variable has positive effect on remittance inflows in presence of the effects of e-Government, political stability and voice and accountability.	Confirmed
Democracy	Positive effect on remittance inflows.	Not tested
Voice and Accountability	Positive effect on remittance inflows in fit models.	Confirmed
Unemployment Rate	In the most of cases unemployment rate has positive effect on remittance inflows.	Unemployment Rate
Inflation Rate	Sometimes inflation rate has effect (positive) on remittance inflows	Inflation Rate

4. Discussions and Conclusions

After hypothesis test and triangulation following issues can be discussed:

1) *Effects of ICT/e-Government on Remittance Inflows*

The use of ICT/e-Government has shown a significant positive effect on the remittance inflows of Bangladesh. The use of ICT or ICT development index has shown a positive and significant relationship directly with the remittance inflows in Bangladesh. Moreover, all interviewees also expressed their ideas that the use of ICT/e-Government has positive effect on the remittance inflows in Bangladesh.

Nonetheless, in presence of remittance transaction cost or cash incentive, the use of ICT (ICT development index) or e-Government (e-Government development index) has not shown any significant direct impact on the remittance inflows in Bangladesh. Ahmed and Martínez-Zarzoso (2016) argue that even if there is higher remittance transaction cost, the remittance inflows increase due the cash incentive for the use of ICT.

On the other hand, in presence of political stability, number of banks and financial institutions, unemployment rate,

and voice and accountability, the use of e-Government has positive effect on remittance inflows. The interviewees also endorsed that, if there are higher number of banks and branches, there would be higher remittance inflows as more households can directly receive the remittances. Moreover, Emara and Zhang (2021) consider that e-Government development index is very much related to household digitization. Amjad et al. (2013) also demonstrate that, in Pakistan, Philippines and Bangladesh, remittance inflows can be increased by adding higher number of branches of banks, financial institutions, post offices and/or exchange companies in different physical locations to receive remittances.

Moreover, the use of e-Government along with exchange rate, unemployment rate, and voice and accountability have significant and positive effects on annual remittance inflows in Bangladesh. Some interviewees also claimed that, in case of higher exchange rate in banks, migrant workers send more remittances using formal channels; hence, remittance inflows increase. Scholars opine that the exchange rate or the appreciation of the local home currency against the dollar causes an increase in remittance inflows (Guetat & Sridi, 2017). Additionally, Asad et al. (2016) propose that unemployment rate in home country induces the workers to go abroad for overseas employment.

Above all, it can be concluded the use of ICT/e-Government has positive effect on remittance inflows of Bangladesh.

2) Number of Recruiting Agencies

The outcome of triangulation has shown that the number of public and private recruiting agencies along with government effectiveness and population growth negative relationships with remittance inflows whereas the use of ICT and democratic system have shown positive impact on remittance inflows in Bangladesh; this was against the hypothesis. The interviewees also opined that, though the number of recruiting agencies are increasing every year in Bangladesh, they cannot help much to increase remittances; due to the syndicate and monopoly among some recruiting agencies, other agencies cannot recruit more for overseas employment. Nonetheless, they claimed that the remittance inflows in Bangladesh show increasing trends. Scholars of migration studies, Siddiqui et al. (2019) endorse the claim as they consider due to the monopoly in recruitment, some recruiting agencies in the process of recruitment create problems.

3) Number of Banks and FIs, Financial Development, Cash Incentive, Remittance Transaction Cost

The result of regression analysis has proved that the number of banks and FIs along with the use of e-Government, unemployment rate, political stability, and voice and accountability have significant and positive effects on the annual remittance inflows in Bangladesh. The interviewees that were bank executives and senior bureaucrats also opined that the higher number of bank branches helps to increase remittance inflows in Bangladesh. This result supports the argument of Amjad et al. (2013) that the remittance inflows can be increased by adding higher number of branches of banks, financial institutions. Above all, the results show that the number of banks and FIs along with the use of e-Government, political stability and voice and accountability has effect on the remittance inflows in Bangladesh.

Regression analyses have shown that cash incentives along with financial development has positive effects on remittance inflows in Bangladesh. Scholars also opine that financial development is an important factor which makes remittances inflows easier and inexpensive, therefore stimulating the remittance inflows through official channels (Freund & Spatafora, 2008; Singh, Haacker, Lee, & Goff, 2011; Singh, Lee, & Haacker, 2009).

The research findings have shown that remittance transaction cost in Bangladesh is still increasing though remittance inflows are also increasing. Nonetheless, Aggarwal et al. (2011) finds that financial development may help to lower the remittance transaction cost of remittance inflows and may lead to higher remittance inflows. Ahmed and Martínez-Zarzoso (2016) argue that the even if there is higher remittance transaction cost, the remittance inflows increase due the cash incentive and/or the use of ICT.

4) Effects of Institutional Quality along with other variables on Remittance Inflows

In this research the predictor variable institutional quality has been analysed with the use of secondary data and interview data. Mainly three variables have been employed as proxies of the variables “institutional quality”, those are: political stability, government effectiveness and regulatory quality. The outcome triangulation of QUAN and QUAL data has shown that political stability and government effective have significant relationship with remittance inflows though regulatory quality has not shown any significant relationship.

The triangulation has shown negative relationship between government effectiveness and remittance inflows when the number of recruiting agencies was also employed as a predictor variable though it has shown positive relationship for other cases. Lartey and Mengova (2016) and Ruiz et al. (2009) also support that government

effectiveness may have negative effect on remittance inflows due to poor institutional environment.

All cases have shown that political stability has a positive effect on the remittance inflows in presence of the use of ICT/e-Government, exchange rate or number of banks though the confidence level varies. Scholars such as Ahmed and Martínez-Zarzoso (2016) also endorse that claim that political stability indicator as a proxy for institutional quality, has positive impact on remittance inflows with other predictor variables.

5) National ICT Policy and Overseas Employment Policy of Bangladesh

Interviewees told that both National ICT Policy and Overseas Employment Policy of Bangladesh are good to increase the number of migrant workers as well as remittance inflows, but these policies need to be executed and implemented properly. On other hand, scholars opine that the ICT and digitalization-led e-Government can ensure ethical recruitment processes conducted by recruiting agencies and supported by Overseas Employment Policy 2016 of Bangladesh and number of legalized migrant workers will be increased that leads to a higher remittance inflow (Barkat, Hossain, & Hoque, 2014; Paul et al., 2019).

4.1 Limitations of the Study and Future Study

Secondary quantitative data was used for linear multiple regression analyses and model equations were employed for these analyses. These analyses could have been conducted using multistage or multi-level regression analysis with intervening variables.

Primary survey data could be collated for establishing the relationship between ICT/e-Government and remittance inflows and other variables.

This research ultimately recommends policy suggestions to the Government of Bangladesh to the use of ICT/e-Government and digital technology effectively in recruitment of workers for overseas employment and for financial inclusion to receive remittances through formal channels.

4.2 Policy Implications

This article ultimately recommends policy suggestions to use ICT/e-Government and digital technology effectively in recruitment of workers for overseas employment.

A. Enhanced Use of ICT/e-Government

The Government of Bangladesh must follow the International Standard Classification of Occupations (ISCO) and must use the ICT/e-Government properly to increase the number of overseas employments. Hence, the remittance inflows would be increased through higher number of migrations.

B. Reformation of Fiscal Sector and Increasing Numbers of Bank Branches

The reformation of the financial sector of Bangladesh is required for financial development. The exchange rate in banks can be made lower through financial development. The Central Bank and the Ministry of Finance of Bangladesh should strengthen their policy measures to enhance financial development. The number of banks and financial institutions along with branches should be increased and ICT based banking or Digital Banking systems must be enhanced to encourage the use of formal channels

C. Policy Improvement for Sustainable Development, Remittance Transaction Cost, Cash Incentive

Policies should be improved to meet the goal of SDGs to reduce the remittance transaction cost for increasing remittance inflows and welfare of the families of migrant workers. The Bangladesh Bank should review its monetary policy to reduce remittance transaction cost; it should monitor and control the exchange rate to reduce remittance transaction cost. The current rate of cash incentives to use formal banking channels should be continued.

References

- Abbas, F., Masood, A., & Sakhawat, A. (2017). What determine remittances to Pakistan? The role of macroeconomic, political and financial factors. *Journal of Policy Modeling*, 39(3), 519-531.
- Agbegha, V. O. (2006). *Does political instability affect remittance flows?* (Master of Arts in Economics). Vanderbilt University, Nashville, Tennessee, USA.
- Aggarwal, R., Demirgüç-Kunt, A., & Peria, M. S. M. (2011). Do remittances promote financial development? *Journal of development economics*, 96(2), 255-264.
- Ahmed, J., & Martínez-Zarzoso, I. (2016). Do Transfer Costs Matter for Foreign Remittances? A Gravity Model Approach. *Economics*, 10(1), 1-37. d
- Amjad, R., Irfan, M., & Arif, G. M. (2013). How to increase formal inflows of remittances: An analysis of the

- remittance market in Pakistan. [Working Paper]. London, UK: A joint publication of Lahore School of Economics (LSE), International Growth Center (IGC) and the Pakistan Institute of Development Economics (PIDE).
- Anarfo, E. B., Amewu, G., & Dzaha, G. C. (2020). Financial inclusion and migrant remittances in Sub-Saharan Africa: a panel VAR approach. *International Journal of Social Economics*, 47(7), 809-829.
- Aquaro, V., Korekyan, A., Reci, E., Susar, D., Soares, D., Alarabiyat, A., . . . Mihov, M. (2020). *E-Government Survey 2020: Digital Government in the Decade of Action for Sustainable Development -With addendum on COVID-19 Response*, New York, USA. Retrieved from <https://publicadministration.un.org>
- Asad, M., Haider Hashmi, S., & Yousaf, S. (2016). Nexus between workers' remittances, unemployment, labor migration and economic growth in Pakistan. *International journal of organizational leadership*, 5(4), 360-379.
- Babbie, E. R. (2010). *The practice of social research* (12th ed.). Belmont, Calif: Belmont, Calif: Wadsworth Cengage.
- Balkenhol, B. (2006). Recruitment bureaux and money transfer agencies: Similarities and differences. In C. Kuptsch (Ed.), *Merchants of labour*. Geneva: International Institute for Labour Studies, ILO
- Barkat, A., Hossain, M. I., & Hoque, E. (2014). *The Cost Causes of and potential redress for high recruitment and migration costs in Bangladesh*. Dhaka, Bangladesh. Retrieved from https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-dhaka/documents/publication/wcms_303633.pdf
- Barro, R. J. (1999). Determinants of Democracy. *Journal of Political Economy*, 107(S6), S158-S183.
- Baruah, N. (2006). The regulation of recruitment agencies: Experience and good practices in countries of origin in Asia. In C. Kuptsch (Ed.), *Merchants of labour*. Geneva: International Institute for Labour Studies, ILO.
- BB. (2020). *Annual Report (July 2019-June 2020)*. Dhaka, Bangladesh. Retrieved from <https://www.bb.org.bd/en/index.php/publication/publicitn/0/2>
- BB. (2021). *Bangladesh Bank Quarterly (April 2021-June 2021): Economic and Financial Developments*. Dhaka, Bangladesh. Retrieved from <https://www.bb.org.bd/en/index.php/publication/publicitn/0/2>
- Begum, M. N., & Sutradhar, R. R. (2012). *Behaviour of remittance inflows and its determinants in Bangladesh (Bangladesh Bank Working Paper No. 1202)*. Dhaka, Bangladesh. Retrieved from <https://www.bb.org.bd/pub/research/workingpaper/wp1202.pdf>
- BMET. (2022a). *Bureau of Manpower Employment and Training (BMET), Government of Bangladesh*. Retrieved from <http://bmet.portal.gov.bd/>
- BMET. (2022b). *Overseas Employment & Remittances (1976 to 2022)*. Dhaka, Bangladesh. Retrieved from <http://www.old.bmet.gov.bd/BMET/viewStatReport.action?reportnumber=24>
- Catrinescu, N., Leon-Ledesma, M., Piracha, M., & Quillin, B. (2009). Remittances, Institutions, and Economic Growth. *World development*, 37(1), 81-92. <https://doi.org/10.1016/j.worlddev.2008.02.004>
- Coase, R. H. (1937). The nature of the firm. *Economica*, 4(16), 386-405.
- Creswell, J. W. (2013). *Qualitative inquiry and research design: choosing among five approaches* (3rd ed.). Los Angeles: Los Angeles: SAGE Publications.
- Emara, N., & Zhang, Y. (2021). The non-linear impact of digitization on remittances inflow: Evidence from the BRICS. *Telecommunications Policy*, 45(4), 102112. <https://doi.org/10.1016/j.telpol.2021.102112>
- Ferreira, J.-P., Lahr, M., Ramos, P., & Castro, E. (2020). Accounting for global migrant remittances flows. *Economic Systems Research*, 32(3), 301-317.
- Field, T., Muller, E., & Lau, E. (Eds.). (2003). *OECD e-Government Studies: The e-Government Imperative*. Paris, France: OECD Publishing.
- Freund, C., & Spatafora, N. (2008). Remittances, transaction costs, and informality. *Journal of development economics*, 86(2), 356-366. <https://doi.org/10.1016/j.jdeveco.2007.09.002>
- Funke, M., & Strulik, H. (2000). On endogenous growth with physical capital, human capital and product variety. *European Economic Review*, 44(3), 491-515.
- Gagliardi, F. (2008). Institutions and economic change: A critical survey of the new institutional approaches and

- empirical evidence. *The Journal of socio-economics*, 37(1), 416-443.
- Ghosh, A. R. (2002). *Exchange rate regimes: choices and consequences*. Cambridge, Mass.: Cambridge, Mass.: MIT Press.
- Giuliano, P., & Ruiz-Arranz, M. (2009). Remittances, financial development, and growth. *Journal of development economics*, 90(1), 144-152.
- National Information and Communication Technology Policy 2018. (2018).
- Action Plan for the Implementation of the Expatriates' Welfare and Overseas Employment Policy, 2016. (2019).
- GOB. (2020). *Making Vision 2041 a Reality: Perspective Plan of Bangladesh 2021-2041*. Dhaka: Bangladesh Planning Commission, Ministry of Planning: The People's Republic of Bangladesh (GOB) Retrieved from http://plancomm.gov.bd/sites/default/files/files/plancomm.portal.gov.bd/files/10509d1f_aa05_4f93_9215_f81fcd233167/2020-08-31-16-08-8f1650eb12f9c273466583c165a315a4.pdf
- Guetat, I., & Sridi, D. (2017). Institutional quality effect on remittances in MENA region. *Middle East Development Journal*, 9(1), 84-100.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Upper Saddle River, NJ: Prentice Hall.
- Holliday, A. (2002). *Doing and writing qualitative research*. London, UK & Thousand Oaks, California: SAGE.
- Ikpesu, F., Akinola, A., & A. Ikpesu, O. (2020). Remittance flows and banking sector development in emerging markets: Do institutions matter? *Journal of Transnational Management*, 1-12.
- IOM. (2009). *IOM and Remittances*. Geneva, Switzerland. Retrieved from https://publications.iom.int/system/files/pdf/iom_and_remittances.pdf
- Islam, M. N. (2011). *Migration from Bangladesh and Overseas Employment Policy*. Dhaka, Bangladesh.
- ITU. (2009). *Measuring the Information Society: The ICT Development Index*. Geneva, Switzerland: International Telecommunication Union (ITU) Retrieved from https://www.itu.int/en/ITU-D/Statistics/Documents/publications/mis2009/MIS2009_w5.pdf
- ITU. (2018). *Measuring the Information Society Report: (Volume 2: Country Profile)*. Geneva, Switzerland: International Telecommunication Union (ITU) Publications Retrieved from <https://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2018/MISR-2018-Vol-2-E.pdf>
- Kacou, K. Y. T., Kassouri, Y., Alola, A. A., & Altuntaş, M. (2022). Examining the sustainable development approach of migrants' remittances and financial development in sub-Saharan African countries. *Sustainable development (Bradford, West Yorkshire, England)*, 30(5), 804-816.
- Kamal, A. H. M. M. (2021). *National Budget Speech 2021-2022: Bangladesh Towards a Resilient Future Protecting Lives And Livelihoods*. Dhaka, Bangladesh: Finance Division (FD), Ministry of Finance, Government of Bangladesh Retrieved from https://mof.portal.gov.bd/sites/default/files/files/mof.portal.gov.bd/page/b29661b6_927f_4012_9f83_5ac47dbd6ebd/Speech%202021-22%20English%20Final%20Press.pdf
- Katz, R., & Callorda, F. (2018). Accelerating the development of Latin American digital ecosystem and implications for broadband policy. *Telecommunications Policy*, 42(9), 661-681. <https://doi.org/10.1016/j.telpol.2017.11.002>
- Kaufmann, D., Kraay, A., & Mastruzzi, M. (2010). *The Worldwide Governance Indicators: A Summary of Methodology, Data and Analytical Issues*.
- Kekic, L. (2007). *The Economist Intelligence Unit's index of democracy*. UK. Retrieved from https://www.economist.com/media/pdf/DEMOCRACY_INDEX_2007_v3.pdf
- Klievink, B., & Janssen, M. (2009). Realizing joined-up government - Dynamic capabilities and stage models for transformation. *Government information quarterly*, 26(2), 275-284.
- Kovacheva, S., Popivanov, B., & Burcea, M. (2019). (Self-)Reflecting on International Recruitment: Views on the Role of Recruiting Agencies in Bulgaria and Romania. *Social inclusion*, 7(4), 49-59.
- Lartey, E. K. K., & Mengova, E. (2016). Does Institutional Quality In Developing Countries Affect Remittances? *The Journal of developing areas*, 50(1), 59-76.
- Mallick, H. (2017). Determinants of workers' remittances: An empirical investigation for a panel of eleven

- developing Asian economies. *The World Economy*, 40(12), 2875-2900. <https://doi.org/10.1111/twec.12519>
- Martin, P., & Sirkeci, I. (2017). Recruitment, remittances, and returns. In K. A. Reinert (Ed.), *Handbook of Globalisation and Development* (pp. 312-330). Cheltenham, UK: Edward Elgar Publishing.
- Maydom, B. (2017). *Migrant remittances and democracy*. (Ph.D.). University of Oxford (United Kingdom), Ann Arbor. Retrieved from <https://www.proquest.com/dissertations-theses/migrant-remittances-democracy/docview/2341348534/se-2?accountid=44809>
- Mitnick, B. M. (1975). The Theory of Agency: The Policing "Paradox" and Regulatory Behavior. *Public Choice*, 24(1), 27-42.
- Mitnick, B. M. (2021). The Theory of Agency Redux. *Academy of Management discoveries*, 7(2), 171-179.
- MoEWOE. (2022). *Ministry of Expatriates' Welfare and Overseas Employment* (MoEWOE). Retrieved from <https://probashi.gov.bd/site/page/69b716ae-5555-4eec-b003-73d2320c4d0a/About-MoEWOE>
- Nabli, M. K., & Nugent, J. B. (1989). *The new institutional economics and development: theory and applications to Tunisia*. Amsterdam: North-Holland.
- Nepal, S., Park, S. W., & Lee, S. (2020). Impact of remittances on economic performance in consideration of institutional quality: Evidence from Asian developing economies. *Journal of economic studies (Bradford)*, 47(3), 479-507.
- North, D. C. (1990). *Institutions, Institutional Change and Economic Performance*. New York: Cambridge University Press.
- Ojo, A., Janowski, T., & Estevez, E. (2011). Whole-of-government approach to information technology strategy management: Building a sustainable collaborative technology environment in government. *Information polity*, 16(3), 243-260.
- Oladipo, O. S. (2020). Migrant Workers' Remittances And Economic Growth: A Time Series Analysis. *The Journal of developing areas*, 54(4), 75.
- Paul, M., Alam, K., & Islam, M. S. (2019). Behind Successful And Unsuccessful Overseas Migration: What Matters? A Case Study Of Bangladesh. *Innovative issues and approaches in social sciences*, 12(1).
- Perkins, D. H., Radelet, S., Lindauer, D. L., & Block, S. A. (2013). *Economics of Development* (7th ed.). London: W. W. Norton and Company, Inc.
- Presbitero, A. F. (2006). Institutions and geography as sources of economic development. *Journal of International Development*, 18(3), 351-378.
- Profillidis, V. A., & Botzoris, G. N. (2019). Chapter 7 - Econometric, Gravity, and the 4-Step Methods. In V. A. Profillidis, & G. N. Botzoris (Eds.), *Modeling of Transport Demand* (pp. 271-351): Elsevier.
- Pv, G. K., & Lorsuwanarat, T. (2018). The Determinants to Foster Innovation Performance from a Sustainable Development Perspective. *Thai Journal of Public Administration*.
- Rahman, M. M. (2011). *Recruitment of Labour Migrants for the Gulf States: The Bangladeshi Case*. Singapore.
- Rahman, M. M. (2012). Bangladeshi labour migration to the Gulf states: patterns of recruitment and processes. *Canadian Journal of Development Studies*, 33(2), 214-230.
- Ratha, D. (2006). *Leveraging remittances for development*. Dallas, Texas: Federal Reserve Bank of Dallas Proceedings
- Rother, S. (2009). Changed in Migration? Philippine Return Migrants and (Un)Democratic Remittances. *European journal of East Asian studies*, 8(2), 245-274.
- Ruhunage, L. K. (2006). Institutional monitoring of migrant recruitment in Sri Lanka. In C. Kuptsch (Ed.), *Merchants of labour* (pp. 53-61). Geneva: International Institute for Labour Studies, ILO
- Ruiz, I., Shukralla, E., & Vargas-Silva, C. (2009). Remittances, institutions and growth: a semiparametric study. *International Economic Journal*, 23(1), 111-119.
- Russell, S. S. (1986). Remittances from international migration: A review in perspective. *World development*, 14(6), 677-696.
- Sagarik, D., Chansukree, P., Cho, W., & Berman, E. (2018). E-government 4.0 in Thailand: The role of central agencies. *Information polity*, 23(3), 343-353.

- Siddiqui, T. (2004). Efficiency of migrant workers' remittance: the Bangladesh case. *Asian Development Bank, Manila*.
- Siddiqui, T. (2011). *Labour Migration from Bangladesh 2010: Achievements and Challenges*. Dhaka, Bangladesh. Retrieved from <http://www.rmmru.org/newsite/publications/migration-trends-report/>
- Siddiqui, T. (2020). *Labour Migration from Bangladesh 2019: Achievements and Challenges*. Dhaka, Bangladesh. Retrieved from <http://www.rmmru.org/newsite/publications/migration-trends-report/>
- Siddiqui, T. (2021). *Labour Migration from Bangladesh 2020: Achievements and Challenges*. Dhaka, Bangladesh. Retrieved from <http://www.rmmru.org/newsite/publications/migration-trends-report/>
- Siddiqui, T. (2022). *Labour Migration from Bangladesh 2021: Achievements and Challenges*. Dhaka, Bangladesh. Retrieved from <http://www.rmmru.org/newsite/publications/migration-trends-report/>
- Siddiqui, T. (Ed.) (2021). *The Other Face of Globalisation: COVID-19, International Labour Migrants and Left-behind Families in Bangladesh*. Dhaka, Bangladesh: Refugee and Migratory Movements Research Unit (RMMRU).
- Siddiqui, T., & Abrar, C. R. (2019). *Making Dalals Visible: Towards Transparency in Recruitment* (1st ed., pp. 1-144). Retrieved from <http://www.rmmru.org/newsite/publications/e-book/>
- Siddiqui, T., Anas, M. A. U., Basar, M. A., & Lock, T. B. (2016). *Labour Migration from Bangladesh 2015: Achievements and Challenges*. Dhaka, Bangladesh. Retrieved from <http://www.rmmru.org/newsite/publications/migration-trends-report/>
- Siddiqui, T., & Chowdhury, R. A. (2003). *Migrant Worker Remittances and Micro-Finance in Bangladesh*. Retrieved from http://ilo.org/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_117970.pdf
- Siddiqui, T., Sultana, M., Nasrin, R., & Akhter, S. (2019). *Labour Migration from Bangladesh 2018: Achievements and Challenges*. Dhaka, Bangladesh. Retrieved from <http://www.rmmru.org/newsite/publications/migration-trends-report/>
- Sikiru, O. I. (2021). *Macroeconomic and Institutional Determinants of Remittances Inflows into Sub-Saharan African*. ProQuest Dissertations Publishing, (18/27/MFI020)
- Singh, R. J., Haacker, M., Lee, K.-w., & Goff, M. L. (2011). Determinants and Macroeconomic Impact of Remittances in Sub-Saharan Africa. *Journal of African Economies*, 20(1), 312–340. Retrieved from <http://mh.devgro.com/papers/singhhaackerleelegoff2011.pdf>
- Singh, R. J., Lee, K.-w., & Haacker, M. (2009). Determinants and Macroeconomic Impact of Remittances in Sub-Saharan Africa. *IMF working paper*, 9(216), 1.
- Stratan, A., & Chistruga, M. (2012). Economic Consequences of Remittances. Case of Moldova. *Procedia Economics and Finance*, 3, 1191-1195. [https://doi.org/10.1016/S2212-5671\(12\)00295-X](https://doi.org/10.1016/S2212-5671(12)00295-X)
- Teddle, C., & Tashakkori, A. (2009). *Foundations of mixed methods research: integrating quantitative and qualitative approaches in the social and behavioral sciences*. Thousand Oaks: Thousand Oaks: Sage Publications.
- Tengratanaprasert, T. (2022). Challenges of Administrative Simplification for Businesses and Citizens and Transition to One-stop e-Government Services. *Thai Journal of Public Administration*, 20(1), 85-85.
- Todaro, M. P. (2006). *Economic development* (9th ed.. ed.). Harlow, Essex: Harlow, Essex: Pearson/Addison Wesley.
- Todaro, M. P., & Smith, S. C. (2015). *Economic Development Twelfth Edition* (12th ed.). New Jersey: Pearson Education Inc.
- UN. (2006, October 23–26). *Definitions of Remittances* Paper presented at the Nineteenth Meeting of the IMF Committee on Balance of Payments Statistics, Frankfurt, Germany.
- UN. (2015). *Transforming our world: the 2030 Agenda for Sustainable Development*. New York, USA. Retrieved from <https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf>
- UN. (2022). *E-Government*. Retrieved from <https://publicadministration.un.org/egovkb/en-us/About/UNeGovDD-Framework>

- UNDP. (2002). *Human Development Report 2002: Deepening democracy in a fragmented world*. New York.
- Vasconcelos, P. D., Ponsot, F., Terry, D. F., & Vásquez, B. (2017). *Sending Money Home: Contributing to the SDGs, one family at a time*. Rome, Italy. Retrieved from <https://www.ifad.org/documents/38714170/40193429/Sending+Money+Home+-+Contributing+to+the+SDGs%2C+one+family+at+a+time.pdf/c207b5f1-9fef-4877-9315-75463fccfaa7?t=1537641888000>
- Velasco Arellano, S. (2021). Fintech, remittances and migrants' prosperity: A systematic review and exploration of the Mexican case. In London: Institute for Global Prosperity: UCL Institute for Global Prosperity.
- Vu, K. M. (2011). ICT as a source of economic growth in the information age: Empirical evidence from the 1996–2005 period. *Telecommunications Policy*, 35(4), 357-372. <https://doi.org/10.1016/j.telpol.2011.02.008>
- WB. (2015, 19 May). *e-Government*. Retrieved from <https://www.worldbank.org/en/topic/digitaldevelopment/brief/e-government>
- WB. (2021). *Defying Predictions, Remittance Flows Remain Strong During COVID-19 Crisis* [Press release]. Retrieved from <https://www.worldbank.org/en/news/press-release/2021/05/12/defying-predictions-remittance-flows-remain-strong-during-covid-19-crisis>
- WB. (2022a). Global Financial Development (GFD). *DataBank*. Retrieved from <https://databank.worldbank.org/source/global-financial-development>
- WB. (2022b). World Development Indicators (WDI): Popular Indicators. *DataBank*. Retrieved from <https://databank.worldbank.org/indicator/NY.GDP.PCAP.CD/1ff4a498/Popular-Indicators#>
- WB. (2022c). Worldwide Governance Indicators (WGI). *DataBank*. Retrieved from <https://databank.worldbank.org/source/worldwide-governance-indicators>
- Williamson, O. E. (1979). Transaction-cost economics: the governance of contractual relations. *The Journal of Law and Economics*, 22(2), 233-261.
- Yifu Lin, J., & Nugent, J. B. (1995). Institutions and Economic Development. In J. Behrman, & T. N. Srinivasan (Eds.), *Handbook of Development Economics* (pp. 2301-2370). Amsterdam: Elsevier B.V.

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).