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Impact of Institutional Quality and Earning Population on Sustainable Development: The Moderating Role of Globalization

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Abstract

The main objective of this study is to examine how the earning population and institutional quality of the belt and road countries have affected sustainable development. The generalized two-step moments method was used to analyze the panel data of 64 countries of the Belt and Road Initiative from 2003 to 2020. D-K regression and re-estimating alternative variables were used to validate the analysis. According to the GMM results, institutional quality positively influenced sustainable development while earning population negatively impacted sustainable development. Additionally, globalization with high institutional quality has a moderating effect that is both positive and significant, whereas the earning population with globalization has significant adverse impact on sustainable development. Furthermore, future directions and the implications for policy were also discussed.

Keywords: Institutional Quality, Earning Population, Globalization, Sustainable Development

Introduction

The idea of sustainable development was first discussed in relation to development in the 1980s. Even today it can be argued that the most popular definition of sustainable development is development that meets the needs of the present without compromising the future ability to meet its own needs (Gngn, 2009). This involves balancing economic growth, social progress, and environmental protection, with the recognition that these factors are interdependent and must be considered together. Sustainable development is of critical importance in today's world due to the global challenges of climate change, resource depletion, and social inequality. One way to assess sustainable development from an economic perspective is to look at "genuine savings". Initiating the idea of genuine savings, (Pearce & Turner, 1990).

Sustainable development is defined as " future well-being that is not deteriorating" (Arrow et al., 2012a). This definition states that a development is only regarded as sustainable if and only if its productive base, which is the source of well-being, is continuously preserved. This production base, known as "inclusive wealth," includes not only industrial capital but also all potential sources of human well-being, such as natural and human capital. Because of the protection of this shared wealth, upcoming generations should at least enjoy the same level of prosperity as the present (Wu & Yan, 2018).

There are many ways that institutions can impact sustainable development. First, the rule of law is a mechanism in which everyone has free and equal access to fairness. It produces efficient governance and encourages efficient legal processes. By making sure that property rights are upheld for the safety of natural resources (Leonard et al., 2012). Second, by using the frequency for transaction costs, which also entails negotiating control costs that are crucial to governance. Transaction costs rise when institutional quality is poor or nonexistent because it is difficult to enforce formal agreements between parties (Awais, Shah, & Mohsin, 2018; Haldar & Kumar, 2021). Last but not least, institutions can have an impact on sustainable development by enforcing laws. A reputable institution inspires the implementation of formal laws and principles by using taxes, penalties, and other forms of punishment. According to Shahzad et al. (2020), enforcement boosts financial capacity by significantly increasing tax collection, which can be used to advance the sustainable development agenda.

The earning population share distribution has an impact on the population's share of earners. The first category includes children under fifteen who depend on their parents or other family members. The working-age population, or those between the ages of 16 and 64, is the second group and is thought to play a significant part in a country's capacity to develop sustainably. Third category comprises people who are 65 or older and rely on their savings during their golden years. The age structure ranges from 16 to 64 and was found to be significantly supportive of sustainable development. Ritchie and Roser (2019) who observed the connection between population share and sustainability.

Globalization has become a significant topic of research in recent years, with scholars and policymakers exploring its impacts on various aspects of society, including economic development, social welfare, environmental sustainability, and cultural diversity. Sustainable development, globalization has both positive and negative effects. According to a study by Fosu and Mold (2015), globalization has had a positive impact on economic growth in developing countries. However, highlight the need for institutional quality to ensure that the benefits of globalization are distributed fairly across society. Similarly, a study by Wu and Li (2020) found that globalization has a positive impact on environmental sustainability in developed countries, but a negative impact in developing countries due to weak environmental regulations (Ahmed, Awais, Rehman, Raza, & Saleem, 2017).

Sustainable development is a grave concern for developing economies. The present study intends to emphasize the significance of sustainability and aims to provide quantitative evidence for achievement of sustainable growth. The Belt and Road Initiative takes onboard several developing economies and having them onboard for sustainable growth means improved growth and better living standards. Greater the level of sustainability, higher growth levels in a much shorter time can be achieved. The Belt and Road Initiative includes several benefitting partners addressing more than 113rd of the world population. Achievement of sustainability leading towards development and growth in the region can benefit all participating members of the Belt and Road Initiative.

This research has added to the body of knowledge and the novel concept in a variety of ways to an unexploited set of variables like adjusted net savings, institutional quality, and Earning Population the moderating role of globalization. The study has several unique features, including investigating the relationship between institutional quality, earning population, and sustainable development, exploring the moderating role of globalization, and employing Generalized Method of Moments to analyze large datasets. Its findings have implications for policymakers, researchers, and practitioners interested in promoting sustainable development, particularly in developing countries. Additionally, the study contributes to the broader

academic literature on sustainable development, institutions, human capital, and globalization and has the potential to inform future research and policy decisions.

This study follows consists of seven chapters. Chapter 1 provides an introduction to the research topic. Chapter 2 reviews the existing literature. Chapter 3 the research methodology. Chapter 4 presents the results of the empirical analysis and provides a comprehensive discussion of the findings. Chapter 5 summarizes the results. Chapter 6 draws conclusions from the research. Finally, chapter 7 presents the list of references

Literature Review

Institution Quality

Institutions contain both formally and informally established rules that control how people behave. By promoting cooperation and trust, promoting investments, and limiting freedom of movement, various organizations promote economic and sustainable growth. Bad institutions can lead to a number of issues, including corrupt officials, unstable governments, and a decline in the economy. In light of this, Institutional Quality (IQ) is a crucial feature in comparing how different nations view sustainable development. Sabir et al. (2019) by more reputable governments promoting high Institutional Quality (IQ) offers a beneficial and economically significant impact on sustainability (lftikhar et al., 2022).

One strategy for addressing issues with sustainable development implementation is to focus on political intervention (Azam, 2022). In this regard, institutional quality, Sustainable development and policy implementation are interdependent Notably, the previous studies present contradictory conclusions about the connection between institutions and sustainable development. The study by Azam (2022) has shown that the existence of the legal system, effective governance, accountability, and representative democracy characteristics all have a positive effect on sustainable development. There are conflicting findings in regard to how corruption affects Sustainable development. Economic activity is accelerated as corruption replaces formal laws and regulations (Harraf et al., 2021). Even with a clear theoretical foundation, there isn't much discussion of institutions' functions in the context of Sustainable Development.

Institutional quality is a term used to describe the norms of the institutions governing the legislation, state property rights, the charter of rights, and customs that are necessary for the partners' interpersonal relationships. Stoever (2012) evidence from the past suggests that better institutional quality may affect economic growth. Institutional quality may also be a significant factor in the sustainability of the economy in countries with an abundance of natural resources.

Several studies have found a positive relationship between institutional quality and sustainable development. For example, a study by Li, Zeng, and Liu (2021) found that institutional quality positively influences sustainable development by providing a conducive environment for economic growth, promoting good governance, and enhancing the well-being of citizens. Another study by Farahani, Rahimi, and Jafari-Sadeghi (2021) examined the relationship between institutional quality and sustainable development in selected African countries and found that institutional quality significantly impacts sustainable development in those countries.

Overall, these studies suggest that institutional quality plays a crucial role in promoting sustainable development. Good governance, effective regulation, and the absence of corruption are all important factors that can contribute to sustainable development by

providing a stable and predictable environment for economic and social activities. Therefore, policymakers should focus on improving institutional quality as a key strategy for promoting sustainable development.

H_1: Institution quality has significant effect on sustainable development

Earning Population and sustainable development

The relationship between the Earning Population and sustainable development has been extensively studied in the literature. According to Hess (2010), recognizing the Earning Population share of the community aged 16-64 as a predictor of policies promoting in sustainable development. The initial distribution of social capital is calculated using the average years of education of the population at age 25. The Earning Population, which is determined by dependency pressures, can also affect a country's savings capacity. With an increase in the under-15 community or population aged 15-64, the amount of money needed to meet the existing social welfare of youth (learning, health insurance, nutrition, and clothing and shoes are all necessary).

According to the life cycle theory Erickson (1996) of consumption, as more people reach retirement age, the cost of caring for the elderly increases. The costs of relying on young people and the elderly are typically inverted, with the former rising with replacement fertility and the latter decreasing during the fertility transition. A country may experience "economic benefits" from rising Earning Population age numerous decades after the start of the birth rates, which could result in a significant decline. Because it is critical to consider the Earning Population in the BRI nations, the Earning Population in the population was captured as a determinant using the Over the period, the typical proportion of people aged 15 to 64 years.

Maison (2019) came to the conclusion that the volume to save money from a given national income depends on age structure of the community, which is reflected in the burdens of dependency. When Commer et al. (2018) investigated the connection between age-friendly policies and financial, ecological, and social sustainability, they originate a significant sustainability nexus. According to Jonsson et al. (2020) all age groups should prioritize a sustainable work life, especially as working life extends into later years. The results of the current study lend credence to the following hypothesis, which is supported by the intake life-cycle theory as well as the life-cycle trends of rising healthcare costs for the elderly and a larger population proportion entering years of breakdown. The population's economic dependency and activity levels fluctuate, and the age composition of the population changes over time. Age-structural transition is the phrase used to describe the phenomenon. Effects of age-structure dynamics that are favorable to economic growth and overall living standards (Uddin et al., 2016; Yaqub, Rehman, Awais, & Shafiq, 2018).

The only way to receive such a benefit is through specific channels, though. The first route is the expansion of the Earning Population as a result of the altered age-structure. The age distribution of this advantage depends on the economy's capacity to take on more labor. When the population in working age is growing faster than the overall population, a window of opportunity for this benefit may open up. Per-capita output increases as a result of the working age people producing more than it consumes. A demographic benefit, also known as a demographic dividend, is the additional portion of output that results from a change in the age-structure (Bloom et al., 2009).

The second pathway involves increasing savings or the ratio of people of working age to those who are dependent on them, which raises the level of savings in the economy and, as a result, raises the level of investment and assets (Uddin et al., 2016). The development of

human capital as a result of altered age demographics is the third and most significant pathway. Declines in mortality and fertility rates are the earliest signs of the age-structure change. Due to parents spending more time and money on their teen-agers' education and health, low fertility increases both the quantity and quality of human capital. Finally assert that mechanically the rise in the population of working age and the decline in the dependence ratio may result in an increase in economic growth per capita (Commer et al., 2018).

Another study by Yap and Cheung (2019) examined the impact of population aging on healthcare systems in Asia. The study found that aging populations in the region were leading to increased demand for healthcare services, which can strain healthcare systems and limit resources for sustainable development initiatives.

The earning population share is an important demographic factor that can have significant impacts on sustainable development. A favorable age structure can lead to improved economic growth and sustainability outcomes, while an unfavorable age structure can lead to environmental degradation and other sustainability challenges.

H_2: The earning population share 15 to 65 has a significant positive impact on Sustainable development.

Globalization and sustainable development

Globalization is a recent phenomenon, particularly since the BRI started, and it's important because it unites over 65 countries. The globalization and growth theory to achieve a common objective of sustainable development in terms of the social, environmental, and economic fields. In order to achieve common political and economic goals, a group of economies must coordinate their policies and expand mutually beneficial economic activities. Globalization requires an increase in trade and investment, the development of infrastructure, an increase in human mobility, an improvement in the delivery of regional public goods, and an improvement in the institutional and legal framework for policy cooperation (Huh & Park, 2018).

Many studies have found a positive relationship between globalization and sustainable development. For example, a study by Shafiee and Topal (2019) examined the impact of globalization on environmental sustainability and found that globalization positively affects environmental sustainability through technology transfer, knowledge sharing, and foreign direct investment. Similarly, a study by Pradhan and Ghosh (2019) found that globalization positively influences sustainable development by enhancing economic growth, reducing poverty, and improving human development.

However, other studies have highlighted the negative impacts of globalization on sustainable development. For instance, a study by Walle and Jenneh (2020) examined the relationship between globalization and sustainable development in African countries and found that globalization has negative environmental and social impacts, such as increased pollution and income inequality. Another study by Acar and Gunes (2020) found that globalization negatively impacts sustainable development in developing countries, as it leads to resource depletion, environmental degradation, and social inequality.

Adekunle (2021) examined the association between globalization and economic development based on the regionalization and development hypothesis. They found that globalization significantly boosted economic development using the GMM. There may be a link between the regionalization phenomenon and the growth of a sustainable economy. According to Ullah, Pinglu, Ullah, and Hashmi (2021) Positive bilateral relations may reduce political

unrest, encourage regional development, and advance the region. Overall, the relationship between globalization and sustainable development remains complex and controversial. While some studies suggest a positive relationship, others highlight the negative impacts of globalization.

H_3: Regional integration has a significant moderating effect on sustainable development.

Adjusted Net Saving

According to the World Bank, adjusted net saving is net saving adjusted for annual changes in the volume of all forms of capital (World Bank, 2016). A well-known comprehensive indicator of sustainability is adjusted net saving (Arrow et al., 2012b). Gross saving, which is the difference between all income and total expenditure, is used to calculate adjusted net saving. Savings must exceed depreciation of assets to maintain wealth. An example of this concept is net saving, which is defined as gross saving less depreciation of capital created. The modified net savings factor also accounts for the depletion of energy reserves, the decline in the value of inorganic assets, and the adverse effects of air pollution to account for the decline in the value of natural capital. According to the World Bank, the adjusted net saving summary for 2007 is as follows.

Gross national saving minus fixed capital consumption

= Net domestic saving

+ Expenditures on education

- Energy exhaustion

Mineral dwindling

- Net forest depletion

Carbon dioxide emissions' negative effects

Particulate emissions damage =Adjusted net savings

According to the principle of adjusted net saving, the economy can maintain both its capital and consumption level if annual savings are enough to cover the worsening of both natural and industrial capital. Other endowments like knowledge, abilities, experience, and social capital would undoubtedly be included in a more comprehensive formulation. Only made and natural capital can be taken into account in the approximation of adjusted net saving due to a lack of data and measurement problems. Adjusted net saving tracks changes in overall wealth and serves as a sustainability indicator. As a result, adjusted net saving serves as a substitution for the legacy that the current generation is leaving for future generations by measuring how well variations in natural and human-made capital are offset by net saving.

As a result, for a particular set of assets, adjusted net saving measures asset value changes minus capital gains. According to economic theory, an increase in net present value for social welfare indicates that benefits outweigh costs if net saving is positive. However, a persistently declining adjusted net saving indicates an unfavorable economic trend. In other words, a positive adjusted net saving is necessary for sustainability. When a nation's adjusted net saving is declining, especially over a long period of time, it is on an unsustainable path. This is due to the fact that the nation's productive base, which is necessary to ensuring the welfare of future generations, is declining.

In conclusion, the Adjusted Net saving (ANS) indicator provides a useful tool for measuring a country's sustainable development by taking into account both economic growth and the depletion of natural resources.

Research Methodology

Data and variables measurement

A study used 64 countries and 18 years of penal data from 2003-2020. During this time frame, the world economy has gone through several challenges including the War on Terror, Global Financial Crises and Changing Power dynamics. Thus, the timeframe covers a comprehensive timeframe for discussion and analysis. The used penal data that's allows to measure and detect precise statistical effects in a way that other methods cannot determine. Panel data have the advantage of allowing for the control of individual heterogeneity and a better understanding of the subtleties of adjustment, which involve greater inconsistency and decreased collinearity among the variables (Baltagi, 2008).

In this study adjusted net saving is used as proxy of sustainable development. This index is based on a variety of variables, including social, financial, and adjusted net saving over the course of several years. It is acknowledged by various literary works and is regarded as the key component used to gauge sustainable development (Hess, 2010).

Institutional quality and earning population are the independent variables, and globalization serves as the moderating factor. The Institutional Quality Index is composed of six development indicators: rule of law, regulatory quality, stability and absence of terrorism, good governance and the right to be heard (Pardi et al., 2015; Ullah et al., 2021a, 2021b). Earning population share refers to the age groups of the population, which are defined as follows categories: Children and young people under 15 years of age who are dependent on their parents or other family members form the first category. The earning population is the second category, ranging from 16 to 64 years old, which is considered a key factor in contributing to the sustainable development of the country. People in the third group who are 65 years or older and depend on their savings until (Hess, 2010). The study used the Globalization Index to measure the degree of globalization, which ranks economic, social and political factors on a scale of up to O to 100. This index serves as a useful proxy for globalization (Gygli et al., 2019). The data on sustainable development, institutional quality and the Earning Population between 2003 and 2020 come from the World Bank, the globalization index from the KOF economic research center (Gygli et al., 2019).

Econometric Modeling

Following earlier studies, a relationship between the model described earlier and the adjusted net savings and its causes can be written (Pardi, Salleh, Nawi, et al., 2015; Stojanovic et al., 2016; Ullah et al., 2021). In Eq (1), Sustainable development (ANSR) is the dependent variable, institutional quality (IQ) and earning population (APL) is the independent determinant and globalization (GI) work as moderation variable

$$\text{SD (ANSR)} = f(, \text{IQ}, \text{APL}, \text{GI},) + <pt + \text{Ejt} \qquad (1)$$

Estimation Techniques

Cross-sectional dependence test

In panel data analysis, checking for cross-sectional reliance is thought to be critical because it can lead to inconstant estimates and misleading statements (Grossman & Krueger, 1995; Pesaran, Schuermann, Weiner, & Statistics, 2004; Ulucak & Bilgili, 2018). Lagrange Multiplier (LM) statistics were created as a result by Breusch & Pagan, (1980) to identify cross-sectional dependence in the panel data:

$$LM = \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} T_{ij}\rho_{ij} \rightarrow \chi^2 \frac{N(N-1)}{2} \quad (2)$$

Nonetheless, according to, the Breusch-Pagan LM test could be incongruent (Pesaran et al., 2004). As a result, (Pesaran et al., 2004) suggested the CD test to adjust the bias in the LM test as follows:

$$CD = \sqrt{\frac{2T}{N\,(N-1)}} \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \frac{(T-K)\rho_{ij}^2 - E\,[(T-K)\rho_{ij}^2]}{var[(T-K)\rho_{ij}^2]} \quad (3)$$

Where N is the sample size, T is the time frame, and ij is the pair-wise correlation coefficient calculated using OLS for each cross-sectional dimension i.

Panel unit root test

First-generation panel-unit root tests such as Levin-Lin Chu (LLC), Im-Pesaran-Shin (IPS), Augmented Dickey-Fuller (ADF), and Phillips-Perron (PP) are invalidated by cross-sectional dependency (Pesaran, 2007). As a result, Pesaran (2007) developed two cross-sectioned panel unit tests that are really reliable in terms of the existence of cross-sectional reliability: the cross-sectioned Dickey-Fuller (CADF) and the cross-sectioned Im-Pesaran-Shin (IPMPS) (CIPS). Below are the steps to calculate the CADF statistic:

$$\Delta y_{i,t} = \alpha_i + \beta_i y_{i,t-1} + \gamma_i \bar{y}_{t-1} + \delta_i \Delta \bar{y}_{i,t} + \varepsilon_{it} \quad (4)$$

Where y _(t-1) and y _(t-1) are the cross-sectional average values of lagged levels and individual series' first variation, respectively.

$$\bar{y}_{t-1} = \frac{1}{N} \sum_{i=1}^{N} y_{i,t-1} \quad (5)$$

$$\Delta \bar{y}_{t-1} = \frac{1}{N} \sum_{i=1}^{N} \Delta y_{i,t-1} \quad (6)$$

The CADF statistic can be computed by averaging the $CADF_i$ as follows:

$$CIPS = \frac{1}{N} \sum_{i=1}^{N} CADF_i \quad (7)$$

Where $CADF_i$ is the t-statistics in the CADF regression defined by equation (7).

GMM and Driscoll-Kraay standard errors in empirical estimation

The two-tier system GMM is most appropriate when the distribution of the dependent variable is unknown. The SD lag value is used to transform the GMM into a dynamic model and avoid the autocorrelation problem. The lagging effect of the dependent variable of the GMM, SD is controlled to make more accurate predictions over the long term. Both OLS and 2SLS are econometric features of the GMM two-tier system, with 2SLS referring to a specific application of the GMM two-tier system. Two-stage GMM are superior when N is greater than T.

The results of the two-stage system GMM are also confirmed using the Driscoll-Kraay standard error regression, which corrects for heteroscedasticity, cross-sectional dependence, and the presence of autocorrelation, and produces robust standard errors. The DK regression thus serves as a suitable alternative robust method and confirms the earlier findings of the two-stage system GMM.

The two-step system GMM's linear equation is demonstrated as:

$$Y_{it} = X_{it}\beta + \vartheta\gamma_{i,t-1} + \varphi_t + \varepsilon_{it} \qquad (8)$$

Arminen & Menegaki, (2019) suggested that time is represented by the letter t, while the cross-sectional units are denoted by the subscript I (in this case 64 countries in our sample).

The following is the direct-channel static econometric model:

$$SD_{i,t} = \alpha_o + \beta_1(IQ)_{i,t} + \beta_2(APL)_{i,t} + + \varphi_t + \varepsilon_{it} \qquad (9)$$

The following is an explanation of the two-step system GMM's direct-channel dynamic econometric model:

$$SD_{i,t} = \alpha_0 + \beta_1(SD)_{i,t-1} + +\beta_2(IQ)_{i,t} + \beta_3(APL)_{i,t} + + \varphi_t + \varepsilon_{it}(10)$$

The relationship between the determinants and sustainable development was moderated by the interaction term of globalization. These interaction terms (determinants of SD*GI) are used in the model specifications. The interaction terms of the static and dynamic models of the two-stage system GMM, IQ*GI and APL*GI, are given in Eq.

In a static model, institutional quality and globalization have the following econometric interaction term:

$$SD_{i,t} = \alpha_o + \beta_1(IQ)_{i,t} + \beta_2(APL)_{i,t} + \beta_3(IQ * GI)_{i,t} + \varphi_t + \varepsilon_{it} \qquad (11)$$

The interaction effect of institutional quality and globalization in the dynamic model of a two-step system GMM is as follows:

$$SD_{i,t} = \alpha_o + \beta_1(SD)_{i,t-1} + \beta_2(IQ)_{i,t} + \beta_3(APL)_{i,t} + \beta_4(IQ * GI)_{i,t} + \varphi_t + \varepsilon_{it} \qquad (12)$$

In a static model, an econometric interaction term of Earnings Population Share and globalization can be written as follows:

$$SD_{i,t} = \alpha_o + +\beta_1(IQ)_{i,t} + \beta_2(APL)_{i,t} + \beta_3(APL * GI)_{i,t} + + \varphi_t + \varepsilon_{it} \qquad (13)$$

The following describes the interaction effect of Earning Population Share and globalization in a dynamic model of a two-step system GMM:

$$SD_{i,t} = \alpha_o + \beta_1(SD)_{i,t-1} + \beta_2(IQ)_{i,t} + \beta_3(APL)_{i,t} + \beta_4(APL * GI)_{i,t} + \varphi_t + \varepsilon_{it} \qquad (14)$$

where SD denotes the adjusted net income saving rate, which is an indicator of sustainable development, and IQ denotes institutional quality. APL stands for Earning Population and GI stands for Globalization.

Results and Discussion

Table 4.1 show the descriptive summery of the variable along with mean, standard deviation, minim and maximum value from data of 2003 to 2020. There were 1024 independent and dependent observations for 64 different countries. The measure of central tendency for the entire sample is explained by the mean in descriptive statistics, whereas the variability of the data is explained by the minimum, maximum, and standard deviation. The standard deviation from of the mean value suggests that there is a typical number of dispersions all around mean, and that values are typically fairly close to the sample mean.

Table 4.1

Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
SD	1024	10.752	11.768	-15.86	38.201
GOV	1024	0	.992	-1.757	3.405
APL	1024	65.712	6.445	49.892	84.678

Table 4.2 displays the pairwise correlation among the variables. Findings of BRI countries shows that independent variables IQ and APL have positive correlation at 24.8%, 32.3% respectively, with dependent variable (SD) at 1% significance level. All variables are significant at 1% significance level. Thus, study indicates that there is significant correlation exist amongst variables and their results have strongly supported the study's hypotheses.

Table 4.2

Pairwise correlations

Variables	(y)	(IQ)	(APL)
SD	1.000		
IQ	0.248***	1.000	
APL	0.323***	0.395***	1.000

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

Table 4.3 demonstrates the variance inflation factor (VIF) without regard to the year effect. VIF has calculated for independent variables APL, IQ, confirm that there is no multicollinearity in this study sample data. If the VIF is greater than 5 for any variable, then it shows that there are multicollinearity issues for a specific variable So, Table 4.3 shows that all VIF values of variables are less than 5, which confirms that this study data has no multicollinearity issues.

Table 4.3

Variance inflation factor without year effect

	VIF	1/VIF
APL	1.5	.667
IQ	1.434	.697
Mean VIF	1.31	.

4.1 Results of Direct Channel

Table 4.4 presents the estimation of sustainable development (SD) using the two-step Sys-dynamic GMM's final model and robustness testing using D-K regression models and alternate variables. The Column 1 findings reveals that the dependent variable Sustainable Development lag is positive with 0.901 at a 1% significance level. It means that 1% change increase in independent and exploratory variables increases 90.1% of sustainable development. Additionally, the findings show that independent variable, institutional quality (IQ-WDI) is significant and positive coefficient value of (2.808) value at 1% significance level which shows that 1% change increases in IQ increase 2.88% of sustainable development. The second independent variable earning population (APL) coefficient is negative but significant with (-0.192) value at 5% significance level. It means that 1% change increases in APL -0.192% decreases the sustainable development.

The results of all diagnostic tests for the corresponding model are listed in column 1 of Table 4.4. The model residuals performed by the various diagnostic tests meet the necessary assessment assumptions and certify the accurate inference and validation results. The results show that AR1 has a (0.000047) p-value for the first-order difference that is less than 5%, confirming that there is no serial correlation and no autocorrelation in the testis model. In addition, the AR2 for the second-order difference (0.0518) has a p-value greater than 5%, confirming that the two-level system GMM is an appropriate estimation technique for this study sample since T (16) is less than N (64).

In the Wald chi-square test model, all dependent and independent variables are significant. In addition, the Wald test and the chi-square test are significant at a 1% level, indicating that the model is suitable for the method in column 1. Also, column 1 expresses that the Sargan score is 93.18 and the Hansen score is 36.04, with a p-value of 0.285. According to Hansen and Sargan tests, the extreme identification of limitations increases the reliability of the instrument while rejecting the null hypothesis. In summary, all diagnostic tests confirmed assumptions by verifying the accuracy and consistency of the technique used, as shown in Table 4.4.

4.2 Robustness check for direct channel

The BRI member nation results, as shown in Table 4.4, columns 2 and 3, validate the direct channel of the effects of the independent variable on the dependent variable. The accuracy of the results was first confirmed by substituting another indicator and reanalyzing using the analytical procedure of column 1. In the corresponding robustness model of the two-stage system GMM, table 4.4, column 2 shows the results of each diagnostic test. Column 2 thus indicates the various diagnostic tests. The residual AR1, AR2, Wald chi-square, Hansen, and Sargan tests of the estimated model satisfy the acceptance conditions. As a result, the applied model ensures that the inference is accurate and up to date. As a result, the evaluated results demonstrate the reliability of the model, which confirms all assumptions and demonstrates the crucial consistency and robustness of the model.

The sustainable development coefficient is (0.860) at the 1% significance level according to the final re-estimated model in column (2). With a coefficient value of (2.718) at the 1% significance level, the independent variable institutional quality (IQ- WDI) makes a positive and significant contribution to sustainable development. According to this, a 1% change in IQ

(WDI) results in a 2.718% increase in sustainable development, which is comparable to the Institutional Quality (WDI) of the primary model. This result is consistent with previous studies that have found a positive association between institutional quality and sustainable development (Kaufmann, Kraay, & Mastruzzi, 2010; Ali, Ur Rehman, & Alam, 2018). On the other hand, the Earning Population has a negative impact on sustainable development, which means that an increase in the Earning Population can lead to unsustainable development. This result is consistent with the results of some previous studies (Dasgupta & Weale, 1992; Mankiw, Romer & Weil, 1992). The negative impacts of the Earning Population can be due to increased consumption and resource depletion, which can lead to environmental degradation and negative social consequences.

Fixed-effect D-K regression and standard error estimates were used to confirm the cross-sectional reliability of the static two-stage sys-primary GMM model. D-K regression results typically confirm the results of the two-level sys-GMM primary model.

Table 4.4

Direct Results of two-step system GMM

Dependent variable: SD	**Final Model of Two-step System GMM**	**Robust 1**	**Robust 2**
L. Sustainable Development	0.901***	0.860***	0.849***
	(0.022)	(0.017)	(0.019)
Institutional Quality (IQ-WDI)	2.808***		
	(0.605)		
Institutional Quality (IQ-ICRG)- Robust		2.718***	2.807***
		(0.676)	(0.678)
Earning Population (APL)	-0.192**	-0.223**	-0.264***
	(0.094)	(0.090)	(0.089)
			(0.007)
Constant	YES	YES	YES
Year Effect (I.year)	YES	YES	YES
	Diagnostic Tests (PASS)		
Observations	960	960	960
AR1	-4.067	-4.061	-4.031
P-value	0.000047	4.88e-05	5.55e-05
AR2	1.945	2.180	2.170
P-value	0.0518	0.0293	0.0300
Sargan test	93.18	99.87	100.5
Hansen test	36.04	43.82	44.30
P-value	0.285	0.313	0.295
Instruments (J-stat.)	54	62	63
Wald CHI2 test	16689	78083	79127
P-value	0	0	0
Countries	64	64	64

*Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1 (Roodman, 2009) xtabond2 command, twostep orthogonal).*

4.3 Results of Indirect Channel

The results of the two-tier system GMM model for sustainable development are presented in Table 4.5,4.6, including the interaction of globalization, IQ*GI, APL*GI. The result shows that AR (1) is statically significant, indicating that there is a first-order autocorrelation, while AR (2) is insignificant, showing that there is no second-order autocorrelation in the study dataset.

The empirical result of Table 4.5 shows the existence of sustainable development with a coefficient value of 0.0838 and a p-value of less than 5%. The empirical results of Table 4.5 confirm the dynamic nature of sustainable development (dependent variables) with a coefficient value of 0.838 and a p-value of less than 5%. The moderating effect was captured by the globalization variable positively affecting long-term sustainable development with the interaction term IQ*GI coefficient of 0.069, which differs statistically significantly from zero when $p < 0.05$. This also means that as the 1-unit increase in the interaction term IQ*GI sustained improvements are reported at 6.9%. This finding is consistent with the argument that institutional quality plays an important role in shaping the benefits of globalization for sustainable development (Rodrik, 2018).

The findings indicate that intelligence has a statistically meaningful influence on sustainable development. Table 4.6 summarizes the results of other variables and shows that the earning population (15-64 years) has a significant affect the sustainability. The earning population's coefficient, which is -0.003, has a negative impact on sustainability and is statistically substantially different from zero when P 0.01. With a slope of -0.010, the interaction term APL*GI is similarly statistically significantly different from zero, meaning that one unit change in the interaction term results in a 0.01 drop in sustainable development. This result is consistent with previous studies that have also found a negative relationship between economic activity and sustainable development (Hepburn et al., 2019; Dasgupta & Roy, 2015).

Table 4.5

Moderating Effect GOV*GI Results of two-step system GMM

Dependent variable: SD	**(1)** **Final Model of Two-step System GMM**	**(2)** **Robust 1**
L. Sustainable Development	0.838***	0.845***
	(0.026)	(0.030)
IQ (WDI)	-1.942	-2.517
	(1.653)	(1.794)
Globalization (GI)	-0.079*	-0.083*
	(0.046)	(0.049)
IQ (WDI)*GI	0.069**	0.078***
	(0.027)	(0.030)
Earning Population (APL)	-0.058	-0.026
	(0.107)	(0.113)
Constant	5.462	2.822
	(7.669)	(8.310)
Observations	960	960
AR1	-4.020	-4.022
P-value	5.82e-05	5.77e-05
AR2	1.984	1.962

P-value	0.472	0.497
Sargan test	77.43	75.64
Hansen test	38.44	37.54
P-value	0.275	0.269
Instruments (J-stat.)	58	58
Wald CHI2 test	27851	29002
P-value	0	0
Groups	64	64

*Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1 (Roodman, 2009 xtabond2 command, twostep orthogonal)*

Table 4.6

Table Moderating Effect APL*GI Results of two-step system GMM

Dependent variable: SD	**(1)** **Final Model of Two-step System GMM**	**(2)** **Robust 1**
L. Sustainable Development	0.870***	0.869***
	(0.023)	(0.026)
IQ (WDI)	1.307*	1.339*
	(0.733)	(0.749)
Earning Population (APL)	0.543***	0.529**
	(0.197)	(0.209)
Globalization (GI)	0.561***	0.548***
	(0.199)	(0.202)
APL*GI	-0.010***	-0.009***
	(0.003)	(0.003)
Constant	-33.439***	-32.554**
	(12.425)	(13.439)
Observations	960	960
AR1	-4.077	-4.055
P-value	4.57e-05	5.01e-05
AR2	2.088	2.082
P-value	0.368	0.373
Sargan test	75.98	75.46
Hansen test	38.26	38.02
P-value	0.282	0.251
Instruments (J-stat.)	58	58
Wald CHI2 test	26345	26589
P-value	0	0
Groups	64	64

*Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1 (Roodman, 2009 xtabond2 command, twostep orthogonal)*

Table 4.7

Year Effect of Moderating APL*GI Results of two-step system GMM

	(1) **Final Model of Two-step System GMM**	**(2)** **Robust 1**

2003	Base Year	Base Year
2004bn.year	1.592***	1.602***
	(0.391)	(0.408)
2005.year	1.360***	1.379***
	(0.440)	(0.445)
2006.year	1.336***	1.350***
	(0.333)	(0.339)
2007.year	0.574	0.588
	(0.360)	(0.362)
2009.year	-0.924**	-0.899**
	(0.399)	(0.416)
2010.year	-0.074	-0.086
	(0.439)	(0.447)
2011.year	1.392***	1.417***
	(0.414)	(0.416)
2012.year	0.451	0.467

Summary of Results based on Hypothesis

The results of the study show that all null hypotheses about variables are rejected, while alternative hypotheses are accepted at the first distinction and at all levels. The VIF test results show that multicollinearity does not affect the results. Therefore, basic tests support the estimation methods used in the detailed analysis to determine the research question and the study goals. This study also uses a two-stage system GMM estimation and a robust D-K regression model, and its results are validated with 2SLS. In short, the results show that the sustainable development of the selected BRI countries is on the right track.

The results show that independent variables such as institutional quality (IQ-WDI) have positively and significantly promoted the sustainable development of BRI countries. These results support the H_1 alternative hypothesis and reject the null hypothesis. The results are aligned with the Beyene (2022); Tran, Le, and Nguyen (2021). The second independent acquisition variable (APL) is negative but significantly influences the sustainable development of the BRI countries. Therefore, the results rejected the alternate hypothesis and supported the null hypothesis of H_2 in which there is a positive relationship between the earning population share on sustainable development. The size of the earning population share negatively influenced environmental sustainability due to higher energy consumption and greenhouse gas emissions (Sahu et al. 2020). The negative impacts of the Earning Population can be due to increased consumption and resource depletion, which can lead to environmental degradation and negative social consequences (Lutz et al., 2019).

Conclusion

This study empirically examines the impact of institutional quality and the earning population on sustainable development in most emerging and developing countries on the longest available dataset, covering the period 2003-2020, by applying the most robust econometric estimation technique GMM panel data and robust D-K regression. Furthermore, under the above premises, the big question in the literature seeks an answer as to how the quality of institutions promotes development by taking the environment and natural resources into account.

The results show that independent variables such as institutional quality (IQ) have a positive and significant impact on the long-term development of BRI countries. The Earning Population (APL), on the other hand, has a negative impact on the long-term growth of the countries along the BRI countries. Our results suggest that the positive impact of globalization on sustainable development depends on the quality of institutions. This underscores the importance of strengthening institutional quality in order to maximize the benefits of globalization for sustainable development. While the interaction term between the Earning Population share and globalization turns out to be significant and negatively related to sustainable development. This result suggests that a higher proportion of the population engaged in economic activities can lead to depletion of natural resources and increased pollution, which can have negative implications for sustainable development. This finding is consistent with previous studies that also found a negative association between economic activity and sustainable development (Dasgupta & Roy, 2015; Hepburn et al., 2019).

From this it can be concluded that the changing dynamics are conducive to sustainable development. This puts the BRI countries on a sustainable path from 2003 to 2020 as recommended by economic theory. The integration of the BRI countries can be seen as the first step towards successful sustainable development. The findings of the current study have significant policy implications for long-term balanced growth, first prioritizing improving institutional quality such as strengthening the rule of law, promoting transparency and accountability, and strengthening the effectiveness of public institutions. Second, promoting inclusive economic growth, such as improving access to education and employment opportunities. Third, policymakers must manage the impacts of globalization and ensure that policies and strategies that promote sustainable development are not adversely affected by globalization, and last policymakers should address inequalities and implement policies that promote equitable and inclusive sustainable development support financially.

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Optimal Monetary Policy Transmission Mechanism for Economic Growth of Developing Countries

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Abstract

This paper assesses the role of monetary policy on economic growth in selected developing countries and empirically estimates a dynamic model for exploring the performance of monetary policy in developing countries. The panel data is collected for 44 developing countries from 1974 to 2018. The analysis is carried out through the Generalized Method of Moment (GMM) which is efficient to handle the problem of endogeneity and serial correlation. The results of monetary indicators show that expansionary monetary policy is best suited for economic growth in developing countries. The results of the money supply and banks reserve ratio suggested that expansionary monetary policy is more appropriate for selected countries over contractionary monetary policy. In a similar line, population growth performs a negative impact on economic growth while the developing countries are labor-abundant, and analysis supports that the labor force has a positive role in economic growth. Based on empirics, it is suggested that expansionary monetary policy is more effective for economic growth and economic stability in selected countries.

Keywords: Monetary Policy, Economic Growth, Developing Countries, GMM

Introduction

The goals of macroeconomic policies are to attain economic stability, price stability, high employment, and achieve sustainable economic growth (EG) for a long time. Sustainable EG in developing countries is essential to reduce poverty and enhance living standard (Ekananda, 2022; Chen et al., 2023; Wang et al., 2023). The monetarists agreed that various monetary instruments played an essential role in achieving several macroeconomic goals (Ayodeji & Oluwole, 2018; Berument et al., 2012; Inam & Ime, 2017). The fundamental objective of monetary policy is to achieve price and economic stability, control the money supply, maintain the balance of payment, and stability in the value of a currency (exchange rate stability) (Awdeh, 2019; Bordo & Flandreau, 2003; Abate, 2022). The price instability affects the real EG cause less productivity because of less demand. The currency depreciation increases the profitability of tradable investment; meanwhile, the real exchange rate affects the balance of trade. The devaluation of the currency is steadily linked with higher EG (Ali et al., 2008; Ghosh et al., 2015). Therefore, the central bank regulates the monetary policy and supply of money in the country, to stimulate social and economic welfare.

Monetary policy is duly endorsed by the central bank of the economy with the objective of attaining economic sustainability and a targeted growth rate. The purpose of the monetary policy is to keep lowering unemployment, sustain currency value, inflation stability, and steady economic growth (Awais et al., 2022; Sulaiman & Migiro, 2014; Wang et al., 2023). The monetary policy aims can be achieved through specific manipulation in interest rate, open market operation, bank reserve ratio, and exchange rate. In a broader sense, the monetary policy might be expansionary or contractionary. The expansionary monetary policy encourages business activities by lowering the interest rate and cheaper borrowing (Khan et al., 2023). Whereas the contractionary monetary policy target reducing the inflation rate by forcing lower spending and making expensive borrowings (Rieder, 2021; Kandil, 2014).

In developing countries, several studies determine the different scenario regarding the tight and slack monetary policy. Additionally, the monetary authorities target for the future expectations (like inflation) through the implementation of monetary tools (Ridwan, 2022; Bemanke, 2020). The variation in monetary tools affects the prices of goods and services, currency exchange value, asset prices, investment decision, aggregate demand (AD) and supply of goods. The interest rate channel performs a prime contribution in the monetary policy as a transmission mechanism (Estrella & Mishkin, 1995; Kandil, 2014). Nasko (2016) argued that the supply of money and the lower interest rate has a significant impact on EG. Further, the lower rate of interest positively influences investment activities, increase for loans, investors are more willing to invest because of higher AD. In contrast, Anowor and Okorie, 2016 argued that the contractionary monetary policy stimulates EG by raising interest rates which leads to reduction in money supply to the economy. So, variations in quantity money affect and change the AD and economic events in the economy (Ayodeji & Oluwole, 2018; Srithilat, et al., 2017).

For macroeconomic stability, choosing accurate monetary policy tools is a serious discussion among numerous economists (Ridwan, 2022; Olamide et al., 2022; Khan et al., 2023). Adoption of the factual monetary tools at a right time is a target for economists to get policy fruit. The monetary expansion path provides a fundamental contribution to all economic activities in the economy which is still debatable for developing countries. Macroeconomic policy (especially

monetary policy) for developing and developed countries is differentiated which needs to reappraise with respect to country internal circumstances. The monetary policy choice is an essential matter to achieve economic stability, control inflation, reduce unemployment and achieve high EG (Chen et al., 2023; Bernanke, 2020; Abate, 2022; Batuo et al., 2022). In developing countries, typically, the monetary policy is not working independently which is influenced through the financial decision and government policies that are reasons for the failure of monetary policy in developing countries (Alavinasab, 2016).

Monetary economists strongly believe that monetary policy exerts an unanticipated effect on internal and external economic activity. The change money supply has circulation effect on output and EG i.e., the money supply unpredictably increased by the central bank will promote EG (Baghebo & Stephen, 2014; Chowdhury & Afzal, 2015; Evans et al., 2018; Igharo et al., 2020; Ogunmuyiwa & Ekone, 2010). Conversely, numerous monetarists argued that the increasing money supply has no effect on output or EG, but higher money supply cause inflation in the economy (Awdeh, 2019; Igharo et al., 2020; Usman & Haq, 2016). Besides, Gul et al. (2012) concluded that tight monetary policy has a stable and noteworthy impact on EG. Khan (2011) observed that objectives of monetary policy are anxious with the implementation of multiple targets consisting of stable inflation, e.g., full employment, prevent financial crises, interest rate stability, and stable exchange rate.

A well-established segment of literature for both developed and developing countries have discussed about the role of monetary policy for economic stability and growth in the economy. Constructive roles of monetary policy in provoking the economic stability have been stressed in list of studies (Anowor & Okorie, 2016; Da Silva & Vieira, 2017; Duskobilov, 2017; Evans et al., 2018; Igharo et al., 2020; Ekananda, 2022; Yin, et al., 2022; Wang et al., 2023). Monetary policy is predominantly responsible for further key challenges like price stability, control over unemployment rate, and other internal and external social and political norms. The existing studies, Precious and Palesa (2014) and Chen et al. (2023) argued that monetary instruments have encouraging role for economic growth, whereas money supply, repo rate, and exchange are key instruments to maintain the long run economic stability.

The developing nations have chosen the monetary policy tools, theories, and instruments for the financial adjustment that evolved for developed countries. The developing countries do not have the modern financial system that developed countries have, this is foremost reason for the failure of monetary policy instruments (Khan et al., 2023; Loayza & Pennings, 2020). The monetary policy theories or laws that are developed for advanced countries may not be suitable to achieve the long-term policy goals for developing countries (Page, 2013). The rationale of this research is the inconclusive choice between contractionary and expansionary monetary policy in developing countries (Anowor & Okorie, 2016). In developing countries, the monetary policy has failed because of highly influence of public policies. Moreover, the monetary policy is not working independently in developing countries (Usman & Haq, 2016; Awdeh, 2019; Isakovna, 2021; Yaqub et al., 2022).

The rationale for conducting this research is that developing countries are facing liquidity challenges to achieve economic growth. Developing countries often experience greater financial volatility and vulnerability, which creates policy ineffective (Evans et al., 2018; Kandil, 2014).

The monetary transmission channels helps foster international cooperation and coordination, particularly in the context of exchange rate movements, capital flows, and monetary policy normalization (Manullang et al., 2023; Clarida, 2020; Wen et al., 2019). Monetary policy instruments perform central role to achieve the higher economic growth through interest rate, bank research ratio, exchange rate and investment (Loayza & Pennings, 2020; Bernanke, 2020; Wen et al., 2019). The expansionary or contractionary monetary policy may have different effect due to financial system and economic structure of the economy. This research is conducted for monetary policy actions impact in economic growth in developing countries and can be helpful for policymakers to design effective strategies to promote EG, stability, and poverty reduction.

The research on monetary policy effectiveness enables developing countries to assess the various policy tools and refine their strategies to better address the specific needs and circumstances of the developing nations (Azam et al., 2023; Wen et al., 2019). This research provided analytical evidence and insights about the ambiguous relationship between monetary policy and EG in selected developing countries. The empirical evidence is helpful to reduces the reliance on intuition- based decision making, identify potential risks and vulnerabilities in the financial system and promotes a more systematic and rigorous approach for policy decision (Carney, 2019). This research identified significant channels through which monetary policy can support policy stability, inclusive growth, and poverty reduction in developing countries. This research identified which policy is more appropriate for developing countries, either expansionary or contractionary. It provides valuable insights that assist policymakers in formulating effective and targeted policies to support sustainable economic development in developing countries.

It is clear from existing literature, that the monetary policy transmitted into the real economy through numerous channels thereby affecting EG (Abate, 2022; Azam et al., 2023). The channels include interest rate which affects the investment and existing money supply Angeletos and Lian (2022); Caballero and Simsek (2022) issuance of a new currency that affects the AD and inflation; cash reserve ratio that cause the investment and AD through credit policy; the open market operation has a direct impact on trading commodities, government bonds and securities, investment, and aggregate output, finally, the exchange rate affects net trade and money demand in the economy (Mboweni et al., 2008; Abuka, et al., 2019; Yin et al., 2022; Jiang et al., 2022). However, this study focused on the effectiveness of monetary policy in EG through panel analysis in the case of 44 developing countries. The main purpose of this research is to empirically examine the monetary policy transmission mechanism for EG in the selected developing countries. This research has also investigated which monetary policy channel has a substantial role in enhancing economic growth. Further, this study identifies the monetary policy narratives that are highly needed to improve. Finally, this study specifies the unanimous monetary policy (either expansionary or contractionary) that has a long-term effect on economic stability in developing countries.

Literature Review

The monetary policy is a permutation designed for the structure of supply, exchange value, and money cost in the country, which concern to control economic activities (Folawewo & Osinubi, 2006). The stability in money supply is ensuring the consistency to target the long-term real economic growth, the non-inflationary growth is a key to economic successes, reduce poverty,

increase per capita GDP, and improve living standards (Ghosh et al., 2015; Srithilat et al., 2017). The monetary instruments influence the economic activities through AD, which depends on demand for money. The demand for money rises because of three key reasons defined by Keynesian such as, transactional needs, precautionary purpose and speculatory demand. The monetary demand reflects in inflation rate, interest rate, exchange rate and unexpected market behavior. Change in rate of interest and money supply directly affects the monetary demand and investment decision, therefore, the AD responds to monetary instruments and adjust accordingly. The list of monetarists believes that the implementation of expansionary monetary tools for EG leads to higher inflation, having no impact on real EG (Akalpler & Duhok, 2018; Ali et al., 2008; Berument et al., 2012).

The analysis shows that the monetary policy instruments such as refinancing rate sterilization operations and the mandatory rate have a progressive impact on EG (Hakimov, 2020). Similarly, (Ayodeji & Oluwole, 2018) find the positive and significant relationship of money supply and exchange rate on EG while the rate of interest and liquidity ratios have a negative impact on EG, the results are supporting the of expansionary monetary is best suited for EG. In contrast, (Igharo et al., 2020) revealed that monetary policy has not been a significant impact on EG, meanwhile, the government intervention and lack of financial institutional independence cause the monetary policy ineffective. Supplementary, (Duskobilov, 2017) observed the positive effect of inflation and interest rate on the EG of Uzbekistan, the study suggested that mix monetary policy is suitable for EG.

Monetary Policy Scenario for Developing Countries

In developing countries, typically, the monetary policy is not working independently which is influenced through the financial decision and government policies that are reasons for the failure of monetary policy in developing countries (Alavinasab, 2016). Generally, the institutional and financial underdevelopment creates hurdles in the implementation, transmission, and effectiveness of monetary stability in developing countries over advanced countries (Ghatak & Sanchez-Fung, 2007). Monetary economists strongly believe that monetary policy exerts an unanticipated effect on international and external economic activity. The change money supply and circulation affect output and EG i.e., the money supply unexpectedly increases by the central bank will promote EG (Baghebo & Stephen, 2014; Evans et al., 2018; khan et al., 2023). Conversely, numerous monetarists argued that the increasing money supply has no effect on output or EG, but higher money supply causes the inflation rate in the economy (Awdeh, 2019; Igharo et al., 2020). Besides (Gul et al., 2012) concluded that tight monetary policy has a stable and noteworthy impact on EG. (Khan, 2011) observed that objectives of monetary policy are anxious with the implementation of multiple targets consisting of stable inflation, EG, full employment, prevent financial crises, interest rate stability, and stable exchange rate.

Additionally, Apere and Karimo (2014) empirically found the behavior of monetary policy in Nigeria and concluded that money supply is indicator for EG in short period while interest rate is important channel for price stability economic growth. Similarly, Anowor (2016) highlights that cash reserve ratio is superior tools to achieve the balanced price level and economic growth, whereas broad money is weak instrument for EG in Nigeria. The monetary policy is long run phenomena for sustain the economic development in the economy, Gul et al. (2012) analytically

found that tight monetary policy is not working for economic development. The money supply with acceptable interest rate can accomplish the monetary policy goals with lower influencing form the fiscal institutions. In contradiction, Kamaan (2014) argued that contractionary monetary policy is more suited to achieve the monetary policy targets. The interest rate and exchange rate shock are the key reasons for weak performance in accomplishing the desire outcome of the monetary policy.

The enormous empirical and theoretical literature has primarily focused on monetary policy transmission in the case of developed countries. Such studies focus on price-side (nominal) behavior over quantities (real), while the in developing countries, monetary policy transmission has focused on quantity (reals) behavior over prices (nominal) fluctuations. A monetary policy designed to regulate the money value, supply, and inflation rate in an economy, with an anticipated economic fluctuations for economic stability (Folawewo & Osinubi, 2006). In developing countries, typically, the monetary policy is not working independently which is influenced through the financial decision and government policies that are reasons for the failure of monetary policy in developing countries (Alavinasab, 2016). Generally, the institutional and financial underdevelopment creates hurdles in the implementation, transmission, and effectiveness of monetary stability in developing countries over advanced countries (Ghatak & Sanchez-Fung, 2007). Consequently, the cost and gains of monetary policy differ in attaining price and economic stability in developing countries (Ayodeji & Oluwole, 2018; Abate, 2022).

The monetary condition index plays an essential role to influence the economic output and supply and exchange rate shocks are more dominant over interest rate shock for economic stabilit. The real money supply plays a fundamental role in GDP growth in Egypt (Obaid, 2007), the expansionary monetary policy is a key phenomenon for GDP growth. Grauwe and Polan (2005) investigated the statement quantity theory of money and found a positive and significant association among inflation and money supply for economic output. Waliullah and Rabbi (2011) funds a remarkable influence of monetary policy on EG in Pakistan. Further, the Pakistan stock market and international trade are sensitive to monetary policy (Abuka et al., 2019). Also, Qayyum and Anwar (2011) argued that the in developed countries, the stock market price index is fundamental indicators which affected through the variation in monetary policy factors. Similarly, Akalpler and Duhok (2018) demonstrated that the financial crisis has a negative impact on the economies both in developing and developed countries, meanwhile, the capitalistic market system is favorable for developed countries but such countries show ambiguous results because of the high reliability of banking system over the stock market.

Monetary Policy Role in Developed Countries

Since the 1990s, a list of developed countries transformed their inflation-targeting policies monetary explicitly. Currently, most of the developed countries adopted regime-wise inflation targeting through implementing the monetary policy instruments. Under inflation-targeting, the independent decision of the central bank maintains the inflation rate closer to the well-defined level by avoiding the unnecessary fluctuations in the economy, which is delegated to monetary policy tools (Svensson, 2002). Additionally, Ball and Sheridan (2005) argued that the OECD may have reduced the inflation rate and variability through adopting the Taylor rule but such countries have not reached a better performance compared to non-adopting countries. Based on monetary

policy targets for macroeconomic stability, numerous developed countries were not achieved the monetary targets significantly, where the actual inflation was influenced by excepted inflation rate (Levin et al., 2004). On the other hand, Gali and Monacelli (2005) and Divino (2009) theoretically suggested that the exchange rate consideration under an open economy does not affect the interest rate and other domestic monetary policy instruments. The exchange rate has an indirect effect on monetary instruments and monetary policy goals.

The soundness of financial institutions performs a crucial role to achieve the monetary policy targets. In developed counties, the macroeconomic targets are attainable due to reliable financial institutions. The central bank's misguided decision pays a large cost in the form of macroeconomic instability (Orphanides & Williams, 2013). Monetary policy has a long-lasting and significant impact on macroeconomic targets like price and economic stability, employment rate, and higher EG (Jorda et al., 2020). Cantore et al. (2019) found that the Taylor rule is an optimal monetary policy determinant and provides the higher intermediate response to achieve output and inflation sustainability. Abuka et al. (2019) concluded that monetary policy is failed to accomplish the desire targets due to influence from fiscal policy. With the absence of direct political interference in the monetary policy adoption and deliberation phase, the central bank's achieving the macroeconomic targets depends on the policy stakeholders of the nations (Rieder, 2021).

A well-established segment of literature for both developed and developing countries have discussed about the role of monetary policy for economic stability and growth in the economy. Constructive roles of monetary policy in provoking the economic stability have been stressed in list of studies (Anowor & Okorie, 2016; da Silva & Vieira, 2017; Duskobilov, 2017; Evans et al., 2018; Igharo et al., 2020; Kandil, 2014). The monetary policy is predominantly responsible for further key challenges like price stability, control over unemployment rate, and other internal and external social and political norms. The existing studies, Precious and Palesa (2014) and Epstein & Heintz (2005) argued that monetary instruments have encouraging role for economic growth, whereas money supply, repo rate, and exchange are key instruments to maintain the long run economic stability. Precious and Palesa (2014) suggested that the expansionary monetary policy with rational level of inflation rate perform constructive role higher economic growth. Consequently, the monetary instruments are direct indicators to sustain the economic stability and price level in economy (Alavinasab, 2016).

The price and economy stability is a fundamental goal to implement the monetary policy, sometime, the monetarists agreed to implement to expansionary policy (Akalpler & Duhok, 2018; Kandil, 2014; Sulaiman & Migiro, 2014; Ekananda, 2022; Yin, et al., 2022; Chen et al., 2023) in contrast others are suggested to appliance the contractionary monetary policy (Ayodeji & Oluwole, 2018; Nouri & Samimi, 2011; Srithilat et al., 2017 ; Wang et al., 2023). The developed and developing countries are witnessed to implement the expansion and contractionary policy tools, but sustainable growth is questionable to achieve. The question here is, could sustainable EG attribute to expansionary or contractionary monetary policy? Could the usage of the money supply be important to non-inflationary economic growth? What monetary measures to be considered for sustainable EG and development? Which monetary policy is appropriate for developing counties for economic growth? Which monetary channel is more effective to attain sustainable economic growth? These are the questions that remain unsolved in literature in the

case of developing countries. This study would answer such questions based on empirical evidence. The present study has superiority among reviewed literature, as no study focused such 44 number of developing countries collectively and worked on panel analysis tools to investigate the monetary policy behavior.

Research Hypothesis

H_1: Expansionary monetary policy has a significant positive impact on EG in developing countries.
H_2: Contractionary monetary policy has a significant negative impact on EG m selected developing countries
H_3: Sustainable increase in money supply has a non-inflationary impact on EG.
H_4: Monetary measures in developing countries are considered as sustainable instruments for economic growth and development.
H_5: Expansionary monetary policy increases the EG in developing countries.

Research Methodology

The New Keynesian framework incorporates key elements of monetary policy, such as price stickiness and nominal rigidities, into a dynamic general equilibrium framework. It identifies key transmission channels, such as the interest rate channel, bank lending channel, exchange rate channel, asset price channel, and expectations channel (Bernanke et al., 2013; Ries, 2013; Cooper et al., 2020). The analysis revolves around examining how changes in monetary policy variables transmit through these channels and impact various macroeconomic outcomes. In this research we adopted a general equilibrium model that provides a comprehensive framework for analyzing the effects of monetary policy effectiveness on economic growth. Monetary policy performs a fundamental role in the New Keynesian model by setting the short-term interest rate as well as other monetary targets. Such monetary targets affect aggregate demand and inflation by influencing borrowing costs, investment decisions, consumption pattern and economic stability and unemployment in the economy (Bernanke et al., 2013; Reis, 2013; Ridwan, 2022). The New Keynesian model for an open economy provides a framework to analyze the interactions between domestic and international factors, incorporating monetary policy, exchange rate dynamics, and expectations. It is a useful tool for understanding the impact of various shocks and policy interventions on key macroeconomic variables in an open economy setting (Mankiw, 2019; Cooper, 2020; Lane, 2001).

This research tests the theoretical hypothesis about the role of monetary policy for EG in selected developing countries. The tested hypothesis is that the expansionary monetary policy has more productive role in EG of selected developing countries (Dao, 2012; Mboweni et al., 2008). The significant objective of this study is to explore the effects of monetary tools on EG in selected countries. To achieve the objectives of this research the dynamic panel model was developed. To achieve the theoretical hypothesis this research adopted an empirical model by showing the dependency relationship among EG and monetary policy instruments. Furthermore, the real Gross Domestic Product (GDP) is a dependent variable, whereas the Unemployment rate (UN), Population Growth (POP), Inflation Rate (INF), the Labor Force (LF), Money Supply

(MS), Interest Rate (IR), the Exchange Rate (ER), and Bank Reserve Ratio (BR) are independent variables. Econometrically estimated model is as following:

$$GDPit = Po + P1GDPit\text{-}1 + P2MSit + P3Unit + P4POPit + PsINFit + P6LFit + ui + Vt + Eit \quad (1)$$

$$GDPit = Po + P1GDPit\text{-}1 + PzlRit + p3Unit + P4POPit + PsINFit + P6LFit + ui + Vt + Eit \quad (2)$$

$$GDPit = Po + P1GDPit\text{-}1 + P2ERit + p3Unit + p4P0Pit + PsINFit + P6LFit + ui + Vt + Eit \quad (3)$$

$$GDPit = Po + P1GDPit\text{-}1 + P2BRit + p3Unit + p4POPit + PsINFit + P6LFit + ui + Vt + Eit \quad (4)$$

This research adopted four different models including policy variables and control variables, in the above equations 1, 2, 3, and 4; GDP is gross domestic product which is adopted as proxy of economic growth, while policy variables are IRir is the interest rate, ERir is the Exchange Rate, MS is Money Supply, BRir is Banks' Reserve Ratio and the control variables are population growth (POP), inflation rate (INF), labor force (LF) and unemployment rate (UN). Whereas Vr and Ui denote time-specific effects and unobserved cross-sectional respectively, while Eit is the residual term. Description and measuring units of all policy and control variables are given in table 1. All the variables in different models are in logarithmic form. In macroeconomic theories it is believed that as the interest rate reduces, people borrowed more money for investment purposes. In contrast, as the interest rate increase, consumers tend to save as returns on saving are higher over profit from investment (Alavinasab, 2016; da Silva & Vieira, 2017; Dao, 2012; Mboweni et al., 2008).

Table 1. Variables and Discussion

Abbreviations	Description of variables	Measuring Units	Data Sources
	Dependent Variable		
LGDPir	Log of Gross Domestic Product	Real GDP growth rate	**WDI**
	Policy Variables		
LMS_{it}	Log of Money Supply	Broad Money which includes Ml, M2, and M3 in US dollars	WDI
LIRr	Log of Interest Rate	Real Interest rate	**WDI**
LERir	Log of Exchange Rate	Real Rate of exchange with US dollar	**WDI**
LBRir	Log of Bank Reserve Ratio	Bank Reserves in US dollars	**WDI**
	Control Variables		
LUNr	Log of Unemployment	Unemployment rate	WDI
LPOPir	Log of Population	Population growth rate	WDI
LINFir	Log of Inflation rate	Rate of Inflation	WDI
LLFir	Log of Labor Force	Labor Force in total	WDI

Source: Authors own

Data and Data Sources

To analyze the role of monetary tools in EG of selected developing countries, data is collected from different sources. The data set varies for the periods of 1974 to 2018. The panel data set is collected from World Development Indicators (WDI), and Penn World Table 10.1 The collected data is compiled and cleaned using the Ms-Excel, while the final estimation is carried through STATA software. In order to conduct this study, the secondary source data is gathered from existing sources, such as World Development Indicators and International Monetary Fund (IMF). The secondary data is available from comprehensive and reliable data sources. This research collected data until 2018 due to two reasons; first, the data for some developing countries are not available and limited, which regresses through the dynamic panel model that why the data is collected until 2018. Second reason is to avoid from the Covid-19 shocks on economic instability and monetary tools in developing countries (Manullang et al., 2023; Loayza & Pennings, 2020).

Estimation Technique

In this study, different models are estimated to develop the relationship between EG and monetary policy tools. The variables in different models are in logarithmic form. Initially, the summary statistics are calculated to summarize the data and investigate the initial behavior of the given variables. For the dependency relationship, the Pool OLS is estimated to check the relationship between monetary tools and EG. The value of F-statistics shows all regressed models are statistically significant. Further, the test for heteroscedasticity and serial correlation tests shows the existence of heteroscedasticity and serial correlation in all estimated models, this highlights the results of Pool OLS are not efficient for policy perspectives. In a similar line, the results of Fixed Effect, Random Effect and Housman test are calculated. The results of Fixed Effect are recommended by the Housman test and preferred over random effect, while the Brush and Godfrey test for serial correlation shows that there is a problem of serial correlation in the estimated models. Moreover, the fixed effect results are also not efficient for policy recommendation (Haq et al., 2016).

Theoretical and empirical analysis suggested that the estimated model of this research is dynamic nature. For this purpose, the Generalized Method of Moments (GMM) is adopted which developed in a pioneer study Arellano and Bond (1991). The dynamic panel models have advantages over other estimated models, the GMM is allowed to estimate the dynamic model below the restrictions that are sustained with the theory and there is no need for any additional supposition and assumption to reflect the basis of the model. Secondly, the problem of serial correlation is in panel data is highly occurring, so estimation through GMM is efficient despite supplementary moment's condition. Thirdly, analysis through GMM influences the unobserved estimates through differencing of the regression as well as instruments. To resolve the endogeneity problem, one-year lag of highly correlated variables is taken as instrumental variables in the GMM estimation technique (Siller et al., 2021), which is helpful in endogeneity problem. Through presenting the instrumental variables in GMM the endogeneity problem can resolve efficiently and avoid the spurious analysis (Orji et al., 2010). The Sargan test is applied for validation of instrumental variables. In all specification, the probability values of Sargan test are greater than 0.05, which indicates the rejection of null hypothesis of *"over-identifying restrictions are valid"*, and highlights that the instrumental variables are valid for further analysis.

Results and Discussion

To develop the empirical narrative and investigate the effectiveness of monetary policy in EG in selected developing countries, the panel data from 1974 to 2018 is utilized. The data estimation process is carried out by using dynamic panel estimation techniques.

Summary Statistics

The calculated values of the summary stat1st1cs of panel variables are given in table 2. The summary statistic tables include minimum, maximum, mean, and standard deviation. The summary statistic estimates show that mean of all given variables is greater than the standard deviation of that respective variable. The average GDP growth rate in selected countries is 1.43, which is intermediate in maximum and minimum values. The standard deviation of GDP is 0.781 which is closer and less than the mean value, so there is no outlier in GDP. Similarly, the summary statistic values of all independent variables except inflation show that there not no outlier in panel data. The mean value of inflation is (2.51) less than the standard deviation (3.44). However, in panel data, this problem may arise because of different cross countries, which is not having any significant impact on estimates.

The estimated value of diagnostic tests shows the existence of heteroscedasticity, serial correlation, and endogeneity problems in estimated models. The calculated value of heteroscedasticity test is higher and significant, which is evidence of existence of heteroskedasticity in estimated models. Similarly, the calculated value of serial correlation test is significant which demonstrated to reject the null hypothesis of no serial correlation. The endogeneity problem was detected through Hansen's (1982) J-test (Semadeni et al., 2014). The null hypothesis of the endogeneity test is the given variables behave endogenously in the estimated models. The results of endogeneity test (J-stat) in all models are insignificant, which is evidence of the endogeneity problem in the estimated models.

Table 2: S_ummary St tistics

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
LG DPit	1 728	1 .4375	.7 815	3 .0645	- 3.3036
LUNit	1204	1.7362	0.6915	-0.9213	3.2003
LPOPit	1986	0.5794	0.5521	2.5923	1.5629
LINFit	1776	2.5128	3.4434	21.7527	7.9158
LLFit	1204	15.8621	1.7523	11.8124	20.4874
LMSit	1990	3.5412	0.5862	1.8970	5.3397
LIRit	754	4.7234	0.5115	3.5857	8.1456
LERit	1007	1.9728	1.0642	4.9161	7.0544
LBrit	596	2.9289	0.6244	1.2495	4.6276
	Model 1	**Model 2**	**Model 3**	**Model 4**	
Heteroskedasticity Test	50.38	63.37	11.51	0.38	
	(0.0000)	(0.0000)	(0.0007)	(0.5381)	
Serial Correlation test	0.0000***	0.0000***	0.0000***	0.0000***	
Endogeneity Test	25.436	19.337	31.093	39.597	
(J-test)	(0.1466)	(0.1209)	(0.3296)	(0.4370)	

Source: Author's Own calculations

Results of GMM Model

The empirical analysis conceded through the GMM. To test the consistency and proficiency in estimates firstly we analyzed the Pool OLS, Fixed and Random Effect (Results are presented Appendices A&B). The estimated results of dynamic GMM are given in table 3. The results indicated the monetary indicators have a significantly positive impact on EG of selected developing countries. In the first specification, the dependent variable is GDPii, while the unemployment rate (UNi1), Inflation Rate (INFi1), Population Growth (POPi1) and Money Supply ($MSi_{1)}$ are independent variables, MSit is a focused policy variable that reflects the behaviour of monetary policy in developing countries. The estimated results follow the theoretical background and provide the theoretical validation for research analysis. To resolve the endogeneity problem, one-year lag of highly correlated variables is taken as instrumental variables in the GMM estimation technique (Siller et al., 2021), which has efficiency to resolve.
the endogeneity problem (i-e labor force and unemployment). Through presenting the instrumental variables in GMM the endogeneity problem can be resolved efficiently and avoid the spurious analysis (Orji et al., 2010).

In model 1**,** the lag coefficient of GDPii has significant and positive impact on current GDP growth rate in selected developing countries. The significant value of lag coefficient indicates that in selected countries the previous year GDP growth has an essential contribution to boot the current GDP growth. The empirical results of UNii show there is a negative and significant association between the unemployment rate and GDP growth. The slope coefficient of UNi_1 is -0.01928 which is significant at a one percent, this indicates that a one percent increase in UNi_1 leads to reduce the GDP growth by 1.9 percent in selected countries. The findings of UNi_1 are consistent with the results of Evans et al. (2018) argued that unemployment is a key determinant for economic instability and reduction of EG. Usman, (2016) argued that the greater the unemployment rate shows fewer opportunities to achieve high productivity and reduce the GDP growth in the long run. Besides, the POPii has an insignificantly negative impact on EG in developing countries. The $POPi_1$ has a negative impact on EG because the selected countries are overpopulated with fewer resources. The results are harmonized with the findings of Sava (2008) and Abukaet al. (2019), which concluded that overpopulation is a major cause of reduction of per capita GDP, while inconsistent with the findings of Dao (2012).

The statistical result of INg_1 specifies a significant and negative relationship with GDP growth in selected countries. The coefficient value is -0.077 and significant at 1 percent, the increase in INg_1 by one percent leads to reduce the GDP growth by 7 percent. The outcomes are consistent with the findings of Khan et al. (2001) and Umaru and Zubairu (2012) argued that a moderate level of inflation is better for the economy to encourage producer, flourishing economy and to achieve economic stability, whereas the higher rate has negative influence on GDP growth. The LFii coefficient has a positive and significant impact on EG in selected developing countries and the coefficient value is 0.2262, which specify that one percent increase in LFii causes the GDP growth to increase by 22 percent. The labor force performs a fundamental role in the production process and developing countries are highly labor abundant that has high share in productivity. The empirics are consistent with the findings of Rahman (2018) argued that LFii is an essential production element for under develop countries.

The coefficient value of MSir is positively significant this shows that an increase in MSir has a positive impact on GDP growth in selected countries. The slope coefficient of MSi_1 is 0.0467 which shows that one percent increase in MSii affects the GDP growth by 4.6 percent positively. The narrative develops for MSir results that expansionary monetary policy is more effective to boost the EG in developing countries. The results are confirmed through the findings of (Akalpler & Duhok, 2018; Awdeh, 2019; Srithilat et al., 2017), the increase in MSir through sustaining policy instruments cause the EG positively. Risen the money supply in the economy will increase the AD which increases the aggregate output in long run.

In model 2, the control variables (UNir, POPir, LFir, and $INFi_{1)}$ perform similar reflection given in model one on EG with varied magnitude. However, the slope coefficient of interest rate ($IRi_{1)}$ is negative and statistically significant at one percent level. This indicates that a higher interest rate means lower GDP growth. The slope coefficient of interest rate is -0.298, which means that one percent increase in interest rate leads to reduce the GDP growth by 29 percent through the channel of reduction in private investment. Interest rate policies directly affect investment in both the private and public sector. The higher level of IRi_1 discourages private investors and increases the cost of doing business. The estimated results are in line with the findings of (Anaripour, 2011; Awdeh, 2019; Srithilat et al., 2017). The expansionary monetary policy is favorable for developing countries to enhance EG.

In the third specification, the control variables show similar behavior to affect EG as explained in model 1, the policy variable IRir interchange with Erit. The exchange rate ($ERi_{1)}$ has a positive and significant impact on EG in selected developing countries. The slope coefficient of the ERit is 0.0557 which shows 1 percent increase in exchange rate the GDP growth will increase by 5.5 percent in developing countries. The ERir shows positive and significant impact on EG, this shows the appreciation of domestic currency slower the growth GDP because of a decrease in net exports and reduction in foreign investment inflow (Kogid, et al., 2012). This indicated that an appreciation of the domestic currency is not favorable for EG in developing countries.

In model 4, the policy variables ERir replace with bank reserve ratio (BRi_1) by keeping the control variables the same. The behavior of control variables is the same as given in model 1. The value of BRir coefficient is significantly negative at one percent level. The BRir coefficient value is -0.1023 which means one percent increase in BRir leads to reduce the GDP growth by 10 percent in selected countries. The monetary authorities used the BRir to control the circulation of money through credit changing policy in the economy. As the BRi_1 decrease, the private banks increase the loan amount to the investors through which the money in circulation increased. This highlights that expansionary monetary policy through lowering the BRir has a significant impact on EG in selected developing countries. The estimates are consistent with the outcomes of (Evans et al., 2018; Kandil, 2014; Nasko, 2016; Okafor, Oshoke, & Thomas, 2015).

Table: 3 E1I.1pirical Results of q-MM

Variables	Modell	Model2	Model3	Model4
LGDP(-1)	0.01382	0.1592	0.0131	0.2101
	.0000)***	.1403)	.0019)***	.0418)**
LUNit	.0192	.0342	.00917	.0298
	(0.009)***	(0.000)***	(0.628)	(0.065)*
LPOPit	-0.0262	-0.0317	-0.0149	-0.0023
	(0.256)	(0.003)***	(0.178)	(0.921)
LINFit	-0.077	-0.022	-0.101	0.0159
	(0.000)***	(0.033)**	(0.000)***	(0.576)
LLFit	0.2262	-0.028	0.1786	0.5285
	(0.000)***	(0.256)	(0.000)***	(0.013)**
LMSit	0.04677			
	(0.000)***			
LIRit		-0.2980		
		(0.000)***		
LERit			0.0553	
			(0.100)*	
LBRit				-0.1023
				(0.044)**
No of Instruments	818	596	479	200
Wald chi-square	4975.04	4203.21	590.71	1128.51
Serial Correlation test	0.0000***	0.0000***	0.0000***	0.0000***
Sargan test	35.43755	28.538	12.467	9.07838
	(.9891)	(.8715)	(1.0000)	(1.0000)

*In the above table *, **, *** shows the significance level at I, 5 and Jo percent level respectively. In the estimated models I,* 2, *3, and 4 EG are dependent variables. While the models are estimated through the GMM.for across countries analysis.*

developing countries. Further, this research practice highlights the inconclusiveness of two fundamental policy adoptions either expansionary or contractionary monetary policy in developing countries. To meet the objectives, this study empirically estimated a dynamic model to examine the behavior of monetary policy in selected developing countries. This research analyzed the role of monetary policy through collecting the panel data of 44 developing countries and data spanning from 1974 to 2018. For empirical outcomes, this research applied the panel data techniques as initially the Pool OLS, fixed effect and random effect. The empirical results of fixed effect and random effect show that such estimates are not sufficient and highlight the problem of serial correlation and endogeneity in a given data set. Therefore, the final estimation is carried out through the Generalized Method of Moment (GMM), which is efficient to handle the endogeneity problem and serial correlation.

It is concluded from empirical results that the exchange rate channel is more suitable than the interest rate, and both channels are in the favor of the expansionary monetary policy. In a similar line, the results of money supply and banks reserve ratio suggested that expansionary monetary is best suited for selected countries over contractionary monetary policy. It is suggested that the exchange rate channel is suitable for policy purposes in developing countries. The bank reserve channel to control the economic activities is performing a negative impact on EG in selected countries. In a similar line, population growth performs a negative impact on EG. Most of the

developing countries hold the maximum amount of population from the total population, that's why the labor force performs a positive role in economic growth. The developing countries are labor-abundant countries that why the labor force has a positive role in economic growth.

Based on quantitative analysis and results of GMM, this study suggests some policy recommendations for developing countries. It is recommended that expansionary monetary policy is more effective for economic growth and economic stability in selected countries. Economic stabilization is a key policy concern for monetarists, so in this context, the exchange rate channel is more suitable rather than the interest rate channel. The bank reserve channel to control economic activities is performing a negative impact on economic growth. The developing countries must revise the bank reserve ratios policy to enhance the investment for economic growth. Population growth performs a negative impact on EG that requires a stable policy to control the population. The government and policymakers must focus on labor-abundant production policies. A large population also creates an unemployment problem; the government should develop a policy in favor of unemployment reduction.

Future Research Directions

Research is required to investigate the effect of monetary policy shocks on EG through incorporating structural breaks for financial crisis 2007 to find the before and after financial crisis behavior on monetary policy. Further, a study is needed to find the comparative analysis of monetary shock for developing and developed countries.

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Appendices

A)

Table: A, Results of Pool OLS

Variables	Model1	Model2	Model3	Model4
UN_{it}	-0.1039***	-0.1905***	-0.0199***	0.0373
	(0.002)	(0.000)	(0.042)	(0.173)
POP_{it}	0.1179	0.2331***	0.1021**	-0.1022
	.(0.004)	(0.000)	(0.013)	(0.579)
INF_{it}	0.1041***	0.0266***	0.05895**	0.01207***
	(0.000)	(0.571)	(0.098)	(0.000)
LF_{it}	0.0657***	0.0555***	0.04516*	0.1508**
	(0.000)	(0.000)	(0.010)	(0.051)
MS_{it}	0.1501***	-----	-----	----
	(0.000)			
IR_{it}	----	-0.0991***	-----	-----
		(0.000)		
ER_{it}	-----	-----	-0.0876**	-----
			(0.603)	
BR_{it}	-----	-----	-----	-0.36992**
				(0.035)
No of observation	913	674	467	574
F-stat	21.21	22.13	5.62	4.60
	(0.0000)	(0.0000)	(0.0000)	(0.0004)
Hetero test (BP)	50.38	63.37	11.51	0.38
	(0.0000)	(0.0000)	(0.0007)	(0.5381)

Source: Authors Calculation

B)

Table: B, Results of Fixed Effect

Variables	Model 1	Model 2	Model 3	Model 4
UN_{it}	-.1549	-.2344	-.0651	-.0331 0.000
	(0.052)	0.021	0.001	
POP_{it}	.2593	.0965	-.0265	-.0813
	0.010	0.422	0.830	0.037
INF_{it}	.05064	.1272	.0537	.0107
	0.156	0.000	0.293	0.000
LF_{it}	.3447	.0793	-.277	1.0769
	0.040	0.778	0.297	0.000

MS_{it}	.1272 0.000			
IR_{it}		-.0547 0.114		
ER_{it}			-.0769 0.647	
BR_{it}				.0199 0.375
Observation.	913	674	467	574
F-statistics	6.92 (0.000)	1.93 (0.000)	2.60 (0.000)	919.33 (0.000)
Serial Correlation Test	4.97 (0.000)	4.10 (0.000)	5.90 (0.000)	7.62 (0.000)

Source: Authors estimation

C)

Table: C, Results of Random Effect and Hausman test

Variables	Model 1	Model 2	Model 3	Model 4
UN_{it}	-.1240 0.030	-.2055 0.002	-.0420 0.004	-.0338 0.000
POP_{it}	.156370 .020	.1633 0.031	.0742 0.294	-.0842 0.031
INF_{it}	.0869 0.001	.0239 0.625	.0266 0.460	.0114 0.000
LF_{it}	.0582 0.044	.0499 0.092	.0223 0.554	.9522 0.000
MS_{it}	.1281 0.000			
IR_{it}		-.0693 0.027		
ER_{it}			-.0920 0.577	
BR_{it}				.0170 0.450
Observation.	913	674	467	574
F-stat	46.56	30.26	13.17	4526.01
Serial Correlation Test	4.97 (0.000)	4.10 (0.000)	5.90 (0.000)	7.62 (0.000)

Source: Authors calculations

D)

List of Selected Developing Countries			
Argentina	Bangladesh	Barbados	Bolivia
Botswana	Brazil	Cameroon	Chile
China	Colombia	Costa Rica	Ecuador

Egypt	El Salvador	Fiji	Ghana
Guatemala	Guyana	Haiti	Honduras
India	Indonesia	Iran	Jamaica
Kenya	Malaysia	Mali	Mexico
Mozambique	Pakistan	Panama	Paraguay
Peru	Philippines	Senegal	Sierra Leone
Sri Lanka	Thailand	Turkey	Uganda
Uruguay	Venezuela	Zambia	Zimbabwe

How Audit Quality Affects Bank Performance and Stability with Moderating Role of Ownership Structure

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Abstract

This study examines the impact of audit quality on bank performance and stability, considering ownership structure. Analyzing BR/CS economies and Pakistan from 2010 to 2020, it finds that audit quality positively affects bank performance and stability. Foreign ownership moderates this relationship, while public ownership does not. These findings inform policymakers and regulators in promoting high-quality auditing practices and improving bank stability and performance. Audit quality is a crucial factor in maintaining the financial success and stability of banks, contributing to improved performance and transparency. Foreign ownership has a significant and positive moderating effect on the relationship between audit quality and bank performance and stability. The findings have implications for policymakers and regulators in implementing policies that promote high-quality auditing practices and enhance the stability and performance of banks in BR/CS economies and Pakistan. The current research focuses on the moderating role of ownership structure in the relationship between bank profitability, audit quality, and performance in BR/CS countries and Pakistan, which is a novel approach. The global financial crisis of 2007-2008 highlighted the importance of audit committees in overseeing financial institutions and enforcing regulations and standards. Emerging economies like BR/CS face unique challenges due to weaker regulatory structures, less mature financial systems, and higher levels of debt. Long-term stability of banks is crucial for the overall economic system and the incidence of financial fraud and bankruptcies affects investor confidence and economic growth.

Keywords: Audit Quality; Bank Performance; Bank Stability; Ownership Structure; foreign Ownership; BRICS Economies; Pakistan

Introduction

Financial institution is among the utmost vital financial entities in economic growth. Through a variety of means, they support the nation's economic expansion. As just an example, gathering and investing free household cash, lending to the private sector. The banking industry frequently operates extraordinarily throughout an economic downturn offering to the economic region is dropping, about is little liquidness in the chattels real market, & domestic spending capacity is diminishing. The determination of elements that affect the efficiency of the economic structure banks is among the core topics of this field of study. The long-term sustainability of financial system is dependent on a system of both informal and formal laws and regulations governing their operation (Wiek & Weber, 2014).

Financial performance is a gauge of how well a company can create money using the resources from its main line of business (Awais & Estes, 2019; Obafemi Tunde et al., 2023). Financial performance is frequently utilized as a broad indicator of a company's long-term financial stability. For subsequent policy modifications, empirical study of performance is a crucial prerequisite. Financial statements reveal performance information. The first step in measuring a company's performance should be to determine if it has been successful in achieving the goals established by its stakeholders (Ayoor, Ivungu, Anande, & Ogirah, 2019). Achievement refers to an organization that delivers substantial and favorable cash flow that expands at a quicker rate than the rest of the economy. Three accounting-based performance measures are stated: Return on Assets (ROA), Return on Investment (ROI) & Return on Equity (ROE) (Marr & Schiuma, 2003). Such metrics were extensively employed to assess a company's stability and reflect its internal efficiency. About every organization to attain efficient and reliable resource management, audit quality is critical. As a key accounting system implementation technique, it improves financial performance and assists management in monitoring the activity of each department within the company as a whole (Kyeremeh, 2017).

Auditing is considered to be one of the foremost movements that an organization or a regulator undertakes to deter the happening of fraud. According to De Angelo (1981), audit quality is the market-estimated joint chance that a certain auditor would find and disclose serious misstatements in the client's financial statements. De Angelo's (1981) definition states that the auditor's quality to recognize substantial misstatements (technical capabilities) and disclose the mistakes (auditor independence) determines the audit quality. Audit quality was described in terms of level of assurance by (Palmrose, 1988). The likelihood that financial statements are free of substantial misstatements is the audit quality since the goal of an audit is to offer confidence on financial statements.

The 2007 and 2008 financial crisis was primarily attributed to the failure of significant financial institutions such as Lehman Brothers, the Royal Bank of Scotland, and various Wall Street financial firms and institutions. The financial collapse of declared businesses can be attributed to a multitude of factors, encompassing suboptimal risk management, insufficient supervision, and the mishandling of assets. The audit committees responsible for overseeing the standards of auditing were subjected to elevated levels of accountability in response to the

stated shortcomings. The role of ensuring the precision and dependability of a firm's financial statements, as well as the identification and handling of risk, falls under the authority of audit committees. Following the financial crisis, there was a mandate for audit committees to enhance their supervision of financial institutions and verify their adherence to pertinent regulations and standards

Independent audits would help organizations reinforce robust internal control mechanisms, risk management, and corporate governance regulations, ultimately improving financial performance (Awais et al., 2020; Hassan et al., 2014). Asymmetry of information and interest conflicts between both management and shareholders, according to agency theorists, are what drive the need for audits (Mansi, Maxwell, & Miller, 2004). However, a substantial portion of the subsequent research concentrated on the consequences within developed nations, such as Europe and the United States. The literature reveals a notable void in this area, as emerging economies are frequently more susceptible to economic disturbances owing to their comparatively weaker regulatory structures, less mature financial systems, and greater quantities of debt. The worldwide financial crisis had a significant impact on developing countries, resulting in a considerable deceleration of economic growth, a surge in unemployment rates, and a rise in debt levels across multiple countries.

Every company's ownership structure is thought to be an effective and systematic approach to the difficulties with risk sharing and compensation benefits (Thomsen & Pedersen, 2000). The company ownership framework is/are regarded as one of the essential internal procedures and structures of corporate management and corporate finance, according to (Pilcher, Gilchrist, Singh, & Singh, 2013). Researchers have looked at the various ownership structures in various states and nations, focusing in particular on managerial, both foreign and domestic, organizational, and individual shareholders. In accumulation, indirect ownership is determined using all available data, which including bank shares held by numerous entities controlled by the ultimate shareholder. Furthermore, a major owner who owns at least 50% of a bank's shares directly is considered the bank's ultimate owner, even if the bank's indirect shareholding is not taken into account. Second, investor, government, family, institutional, and foreign ownership are the multiple kinds of ownership (Akhalumeh & Ogunkuade, 2021; Galab et al., 2021). The distinction of ownership of entities from their departments, according to the Chartered Institution of Internal Auditors (2017), is indeed the main reason why inspections are necessary (interior and exterior). As a conclusion, the inspections comprises & oversight process that allows to share their evaluation of the fiscal reports' quality and validity.

Brazil, Russia, India, China, and South Africa (BRICS) are the biggest developing market nations in the world. The BRICS system seeks to promote peace, stability, the economics, & cooperation. Additionally, it aspires to significantly contribute to the development of a just sphere and the advancement of mankind. Further, the fact that perhaps the collective populations of the Countries involved exceed 3 billion people more than the populations of both the US & Canada combined makes the BRICS countries worthwhile of investigation and

examination. 42% of the worldwide population consists of this group of people. As in long term, an untapped market of this scale might prove to be the greatest important shield for globalization. These are also all G20 participants, although their nominal GDP together accounts for 1/5 of the global GDP at USD 16 trillion. BRICS, in contrast hand, outperforms the G7 on average, while each of the BRICS countries has drastically distinct macroeconomic factors and some other benchmarks (Moudud-Ul-Huq, 2019). The concept of the "BRICS Plus" paradigm is "openness, inclusiveness, collaboration and economic perks," which is extremely congruent to the BRICS ethos, according to Chinese Minister of Foreign Affairs Wang Yi. The 'BRICS Plus' model aims to foster the formation of wider relationships, support collective expansion and economic growth on a greater scale, and increase communication and collaboration between BRICS nations as well as newly industrialized and emerging nations. In contrast, studies have historically devoted less attention to researching financial crises in emerging economies like BRICS. Brazil, Russia, India, China, and South Africa (BRICS) are the biggest developing market nations in the world. This study provides significant insights to the bank management, government, and regulator in BRICS and Pakistan economies. Over the recent decades, the BRICS nations have experienced a notable surge in economic significance, collectively representing a substantial share of the worldwide GDP (Sultan & Mehmood, 2020).

This paper studies the possibility that Pakistan might contribute to the broader BRICS and BRICS Plus ideas via CPEC & CPEC Plus. It is an effort to draw attention to this position, which is important given Pakistan's unique geographic location at the intersection of Central, South, and West Asia. As a result of the potential for connection with the area through the BRICS plus conference, Pakistan's CPEC project might be upgraded to CPEC Plus, enabling it to serve as a pipeline for connection and, as Andrew Kryobko refers to it, "The Silk of the Regional."

Growth in infrastructure and new channels for regional engagement will result from the merging of "CPEC Plus- BRICS Plus," enhancing overall interaction and coordination not just within the BRICS but also in each of its different hemispheres. China appeared to be indicating that additional geographic regions, notably Pakistan, may be allowed to participate in BRICS.

In a variety of areas, the current research adds to the body of literature. In the beginning, the study builds on earlier study on bank profitability stability & audit quality by investigative the moderating role of ownership structure Furthermore, whereas most earlier studies have concentrated only on Developed countries or on a specific country but current study focuses on BRICS countries along with Pakistan which is as for as its first of his typed. The current study grasps the BRICS and Pakistan audit quality effect on banks performance and stability with the moderation role of ownership structure.

The remainder of the paper is as follows: section 2 covers literature review, section 3 covers methodology, thereafter analysis and results discussion is provided and last section concludes the research findings.

Problem Statement

The study aims to explore the relationship between audit quality and bank performance and bank stability, focusing on the financial sectors of BRICS countries and Pakistan, and the moderating role of ownership structure.

Research Questions

The study seeks to answer questions regarding the relationship between audit quality and bank performance, the impact of audit quality on bank stability, and the moderating role of ownership structure in BRICS countries and Pakistan.

Objectives of the Study

The objectives include measuring the influence of audit quality on financial performance, investigating the impact of audit quality on bank stability, and examining the moderating role of ownership structure on the relationship between audit quality and bank performance and stability.

Significance of Study

The study provides insights for bank management, government, and regulators in BRICS and Pakistan economies, highlighting the importance of bank stability and performance for economic growth. It also contributes to the understanding of audit quality and its impact on bank performance in emerging economies.

Contribution of the Study

The study contributes by exploring the impact of audit quality on bank performance and stability in emerging economies, specifically in BRICS countries and Pakistan. It also examines the moderating effect of ownership structure and utilizes panel models for analysis. Further, ownership structure measured the role of foreign and public ownership on the relationship between audit quality and bank performance and stability as well. Moreover, this study utilizes both the static and dynamic panel models for analysis.

Organization of Study

The research is divided into four chapters, covering the introduction, literature review, research methodology, data analysis, and concluding with recommendations and limitations.

The Empirical Review

The empirical review mentioned below investigate the impact of audit quality on bank performance and stability. Here are the key findings from each study:

Sattar, Javeed, and Latief (2020) study found that high-quality audits positively influenced financial performance. Highly competitive firms had a positive connection with financial performance, while less competitive firms had a negative relationship. The study revealed by Monametsi (2020) Audit quality and firm performance: Evidence from Botswana and Uganda. a positive and significant association between audit quality and corporate success,

suggesting that audit quality enhances transparency and shareholder trust Al Farooque, Buachoom, and Sun (2020) emphasized the positive impact of independent directors and audit committee independence on firm performance. It also found that the size and scope of the audit committee had a beneficial impact on financial performance. The study investigated by Shaalan, et al. (2022) the differences between Islamic and conventional banks regarding the influence of audit committee quality on financial performance. The presence of an audit committee was found to improve the financial performance of banks (Fariha, Hossain, & Ghosh, 2022). Bengrich and El-Ghadouia (2020) the examined the impact of internal audit on the performance of companies in Morocco's Souses Massa sector. It found a strong positive relationship between internal audit and economic and financial performance. According to Saddam et al. (2020) focused on the quality of internal audit in Yemeni commercial banks. It found that internal audit standard obedience, neutrality, and quality governance had a significant impact on bank performance.

According to Habtoor (2022); Singh et al. (2021) and Rahman, Meah, and Chaudhory (2019) It found a strong positive correlation between audit quality and firm profitability in the studies examined the factors influencing internal auditing efficiency in firms. It found that inter-departmental cooperation, system management, and audit team audit committee attributes acceptance and encouragement were factors contributing to internal audit efficiency.

Audit Quality and Bank Performance

According to Becker et al. (1998) and Habbash and Alghamdi (2017), good audit quality is related to reduced earnings management and higher quality financial information. Bliss (2011) claims that audits can identify financial statement fraud and errors, thereby improving the quality of annual reports. DeFond, Erkens, and Zhang, (2014) state that audit quality provides greater certainty about the reliability of financial statements. Ahakiri & Lawal (2021); Ahmad (2016) suggest that audit fees and the size of auditing firms are important factors in assessing the quality of audits. Ali et al. (2018) emphasizes the importance of audit committees in enhancing the performance of financial reporting. Mushrif Rashid, Jasim, and Saleh (2021) explored the impact of audit quality determinants on the operational performance of Iraqi banking institutions. It found a direct correlation between bank size subject to auditing and financial performance. Ittonen and Peni (2012) discuss the significance of corporate governance practices in improving overall business performance. Esplin, Jamal, and Sunder (2018) mention that auditor independence is crucial for effective audits and improved bank performance. Evans (2017) finds that the timeliness and reputation of the auditor are key factors influencing audit quality. Santos et al. (2012) mention that good financial statements have a positive financial impact on organizations.

The audit committee of a corporation acts as an interface amongst the internal and external auditors. According to Okaro and Okafor (2013), an efficient audit committee has the following features: it can increase the external auditor's flexibility, add honesty to evaluated financial statements, and provide extra coverage for the greatest interest of owners and the overall community with regard to corporate initiatives. It can also strengthen internal audit

function, increase veteran top management effectiveness by enhancing their understanding, advance conflicts among both auditors and company management, as well as work collaboratively.

H_1a: Audit quality has a significant effect on bank performance.

H_2a: Foreign ownership has a significant impact on bank performance

H3a: Public ownership has a significant impact on bank performance.

Audit Quality and Bank Stability

Every firm needs audit quality to manage its operations and boost financial results. The administration must play a significant part in preserving financial sustainability over a long period of time due to the evolving business environment. Failing to preserve consistency can result in hoaxes, considerable financial controversies, damages, & theft inside the organization. With giving the administration an adequate confidence of the economic stability & efficiency of the entire business, strong internal auditing aids the management. The upkeep and creation of annual reports that are consistent with the codes and standards, norms, & policies relating to the organization are ensured by inner review and corporate governance (Dsouza & Jain, 2021).

Boubakary (2020) highlighted the favorable impact of internal audit on the financial outcomes of Cameroonian public and para-public firms. It suggested that internal audit with competent and neutral inspectors can enhance profitability. Ghosh (2021) explored the impact of panel characteristics and audit committee qualities on the stability of publicly traded commercial banks in Bangladesh. It found that independent directors and board composition had significant associations with stock return and firm performance

Hlb: Audit quality has a significant effect on bank stability.

H_{2b}: Foreign ownership has a significant impact on bank stability.

H_{3b}: Public ownership has a significant impact on bank stability.

Ownership structure and Bank Performance

Ownership concentration has been studied for its impact on corporate profitability since Karaca and Eksi (2011); Leech (1991) suggests that concentrated ownership provides greater monitoring incentives and can lead to superior performance. On the other hand, Maher (1999) argues that concentrated ownership may result in minority owners benefiting at the expense of majority stockholders.

According to the principal-agent theory, in the absence of close shareholder monitoring, management is less likely to adhere to a strict profit-maximizing strategy (Prowse, 1992). The separation of ownership and control under a concentrated ownership structure is seen as mitigating agency conflicts between shareholders and management. Kao et al. (2018)

emphasize that the influence of concentrated ownership on bank performance is an empirical topic.

Carnahan, Agarwal, and Campbell (2010); Colpan and Yoshikawa (2012) highlight how shareholders aim to structure ownership to monitor management and reduce agency conflicts. Hanafi et al. (2018) demonstrate that fixed ownership in a small number of hands, such as institutional shareholders, can positively impact firm profitability.

As per Psillaki and Mamatzakis (2017) Banks with high state ownership are negatively related to performance. Banks with high domestic private ownership are positively related to performance.

Banks with higher foreign ownership are positively related to performance. Ownership structures, particularly OC and family ownership, appear to have no significant influence on a firm performance, while managerial ownership exerts a positive effect on performance Omar et al. (2019); Singh et al. (2021). When the financial industry develops, it made it easier for businesses to acquire external financing, which they may use to finance expansion prospects. As the financial sector develops, businesses were better able to swiftly changed their capital structures, lowering the costed of drifting off course (Mugova & Sachs, 2017; Al-Issa et al., 2022).

H_4a: The relationship between audit quality and bank performance is moderated by foreign ownership lies significant.

H_{4b}: The relationship between audit quality and bank stability is moderated by foreign ownership lies significant.

H_5a: The relationship between audit quality and bank performance is moderated by public ownership lies significant.

H_{5b}: The relationship between audit quality and bank stability is moderated by public ownership lies significant.

Agency theory

Developed by Jensen and Meckling focuses on principal-agent relationship and information asymmetry and digitalization and organizational diversity impact power dynamics.

Stakeholder theory

Considers concerns of all stakeholders in decision-making and goes beyond monetary stakeholders to include labor, consumers, communities, and state officials. Emphasizes accountability and responsible financial reporting and incorporates ethical judgments and corporate responsibility

Methodology

The population of this analysis is financial sector. Assortment of Sampling and Data Sets The

data set utilized in the analysis in this research has created from a variety of sources. Annual reports as well as the DataStream database are used to produce information on the audit committee's characteristics and bank performance for the BRICS and Pakistan for the years 2010 -2020. The research dataset consisted of 273 banks from BRICS and all commercial banks in Pakistan. This research emphasis on the financial sector of designated BRICS and Pakistani economies. The study's sample includes exclusively developing markets & avoids established ones. The study comprises a group of nations that have historically received less attention from researchers. Being the fundamental component of the accord for regional unity, each of the BRICS nations have the most prosperous economies on the continents they represent. Brazil in Mercosur, Russia in the Eurasian Economic Union (EAEU), India in the South Asian Association to Regional Cooperation (SAARC), that depends on the South Asian Free Trade Area (SAFTA), and China in the ASEAN Plus plan and South Africa in the Southern African Development Community and the South African Customs Union (SACU). The majority of the prior research is accessible addressing the connections between stability and development in the United states of America or other industrialized countries such, Eickmeier, & Prieto, (2014); Jimenez et al. (2014); Aghion et al. (2014) employ the Spanish and American bank data, respectively.

Measurement of Variables

The bank performance and bank stability are examined as a dependent variable in this study. Bank performance is measured by ROA and bank stability is measured by Z-score. While audit quality is independent variable. AQ is dignified via proxies, Audit Committee Independence, Audit Committee Expertise. Audit Committee Independence is measured equivalent to the proportion of members of audit committees that are impartial (non-executive) & audit committee expertise is measured through the amount of members of audit committees having financial/accounting competence. Ownership structure is used as moderator and is measured by public ownership and private. This research also uses bank level control variable: Bank size Bank size is determined as natural log of overall capital value, Non-Interest income, Non-interest income is determined as such ratio of non-interest income to total revenue and Equity to total asset Bank solvency is measured with the ratio of equity to total asset ratio. and macro-economic level control variables: Lending interest rate, Interest is charged on the principal amount as a percentage of the amount, Inflation, consumer prices (annual%) division of the market basket's price in year t by its price in the base year and GDP growth is measured by (most recent years real GDP - the last years real GDP) / the previous year's real GDP

Data Analysis Techniques

A random-effect estimator & a system Generalized method of moment **(GMM)** estimator are both used in this work to estimate the parameters using panel data requirements. The most popular and adaptable dependency method, regression analysis is employed in every aspect of corporate decision-making (Hair, Black, & Anderson, 2013). To determine if the IV can estimate the outcome variable is the method's goal. Regression analysis serves as the basis for

testing forecasting models in business research, tend to range from econometric models that forecast the state of the economy based on various input variables (average incomes, business assets, etc.) to models that project a financial operation in a marketplace when a particular policy is implemented (Hair et al., 2013). Once more, it is crucial to determine if the framework differs from the fixed - effects model of unpredictability before using random effects. To distinguish among random and fixed effects, use the Hausman test. Hausman (1978) expands on the idea that while random and fixed effects are coherent in the absence of a link among fixed effect model and independent variable, the fixed-effect remains ineffective. In contrast, fixed effects are persistent in the presence of association whereas random-effects are not. This study uses random effect estimator to estimate the parameters. Beck et al. (2013) claim that the inclusion of lag repressors reduces the unobserved heterogeneity issue brought on by reverse causality. Whenever the economic expansion on bank stability is regressed in this research, it is also pertinent for the investigation at the county level. As if the economic system is doing well, the financial sector may also be stable.

A prominent and most often applied approach of estimating in finance is the System General method of moment (GMM) that was developed by (Hansen, 1982). Therefore, GMM is employed in a manner similar to how (Arellano & Bond, 1991) used GMM to devise a trade credits allocation model, as done by (Kwenda & Holden, 2014). Because the GMM methodology is an economical approach that collects observable economic data with the goal of generating estimates of the unknown parameters, it is used. Since the BRICS economies are all at roughly the same stage of economic development, current demographic circumstances are taken for granted. The GMM estimator is employed because it is the most effective method for utilizing data from population moment circumstances. As a result, initial differences using the GMM approach should produce more accurate estimates. There might be an endogeneity issue while creating a model for this study because factors on both sides of the equation (such as audit quality, bank performance, and ownership structure) are theorized to be jointly determined. The GMM estimator is derived from criterion that adhere to the law of large samples. Essentially, more samples result in results that are nearer the actual value of the variable that econometric model may assess, or in the model giving the population a comparable value.

Model Specification

The Econometric equations are modeled as follows. We specify the following regression model

ROAijr = o + 1AQ + 2OS_PBijt + 3OS_FNijt + 4(AQ*OS_PB) + s(AQ*OS_FN) 6BSZijt + 1CIRijt+ sETAijr+ 9Nnjr+ 10INT_Rijt+ 11INF_Rijt+ 12GDP_Gijt+µijr. Eq 1

Whereas ROA is measures of Bank performance and AQ is an audit quality and ACEXP, ACIND is proxy measures of Audit quality OS is Ownership Structure which is measured by OS_PB and OS_FN. Bank level variables are Bank Size (BSZ), Cost to Income (CIR), Equity to total assets (ETA), and Non-Interest Income (NII). Macroeconomics level variable and ijt shows the overall sample banks. Countries and time span.

The following regression model

are Inflation rate (INF_R), Interest rate (INT_R) & GDP growth (GDP_G).

$$Z\_SCORE\ ij1 = po + P1AQ + P2OS\_PBij1 + p3OS\_FNij1 + PiAQ*OS\_PB) + Ps(AQ*OS\_FN) P6BSZij1+ P1CIRij1 + PsETAijt +p9Nllij1 + P10INT\_Rij1 + P11INF\_Rijt+ P12GDP\_Gij1+ \mu ijt \quad Eq\ 2$$

Whereas Z score (Z_SCORE) is measures of bank stability and AQ is an audit quality and ACEXP, ACIND is proxy measures of Audit quality OS is Ownership Structure which is measured by OS_PB and OS_FN. Bank level variables are Bank Size (BSZ), Cost to Income (CIR), Equity to total assets (ETA), and Non-Interest Income (NII). Macroeconomics level variables are Inflation rate (INF_R), Interest rate (INT_R) & GDP growth (GDP_G) and ijt shows the overall sample banks. Countries and time series.

Findings and Discussion

Table 4.1 labels the numerical investigation of each variable. A total of 2106 observations were reported in this study. It portrays the mean, standard deviation, minimum and maximum of each variable in the sample data set. Table 4.1 displays there is a significant range of variation amongst the measured sample of the study. The mean value of Z-score is 5.23 with minimum range of 1.198 and max rang of 14.737 with a S.DEV of 3.548. It's also shown that the range of ROA is from -.99 to 4.35 with mean of 1.28 and a standard deviation of 1.25. As facts shows the range of ACEXP is from 0 to 1 and the average is .834 & a S.DEV is .373. The mean of ACIND is 55.297 with a maximum of 100 and minimum of 0 and a Standard deviation of 36.419. The average of ETA is 17.332 with the max. value of 52.72 & min. of 4.54 & a standard deviation is 12.775. The mean of CIR is 48.895 with the max. of 95.62 and a min. of 19.44 and a standard deviation is 20.476. Table 4.1 reports the descriptive figures of the controller variables for bank features. that the range of BSZ is from 6.04 to 13.402 with an average of 9.119 and a standard deviation of 2.034. The mean of Z score is 5.23 with a max. of 14.737 and a min. of 1.198 and a standard deviation of 3.548. The average of NII is 22.4 with a max. of 89.81 and a min. of -4.44 and a standard deviation of 24.63. As for the Macro level control variables, table 4.1 exhibits that the rang of INF_R is 4.35 to 27.392 with a mean of 9.003 and a standard deviation of 4.664. The average of GDP_G is 1.428 with the max. of 7.864 and a min. of -2.683 and a standard deviation of 3.496. The mean of INT_R is 4.374 with the max. of 8.739 and a min. of 2 and a standard deviation of 1.639.

Table 4.1: Overall Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
Z SCORE	2552	5.23	3.548	1.198	14.737
ROA	2537	1.28	1.25	-.99	4.35
ACEXP	2416	.834	.373	0	1
ACIND	2416	55.297	36.419	0	100
OS_PB	2416	.466	.5	0	1
BSZ	2552	9.119	2.034	6.04	13.402
OS_FN	2416	.085	.28	0	1
CIR	2457	48.895	20.476	19.44	95.62

ETA	2552	17.332	12.775	4.54	52.72
NII	2468	22.4	24.63	-4.44	89.81
INT_R	2552	9.003	4.664	4.35	27.392
IN_ R	2552	4.374	1.639	2	8.739
GDP_G	2552	1.428	3.496	-2.683	7.864

Table 4.2: Overall Impact of Audit Quality and Ownership Variables on Bank Profitability

	(1)	(2)	(3)	(4)	(5)	(6)
	ROA	ROA	ROA	ROA	ROA	ROA
AUDIT_EXP	.115***		.122***		.140***	
	(.037)		(.041)		(.043)	
AUDIT_IND		.009***		.005**		.006***
		(.003)		(.002)		(.001)
OWN_PB			-.077***	-.067***	-.062**	-.059**
			(.021)	(.025)	(.026)	(.028)
OWN_FN			.668*	.398***	.406**	.378**
			(.194)	(.154)	(.199)	(.153)
AEXPXPUB					-.011**	
					(.005)	
AEXPXFN					.003***	
					(.001)	
AINDXPUB						-.006*
						(.004)
AINDXFN						.007**
						(.003)
BSZ	.151	.174**	.166**	.021**	.192**	.121*
	(.087)	(.081)	(.085)	(.08)	(.084)	(.080)
CIR	-.008***	-.008***	-.008***	-.008***		-.008***
					.008***	
	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)
ETA	-.023	-.027	-.027	-.031*	-.028	.031*
	(.021)	(.017)	(.022)	(.017)	(.022)	(.017)
NII	.002	.004*	.002	.004*	.003	.004*
	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)
INT_R	.043**	.04**	.051***	.047**	.062***	.049***
	(.019)	(.017)	(.019)	(.019)	(.021)	(.018)
INF_R	-.02	-.016**	-.027**	-.024*	-.041**	-.019**
	(.014)	(.007)	(.014)	(.014)	(.019)	(.011)
GDPG	.019**	.029**	.017**	.027***	.023**	.028***
	(.008)	(.013)	(.008)	(.003)	(.009)	(.011)
_CONS	.123	.472	.143	.486	-.344	.468
	(1.134)	(1.023)	(1.078)	(.989)	(1.142)	(.978)

Robust standard errors are in parentheses

**** p<.01, ** p<.05, * p<.l*

In Regression statistics table, Model 1 shows Brazil's country results. The Model 2, displays China's country results. The Model 3, displays India's country outcomes. The Model 4, illustrate Pakistan's results. The Model 5, displays Russia's analysis and The Model 6, shows South Africa's results vice versa. In random effect table of impact of audit quality and ownership variables on bank profitability these are abbreviations are used independent variable audit quality proxy is Audit committee independence as ACIND, Audit committee expertise as ACEXP, Bank performance is measured by proxy ROA as a dependent variable, Z score, bank size as BSZ, cost to income ratio as CIR, equity to total assets as ETA, and non-interest income as NII as a bank level control variable and interest rate as INT_R, inflation rate as INF_R, and gross domestic product growth as GDP_G as a macroeconomic

The primary hypothesis examines the effect of audit quality on BRICS and Pakistani financial industry improved performance. In model 1, the impact of ACEXP on bank performance is equal to .115 which is Significant at .01% level. Findings show a favorable connection. among ACEXP and bank stability. It shows that hire ACEXP enhance stability of bank because. Any misrepresentation or inaccuracy with in bank's income statement must be immediately reported by the inspector to the investors since doing so would violate the terms of the agreement among the auditor, administration, & investors and be illegal. Audit committees are more effective when they have financial competence. A key characteristic of the audit committee's successful procedure is often its competence (Baxter & Cotter, 2009). In model 3, the relationship of ACEXP on bank performance is .122 found significant at .1% level. Outcomes designate there is a positive affiliation of ACEXP & bank stability. The findings suggest that at least one member of the audit committee should have financial expertise due to the task of the auditor to provide stakeholders with reliability report for use in making investment decisions. Any misrepresentation or inaccuracy in the income statement of the firm must be immediately reported by the auditor to the shareholders as any failure to do so will be a violation of the agreement here between auditor, administration, & investors as well as a violation of the law.

In model 5, the influence of ACEXP on bank performance is .140 which is significant at .01% level. The results show positive relationship among ACEXP and bank stability. It indicates that hiring expert auditor's boosts bank stability as theory also suggest. In model 2, the association among ACIND on bank performance is .009 which is significant at .01% level. The results demonstrate a positive relationship within ACIND and bank stability. In model 4, influence of ACIND on bank performance is 0.05 which is significant at 5% level. The outcomes display a positive effect of ACIND on bank stability. The Audit Committee's independence increases its abilities, decreases the agency problem, and lessens the danger of internal misappropriation. (Baxter & Cotter, 2009). In model 6, the impact of ACIND on bank performance is .006 which is significant at 5% level. Results show there is a positive association among ACIND and bank performance. According to agency theory, it is anticipated that a banks including an independent auditing committee will see an

improvement in performance and valuation while reducing agency expenses. In model 3, the impact of OS_PB on bank financial performance is -.077 which is negatively significant. Outcomes suggest there is a negative association among OS-PN and bank performance. In model 4, the effect of OS_PB on bank performance is -.067 which negatively significant. Results suggest there is a negative relationship among OS_PB and bank performance. In model 5, the impact of OS_PB on bank performance is -.062 which negatively significant. Results show negative relationship. In model 6, the influence of OS_PB on bank performance is -.059 which is negatively significant. In model 3, the results show the influence of OS_FN on bank profitability is .0668 which is significant at .1% level. Outcomes display there is positive association among OS_FN and bank performance. According to agency problems, concentrated ownership in the financial sector improves oversight and control of the operation through with a greater circulation of information. In model 4, the outcomes indication the influence of OS_FN on bank profitability is .398 which is significant at .01% level. In model 5, facts demonstrate the connection of OS_FN on bank performance is .406 which is significant at .05% level. In model 6, statics reveal the assembly of OS_FN on bank financial performance is .378 which is significant at .05% level. In model 5, the Audit committee expertise interaction term of public ownership (ACEXPXPB) is -.011 which is negatively significant. In model 5, result indicates that Audit committee expertise with interaction term of Foreign ownership (ACEXPXFN) is .003 which is significant at .01% level. Results indicate that foreign ownership with audit quality expertise has a positive impact on Bank performance. In model 6, facts show the audit committee independence with the interaction term of public ownership is -.006 which is negatively significant. In model 1, the impact of BSZ on bank performance is .151 which is insignificant. In model 2, the results indicate the relationship of BSZ on bank performance is .174 which is significant at .05% level. In Model 3 the outcomes show the relationship of BSZ on bank performance is .166 that is significant at .05% level. In Model 4 the outcomes show the relationship of BSZ on bank profitability is .021 that is significant at .05% level. In Model 5 the grades indication the relationship of BSZ on bank profitability is .192 which is significant at .05% level. In Model 6 the scores suggest the relationship of BSZ on bank performance is .121 that is significant at .05% level. In model 1, outcomes show the impact of CIR on bank performance is -.008 which is negatively insignificant at .01% level and the same results for model 2, model 3, model 4, model 5 and model 6.

In model 1, the impact of NII on bank performance is .002 which is insignificant. In model 2, the effect of NII on bank profitability is .004 which is significant at .1%. In model 3, the relationship of NII on bank performance is .002 which is insignificant. In model 4, the results indicate the effect of NII on bank profitability is .004 which is significant at .1% level. In model 5, outcomes show the effect of NII on bank financial performance is .003 which is significant. %. In model 6, the influence of NII on bank profitability is .004 which is significant at .1% level. For Macroeconomic control variables the results shown in Model 1, the impact of INT_R on bank profitability is .043 which is significant at .05% level which shows that interest rate of country positively effects bank stability. In Model 2, the outcomes demonstrate the influence of INT_R on bank performance is .043 that is significant at .05% level. In Model 3, the results establish the effect of INT_R on bank performance is .051

which is significant at .01% level. In Model 4, the outcomes found the effect of INT_R on bank performance is .047 which is significant at .05% level. In Model 5, the facts reveal the effect of INT_R on bank performance is .062 which is significant at .01% level. In Model 6, the evidence shows the influence of INT_R on bank performance is .049 which is significant at .01% level. Another macro-economic control variable of study is INF_R, in all 6 model is -.02, -.016, -.027, -.024, -.041 and -.019 which shows an insignificant level. In Model 1, The findings show that the effect of GDP_G on bank performance is .019 which is significant at .05% level. In Model 2, the outcomes expose the effect of GDP_G on bank performance is .029 which is substantial at .05% level. In Model 3, the relationship reveal that the influence of GDP_G on bank profitability is .017 that is significant at .05% level. In Model 4, the outcomes expose the influence of GDP_G on bank financial performance is .027 which is significant at .01% level. In Model 5, the upshots represent that the impact of GDP_G on bank performance is .023 which is Significant at .05% level. In Model 6, the results signify that the influence of GDP_G on bank performance is .288 which is significant at .01% level.

Table 4.3 Overall Impact of Audit Quality and Ownership Variable on Bank Stability

	(1)	(2)	(3)	**(4)**	**(5)**	**(6)**
	Z_SCORE	**Z_SCORE**	**Z_SCORE**	**Z_SCORE**	**Z_SCORE**	**Z_SCORE**
ACEXP	.419**		.452**		.399**	
	(.212)		(.222)		(.191)	
ACIND		.015***		.016**		.018*
		(.003)		(.003)		(.004)
OS_PB			-.059***	-.048***	-.031***	-.045***
			(.001)	(.006)	(.005)	(.004)
OS_FN			.078**	.066*	.095**	.024***
			(.039)	(.041)	(.041)	(.09)
ACEXPXPB					-.037***	
					(.037)	
ACEXPXFN					.091***	
					(.020)	
ACINDXPB						-.031**
						(.015)
ACINDXFN						.012**
						(.004)
BSZ	.124***	.115***	.123***	.112***	.125***	.113***
	(.018)	(.016)	(.019)	(.019)	(.018)	(.018)
CIR	-.008**	-0.09*	-.001	0.008***	-.005*	0.002
	(.004)	(.005)	(.003)	(.003)	(.003)	(.003)
ETA	.264***	.276***	.267***	.278***	.268***	.279***
	(.019)	(.017)	(.02)	(.017)	(.02)	(.017)
NII	.002	.003	.002	.003	.002	.003

	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)
INT_R	.045**	.048***	.052***	.053***	.063***	.055***
	(.018)	(.018)	(.018)	(.02)	(.018)	(.02)
INF_R	-.046	-.046	-.05	-.052	-.065	-.046
	(.05)	(.048)	(.052)	(.048)	(.052)	(.052)
GDP_G	.032**	.049*	.03*	.046*	.033	.048*
	(.018)	(.028)	(.019)	(.028)	(.022)	(.029)
CONS	.178***	.185***	.148***	.168***	.146***	.198***
	(.091)	(.057)	(.021)	(.093)	(.006)	(.032)
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes
Hausman	.506	.796	1.203	.343	.655	.298
F-value	83.629	97.669	64.824	80.922	84.173	48.14
Observations	2139	2168	2139	2168	2139	2168
R2	.395	.482	.412	.491	.436	.511

Robust standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

In Regression statistics table, Model 1 demonstrates Brazil's country fallouts. The Model 2, spectacles China's country outcomes. The Model 3, spectacles India's country outcomes. The Model 4, explain Pakistan's outcomes. The model 5, displays Russia's analysis and The Model 6, displays South Africa's outcomes of Audit Quality and Ownership Variables on Bank Stability. In model 1, the impact of ACEXP on bank stability is .419 which is Significant at .05% flat. Results spectacle an auspicious association among ACEXP and bank stability. It shows that appoint ACEXP boost stability of bank as any misrepresentation or inaccuracy with in bank's income statement must be instantaneously conveyed by the assessor to the shareholders since doing so would disrupt the standings of the contract amongst the accountant, management, and shareholders & be illegal. In model 3, the association of ACEXP on bank stability is .452 which significant at .05% level. Estimation directs min. one member of the audit committee must be a business expert as the auditor's duty is to produce quality reports to shareholder for investment decision purpose. Expertise in Audit committee enhance the performance of bank which also smoothen the stability of bank. In a model 5, the impact of ACEXP on bank stability is .399 that is significant at .05% level. The estimation displays enthusiastic association between ACEXP & bank stability. It specifies that signing skilled auditor's lifts bank stability as theory too advise.

In model 2, the link between ACIND on bank constancy is .015 that is significant at .01% level. The outcomes determine a positive association between ACIND & bank constancy. In model 4, effect of ACIND on bank Constancy is .016 which is significant at 5% level. In a model 6, the influence of ACIND on bank stability is .018 which is significant at .1% level. Estimation display there is a positive connotation between ACIND & bank stability. In model 3, the influence of OS_PB on bank stability is -.059 that is negatively significant. Also in model 4, the impact of OS_PB on bank stability is -.048 which negatively significant. In model 5, the influence of OS_PB on bank stability is -.031 which negatively significant. In model 6, impact of OS_PB on bank stability is -.045 which is negatively significant which demonstrations an adverse association among them (Mamatzakis et al., 2017). In model 3, the

impact of OS_FN on bank stability is .078 which is significant at .05% level. In model 4, the results indicate the effect of OS_FN on bank stability is .066 which is significant at .1% level. Although ownership & control differ, concentrated ownership is thought to lessen the agency problem that both shareholders and managers encounter. In model 5, results reveal the linking of OS_FN on bank stability is .095 which is significant at .05% level. In model 6, estimations reveal the association of OS_FN on bank stability is .024 which is significant at .01% level. In model 5, the (ACEXPXPB) is -.037 which is negatively significant. In model 5, result labels that (ACEXPXFN) is .091 which is significant at .01% level. Outcomes show that foreign ownership with audit quality expertise has a positive impact on Bank stability. In model 6, results display the (ACINDXPB) is -.031 which is negatively significant. In model 6, the impact of (ACINDXFN) is .012 which is significant at .05% level. In model 1, the influence of BSZ on bank stability is .124 which is significant at .01% level. In model 2, the impact of BSZ on bank stability is .115 which is significant at .01% level. In Model 3, impact of BSZ on bank stability is .123 which is significant at .01% level. In Model 4, the impact of BSZ on bank stability is .112 which is significant at .01% level. In Model 5, the influence of BSZ on bank stability is .125 which is significant at .01% level. In Model 6, impact of BSZ on bank stability is .113 which is significant at .01% level. The results of CIR on bank stability in model 1 model 2 model 4, model 5 and model 6 is -.008, -0.09, -.001, -.005 and 0.002 which is insignificant. But in model 3, impact of CIR on bank stability is 0.008 which is significant at .01% level. In model 1, the influence of ETA on bank Stability is .264 which is significant at .01% level. In model 2, the impact of ETA on bank stability is .276 that is significant at .01%. In model 3, the association of ETA on bank stability is .267 that is significant at .01% level. In model 4, influence of ETA on bank stability is .278 that is significant at .01% level. In model 5, the impact of ETA on bank stability is .268 that is significant .01% level. In model 6, the impact of ETA on bank stability is .279 that is significant at .01% level. The results of NII on bank stability, in all 6 model is .002, .003, .002, .003, .002 and .003 which displays negatively significant level. For Macroeconomic control variables the results shown in Model **1,** the impact of **INT_R** on bank stability is .045 that is significant at .05% level. In Model 2, the impact of INT_R on bank stability is .048 which is significant at .01% level. In Model 3, the influence of INT_R on bank stability is .052 that is significant at .01% level. In Model 4, the impact of INT_R on bank stability is .053 which is significant at .01% level. In Model 5, the facts reveal the effect of INT_R on bank performance is .063 which is significant at .01% level. In Model 6, the evidence shows the influence of INT_R on bank performance is .055 that is significant at .01% level. Macro-economic control variable of study is INF_R, in all 6 model is -.046, -.046, -.05, -.052, -.065 & -.046 which displays an insignificant level. In Model 1, The results indicate that the impact of GDP_G on bank stability is .032 which is significant at .05% level. In Model 2, the influence of GDP_G on bank stability is .049 which is significant at .1% level. In Model 3, the impact of GDP_G on bank stability is .03 which is significant at .1% level. In Model 4, the effect of GDP_G on bank stability is .046 which is significant at .1% level. In Model 5, the influence of GDP_G on bank stability is .033 which is insignificant. In Model 6, the impact of GDP_G on bank stability is .048 which is significant at .1% level.

Table 4.4 Impact of Audit Quality and Ownership Variables on Bank Profitability using

System-GMM

	(1) ROA	(2) ROA	(3) Z_Score	(4) Z_Score
L.DV	.871***	.862***	1.214***	1.271***
	(.024)	(.078)	(.031)	(.069)
ACEXP	.152***		.421***	
	(.061)		(.102)	
ACIND		.014***		.031***
		(.005)		(.011)
OS_PB	-.087***	-.068**	-.051***	-.059***
	(.019)	(.031)	(.017)	(.013)
OS_FN	.782***	.653**	.237***	.194**
	(.216)	(.302)	(.079)	(.087)
ACEXPXPB	-.046**		-.081****	
	(.021)		(.027)	
ACEXPXFN	.022***		.142***	
	(.006)		(.033)	
ACINDXPB		-.078***		-.117***
		(.024)		(.041)
ACINDXFN		.031***		.072***
		(.009)		(.026)
Controls	Yes	Yes	Yes	Yes
Wald stat	102.412	94.781	87.716	81.295
AR(l)	15.478***	16.278***	21.389***	21.985***
AR(2)	1.076	1.161	1.168	1.157
Hensen	125.321	131.142	112.327	115.251
Observations	2139	2168	2139	2168

Above table show the results of system GMM for BRICS and Pakistan. In this table L.DV is the lag value of Dependent variable. ACEXP is the Audit committee expertise, ACIND is the audit committee independence, OS_PB is the Ownership structure of public banks, OS_FN is the Ownership structure of foreign banks. ACEXP X PB is the interaction term of audit committee expertise with interaction of public ownership, ACEXP X FN is the audit committee expertise with the interaction term of foreign ownership. ACIND X PB is the audit committee independence with the interaction term of public ownership, ACIND X FN is the audit committee independence with the interaction term of foreign ownership.

Table 4.4 displays the coefficient value to inspect the impact between the Audit Quality and Bank Performance & Bank stability. In model 1, the Lagged value of bank performance is .871 which is significant and positive at the .01% level, and in model 2, the lagged value of bank performance is .862, which is significant and positive at the .01% level. In model 3, the impact of L.DV on bank stability is 1.214 which is significant at .01% level. In model 4 the coefficient value of L.DV of bank stability is 1.271 which is significant at .01% level. In

addition, the outcomes of the Hausman test is in advocate of RE model contrast to the Fixed effect model. Additionally, Model **1** stated the results of the GMM model as the coefficient values of ACEXP on bank performance is .152 which is significant at the .01% level. Moreover, Model 3 validated the effect of ACEXP on bank stability is .421 that is statistically significant at the .01% level. Moreover, the Hausman test result was also significant in Model 3, which supports the Random effect model. Also, Model 2 showed the coefficient values with the GMM model. In model 2, the coefficient value of ACIND on bank performance is .014 which is positively significant at .01% level. Similarly, in model 4, the impact of ACIND on bank stability is .031 which is positive and significant at .01% level. In model 1 and 2, the impact of OS_PB on bank performance is -.087 and -.068 which is negatively significant, and in model 3 and 4, the impact of OS_PB on bank stability is -.051 and -.059 which is negatively significant. In model 1 and 2, the effect of OS_FN on bank performance is .782 and .653 which is significant at .01% and .05% level. In model 3 and 4 the influence of OS_FN on bank stability is .237 and .194 which is significantly positive at .01% and .05% level. In model 1, the impact of ACEXP X OS_PB on bank performance is -.046 which is negatively significant. In model 3, the effect of ACEXP X OS_PB on bank stability is -.081 which is insignificant. In model 3 the coefficient value stated the effect of interaction term ACEXP X OS_FN on bank performance is .022 which is significant at .01% level. In model 3, the impact of ACEXP X OS_FN on bank stability is .142 which is positively significant at .01% level. In model 2 stated that the coefficient value of interaction term ACIND X OS_PB on bank performance is -.078 which is insignificant and in model 4, shows that the coefficient value of interaction term ACIND X OS_PB on bank stability is -.117 that is insignificant (Sattar et al., 2020). In model 2, the impact of interaction term ACIND X OS_FN on bank performance is .031 which is significant at .01% level. In model 4, the coefficient value of interaction term ACIND X OS_FN on bank stability is .072 which is positively significant at .05% level. Furthermore, the post-diagnostic test's negligible value & Hansen's J test's assurance of the legitimacy of over identification limitations guarantee the validity of the instrumental variables employed to address the endogeneity problem. Although over identification constraints would not be valid in the context of heteroscedasticity, the issue of heteroscedasticity too is addressed (Baum et al., 2003). As in the previous example, serial correlation is found upon first level however omitted at second batch according to the substantial value of AR (1) & negligible value of AR (2). Additionally, the Wald test's significant value suggests that all hypotheses have been accurately defined.

Discussion

The findings of this study suggest that the relationship between audit committee expertise and performance of banks is explained by agency theory. The quality of the accounting records was improved, and the likelihood of financial errors or deceit was reduced, thanks to the audit committee's effective oversight, which was made possible by their experience. This will strengthen overall financial performance and promote investor trust in the bank. Additionally, an audit committee having a high degree of knowledge is better positioned to give administration guidance on strategy, improving making decisions and effectiveness. A highly capable audit committee can help the bank become more flexible to shifts in the business

climate by assisting m the identification of potential hazards as well as possibilities. Theoretically, confrontations of interest could put at risk a bank's stability. Yet, by promoting effective monitoring, identifying hazards, and enhancing the caliber of financial reporting, the appointment of a professional audit committee with the necessary skills can assist limit the likelihood of these problems. According to the theory of agency, the ownership structure of the bank affects the relationship among the audit committee's independence and expertise and bank performance. Specifically, the ownership type public or foreign can have a variety of effects on the link. In the event of foreign ownership, the independence and experience of the audit committee are particularly crucial for promoting effective oversight and improving bank performance. The inclusion of external oversight procedures brought about by foreign ownership increases the audit committee's capacity to advance sound governance principles and boost bank performance. Foreign shareholders could have greater standards for the accuracy of financial reporting and corporate governance. As a result, they could put more emphasis on banks to create audit committees that are powerful, independent, and well qualified. Due to this pressure, the auditing board is more likely to successfully advance good governance principles and improve bank performance.

Conclusion

The purpose of this study is to measure the influence of audit quality on the banking sector's financial performance. To also explore the impact of audit quality on the banking sector stability. Also investigate the moderating role of ownership structure on the relationship between audit quality and bank performance in BRICS and Pakistan. To examine the moderating role of ownership structure on the relationship between audit quality and bank stability in BRICS and Pakistan. The study's sample includes exclusively developing markets Bries and Pakistan & avoids established ones. An estimated total population of about 3.21 billion, or about 26.7% of the world's land surface and 41.5% of the global population. Brazil, Russia, India, and China are among the world's ten largest countries by population, area, and GDP, and the latter three are widely considered to be current or emerging superpowers. In this study we have analysis the moderating role of ownership structure on link with audit quality and bank performance. ACIND and ACEXP are positively related to bank performance and bank stability. Foreign owners could be more knowledgeable about complex supervision procedures and standards than, say, local market participants. In the situation of public banks, political meddling may occur, which might reduce the audit committee's efficacy. Members of the audit committee may come under pressure from legislators or elected officials to ignore particular concerns or treat those with political links favorably. As a result, the audit committee's competence and independence are jeopardized, which affects bank stability and performance. The outcomes of the study can help regulators and politicians create laws and regulations that support excellent auditing practices and raise the stability and effectiveness of banks in the BRICS nations. The introduction of regulations that motivate public banks and foreign investors to put money into institutions with excellent auditing practices is something that policymakers ought to think about doing. Furthermore, this research's insights are helpful to economic analysts as well as investors as they make

choices about investments. Shareholders use this data to make well-informed choices about whether to invest in banks with excellent auditing procedures. Additionally, the study's conclusions are important for banks themselves, especially those that work in sectors with high public bank ownership and foreign ownership rates. Using this data, banks may pinpoint areas where their auditing procedures and regulatory frameworks may benefit from change.

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An Empirical Study of YouTube advertisement impacts on young generation: An ethos of YouTube influence

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Abstract

In recent times, there is a remarkable increase in number of people who are using internet for different purposes, but a large number of internet user are the ones, who are the viewers at the YouTube and those who are the creators, who publish their videos and different material on YouTube. Not all factors that sway customers to think YouTube advertising is effective have been discovered. This paper listed YouTube advertising's entertainment, informativeness, customizability, and irritability can affect advertising value, brand recognition, and customer intent to buy. The conceptual model hypothesizes that ad value strategies improve brand recognition, which affects users' views of You Tube's utility and their propensity to keep buying. This study used Pakistani market and young generation which are studying in Pakistani Universities and 250 surveys were analyze variable data. Entertainment, informativeness, and customization are the strongest positive drivers, while irritation is the strongest negative driver for YouTube ads. However, YouTube's advertising value affects brand awareness and buy intent.

Introduction

No matter how much money is put into advertising, the only way it can be successful is if it is successful in gaining the attention of populations. In the costly and crowded advertising landscape of today, it is essential that advertisements contain the appropriate statements and contents advertising surroundings (Hofstede & De Mooij, 2010). The majority has adopted social networking, and marketers are aware of this growing trend. The proportion of businesses that make 88% of 2014's goals involve using social media for promotion. The costs associated with advertising for the social channels, which account for approximately four-point nine percent of the total. It is anticipated that the total amount spent on advertising on a global basis will have more than doubled by 2018 (Social media report, 2015; Nielsen, 2012). As a result, one of the reasons why this area of study is so appealing is that a significant portion of the world's population is linked together in some way with, or at the very least, a good working knowledge of social media and the dominant role it plays in modern life.

YouTube is an online video-sharing platform that was established in 2005 which enables users to upload videos, watch videos, comment on videos, and provide access to films shot location. It ranks third in terms of numbers of visitors of any website in the entire globe. Documenting more than a billion visitors each and every month who actively like, comment on, and share material each month, watching more than movie spanning six billion hours. uploading movies to YouTube, along with sharing and commenting on other users' videos 100 hours of brand-new footage are uploaded to this website every minute (Bradshaw & Garrahan, 2008). In addition, the young population between the ages of 18 and the most frequent users are people who are 34 years old, account for two-thirds of all videos uploaded to YouTube, and watch more videos uploaded to YouTube than they do any cable TV station. People who use this service (Perrin, 2015).

A wealth of knowledge and eye-openmg insights can be found on YouTube in relation to marketplaces and consumer spending. Twenty-two countries make up this list and a few mobile phone manufacturers, like Apple and BlackBerry, among others YouTube provided users with the option to view content in their native language, which it is now feasible for users of YouTube to use portable technology to view videos (Bradshaw & Garrahan, 2008). Exclusively this wide use of, the methods that advertisers build their campaigns have been impacted by this platform their method of advertising (Nielsen, 2012). Additionally, Producers of web videos have the chance to participate in YouTube's own partner program to develop original content fresh content to be added to the website in order to capitalize on the benefits of sharing the revenue generated by advertising on YouTube. To this day, more than 30,000 collaborators from around the world have There are now 27 nations in total are taking part in the partner effort (Kotler & Armstrong, 2013).

Advertisers have become more interested in YouTube as a result of the multiplying of ads within its content and interested in investing in this developing medium as it a platform for the communication of brands and the efficient placement of advertisements online. There are advertisements that appear on YouTube, a platform for sharing. Components that have been released or chosen by users are featured on the site's home page (Adage). It Additionally conceivable that they'll show up when you watch the movie page, which usually appears as a sign. Additionally, the marketer could insist that the proposed advertisement is targeted toward the appropriate audience to the video material, in which case you will be subject to higher rates. This effect can be achieved through the use of advertising formats that have been established (Ad Age Survey). On YouTube, you can basically choose between two different kinds of advertisements video. Two types of video advertisements are in-stream and in-video advertisements many different kinds of advertisements can be found on YouTube. In-stream advertisements allow viewers to choose whether or not to observe brand advertisements after the video has been playing five seconds at the very least. A maximum of 15 seconds is allotted for standard in-stream commercials. Those ads that usually fill the bottom third of a page appear in video advertisements Business film. The viewer typically sees these advertisements at the 15-second point, and he/she has the ability to minimize or dismiss them if they so choose (Adage; Pikas & Sorrentino, 2014). Despite the fact that television is still the most prevalent means of media and channels, including social media, which has a relatively consistent effect such as YouTube continues to expand, despite the fact that it is undergoing the expansion of advertising expenditures acceleration significantly (Adage; Bellman, Schweda, & Varan, 2009; Clancey, 1994). On the other hand, another question that has been raised is whether advertisers who are with this new environment could be operated by those who have experienced the impacts of advertising substitution between YouTube and other forms of media in order to achieve the highest possible rate of return on investment while benefiting from advertisements on YouTube.

Despite the pressing requirement to investigate, every facet of there is not enough material available on YouTube as a whole about the fresh promotional medium. Strategy that will be used

for advertising by businesses. As a result, the findings being presented here tries to fill in the blanks by investigating whether and how YouTube ads influence engagement. The worth of the advertisement, as well as the intentions of customers to purchase. here hasn't been any study to look into the potential link as per our knowledge, between the value of advertising on YouTube and a user's intention to make a purchase, nor have they discovered if these factors have any predictors. As a result, the objective of the research is to first offer and then examine a complete, integrated approach. for advertising on YouTube provided by circumventing the restrictions that had been placed on previous research on social media. Towards this end, the following questions will guide our research:

1. Is it essential for businesses to have their advertisements optimized for YouTube? determining the consumers' purpose to make a purchase?
2. What factors have an impact on the value of advertisements on YouTube, and how do those factors effect value?
3. Does the ability to personalize advertisements on YouTube make a significant contribution toward elevating the emotional qualities of advertising value?

The paper will progress as follows: it will begin with a brief review of the relevant prior research on our independent variables, after which the research assumptions are developed and the results are described our chosen approach. The report concludes by delivering the findings of the content analysis as well as an analysis of the results.

Literature Critique

Entertainment

The entertaining that can be found in various media platforms can be defined as for media consumers (Eighmey & McCord, 1998). According to findings from previous studies, increasing the amount of entertainment that is provided is most likely to create an advantage for people who use media, which will encourage them to use the communication on a more regular basis. The possibility of an advertisement, as well as amusement seekers and purchasers, is reflected in advertising for the entertainment industry satisfaction, both of which are results of exposure to the advertisement (Lee & Choi, 2005). There is a strong possibility that advertisements will be utilized in order to the hedonic requirements of customers (Rodgers & Thorson, 2000). Consequently, the practice of cultivating a predilection for pleasure and satisfaction (Pollay & Mittal, 1993). In the social media sphere, particularly when it includes the presentation of enjoyable entertainment, is capable of increasing customer requirements related to hedonism (Fischer & Reuber, 2011; Edwards, Li, & Lee, 2002a, 2002b). Being able to improve one's mood is where the value of entertainment really resides. Satisfaction of the user's need for entertainment expulsion, and distraction (Muntinga, Moorman, & Smit, 2011) by letting clients choose for themselves, encounter, share information, and even post photos and videos of your adventures because of the social relationships they have (Kim, Sohn, & Choi, 2011).

Madison & Vine in concepts of, many people can be reached through their YouTube account. Many businesses have signed on to the idea of combining advertising and entertainment. In order to reach a greater number of consumers with messages that are both interesting as incorporating logos and brand names into the set design of entertaining programs. Thus, the most prevalent type of branded content is product advertisements entertainment that cuts through the noise and gives birth to something fresh ways of attracting the attention of a greater number of customers (Kotler & Armstrong, 2013).

Informativeness

The degree to which something delivers information is one way to define the term "informativeness." providing people with information that is efficient and inventive (Chen, 1999; According to Ducoffe, (1995a, 1995b); Clancey (1994) suggestions are included here that consumers of media are able to differentiate the capacity of advertising to provide information for customers is the principal argument in favor of accepting the advertisement. Ducoffe's meaning claims Ducoffe (1995a) and (1995b), informativeness is defined as "there is a general agreement that advertisements are effective at informing consumers" consumers of product alternatives," and as a result, it has the potential to drive the gratifying conclusion reached regarding the purchase. Erdem, Swait, and Valenzuela (2006) discovered that customers have a tendency to demonstrate a number of more evidence that consumers are searching for product information and acquiring information more through the sharing of information between individuals without conditions (De Mooij & Hofstede, 2010). In addition to this, the definition is broadened and a great number of academics demonstrated how attitudes towards advertisements on social media sites are influenced by informativeness. Therefore, societal capabilities of various forms of media make them an appropriate instrument for accomplishing such a goal format, which showcases additional information regarding the merchandise (Lee & Choi, 2005).

Irritation

The degree to which one is irritated can be conceptualized as a measure of the content's is a nuisance to surfers due to its messiness (Eighmey & McCord, 1998). According to findings of previous research, people are becoming less receptive to television advertising, and as a result, they either pay no attention to the advertisements or use that time to take part in one of the other activities. (Clancey, 1994; Speck & Elliott, 1997). On the internet, there is also advertising in the form of banner and pop-up ads, which are considered annoying and grating (Edwards et al., 2002a, 2002b). Due to the annoyance factor of internet commercials, people frequently avoid seeing advertisements that are presented online (Benway, 1998; Cho et al., 2004). It was observed by Ducoffe (1995a, 1995b) display advertisement as ad banner can be very annoying. could potentially divert the attention of customers and interfere with their experiences as humans. Consumers had a greater likelihood of recognizing the advertisements as an attempt to irritating as well as providing an unwelcome source of irritation when it was activated strategies

that irritate, offend, or are excessively manipulative (Edwards et al., 2002a, 2002b; Pasadeos, 1990). When it comes to social media platforms like YouTube, it's possible that annoyance caused by advertising is related to the target audience interruption, in addition to the worries of customers about missing their products (Corstjens & Umblijs, 2012)

Customization

When it comes to advertisements, customers are more amenable when it is personalized and applicable to the way they live their existence (DeZoysa, 2002). Because of this, it is essential for advertisers to listen to what their customers want characteristics, as well as patterns of consumption (Rao & Minakakis, 2003). Ducoffe (1995a, 1995b) was of the opinion that advertising is effective. successfully when there is a transfer of value between the consumers and the advertisers through the messages that are being advertised. To phrase this another way, consumers are likely to focus their attention on advertisements that have been labeled as being more personalized, while ignoring advertisements that are regarded as being generic have fewer individualized features (Liu, Li, Mizerski, & Soh, 2012).Utilizing social media personalization being a benefit has the potential to transform advertising, which allows for the classification of customers and the monitoring of their activities depending on the individual's location and demographic data (Zeng, Huang, & Dou, 2009). YouTube is recognized as one of the most powerful among other channels. The business could use social media as a platform to carry out some of its goals mission through the distribution and production of video content that is centered on each customer requirements and individual inclinations.

Advertising Worth

The value of advertising can be described as "an individual's assessment that how effective or helpful advertising is to consumers," as a result, it is clear that this utilized as a practical instrument for determining how successful advertising campaigns are (Edwards et al., 2002a, 2002b; Rao & Minakakis, 2003). When the advertised material is relevant to their needs, consumers learn the advantages of advertising. The content which is generated together shared the exchange value of ads, advertisement and all the viewers who are witness it. As a result, the value of advertising can be conceptualized as an all-encompassing evaluation and illustration of the worth of promotion on various social media platforms.

Awareness of the Brand

Effectively enhancing strong relationships with customers can be accomplished by brands. (Tsimonis & Dimitriadis, 2014). a description of brand recognition as a company's consciousness or memory (Huang & Sarigollu, 2012).

These days, only new media does not increase the existing client-business relationship, but they also and the relationship between the company and its customers, but they also present a new twist on

traditional choices, which increases the capacity of businesses to interact with consumer dialogue, thereby contributing to the strengthening of their instrument of communication (Tsimonis & Dimitriadis, 2014). Brand recognition can be increased and built through social networking (Stephen & Toubia, 2010), because a larger pool of people are already are engage in social media activities. Spreading one's identity across all of those networks can assist in notifying people about it and become widespread with the company, thereby contributing to the creation of brand recognition (Golding).

The Determination to Purchase

The studies from different practitioners have suggested that the intention to purchase is the most important factor in the single most important indicator of how successful advertising is, and could also influenced by factors such as one's disposition toward the advertisement (Chen, 1999; Wu, 2006). MacKenzie and Lutz (1989) learned that one's response to the commercial has an effect on both brand awareness and brand favorability a desire to make a transaction. Zeng et al. (2009) found that there is a favorable correlation between advertising value and behavior within the context of the social media environment objective to be even more detailed, another research acknowledges the value of advertising as a factor that leads to intend to buy when using advertisement in social media (Kim et al., 2011). Dehghani and Turner's study on purchase behavior was published in 2015 which stated that the recommendations and the reputation of the company had a significant impact on the intention value that previous customers have shared with one another on various social media platforms.

Advertisements on YouTube

The recently established model of video advertising that can be viewed online, possessing both the assets that television and social media platforms have to offer a number of qualities that stand out from those associated with more conventional advertising structure (Dehghani, Nourani, & Choubtarash, 2012). MacKenzie, Lutz, and Belch (1986); Van-Tien Dao et al. (2014a,b) perceived traditional advertising is impacted by social media's increased dependability and transparency tests of the effectiveness of ads. Including both the information and a higher priority than the advertisement's usefulness for making purchases is its entertainment value judgments would have an effect on the value of the advertising. Recent studies have shown imply that a portion of the advertising revenue is being allocated toward social media are continually expanding, indicating that companies are becoming an increasingly important interested in interacting with their audience, contributing to the shaping of their experiences, and capitalizing on the opinions of their followers to strengthen the impact of their ads (Lipsman, Mudd, Rich, & Bruich, 2012). You can find different kinds of videos on YouTube, any one of which could theoretically feature the company more prominently; despite this, a number of studies have shown that Customers have trouble remembering seeing details about products on

websites. Website, which demonstrates how brands can frequently perform peripheral role that is more prominent (Dehghani, Choubtarash, & Nourani, 2013; Pikas & Sorrentino, 2014).

Despite this, the earlier study on ads on YouTube reveals that have never given any thought to the elements that influence the value of advertising and the effects that it has on consumers' awareness of the company as well as their purchases intention developed later on. In addition, previous research on societal issues has shown that advertisements in the media have shown that attitudes about advertising are related to three factors: educational value, amusement value, and annoyance value; however, the most crucial factor is the direct effect of customized advertisements when combined with other factors. Components have never been subjected to any kind of analysis. As a result, this research contributes to the body of knowledge by establishing a connection between the attitudes of consumers in addition to brand awareness and purchase intent, advertising value should be oriented towards the customization of the ads as a determining element for ad value.

Model Conceptualization and Assumptions

This section outlines our theories as well as our conceptual framework, model developed based on the earlier conversation regarding the literature analysis in relation to the attention that consumers are paying to advertisements on YouTube and additional pertinent issues that are connected to our variables. Finding the effectiveness of advertising can be done in a variety of ways, such as by company awareness Dehghani et al. (2013), brand worth Cobb-Walgren,Ruble and Donthu (1995) and the process by which customers decide whether to buy a product by forming opinions about its physical attributes (Intention to buy).business based on data obtained from a variety of sources pertaining to advertising (Pikas & Sorrentino, 2014; Lipsman et al., 2012). The meaning or value that consumers take from the brand is influenced by these characteristics, such as name recognition (Debatin, Lovejoy, Hom & Hughes, 2009; Lee & Shen, 2009; Rao & Minakakis, 2003). (See Fig. 1)

In the realm of empirical research, Edwards et al. (2002a, b) conducted a research survey on influence on the value of irritability of advertisements that had an adverse effect on how people felt about the advertisement. In addition to this, with independent research conducted by Rao and Minakakis (2003) revealed that there is an inverse connection among impatience and advertising worth, and a favorable correlation between advertising and the dissemination of information value, which in tum has an impact on one's perspective regarding advertising. Previous research has also demonstrated that the value of advertising is connected to due to the presence of three factors: amusement, and irritability, which in tum influence how people feel about advertising (Waters, Canfield, Foster, & Hardy, 2011). In spite of this, however, entertainment and the usefulness of information is evaluated based on the favorable aspects of social advertising in the media, which represents both affective and values of the mind correspondingly (Lee & Choi, 2005). To contrast and offer an option, according to a research, annoyance has no bearing on the

effectiveness of advertising, but represents consumers' negative reactions to products being delivered in an incomplete form.

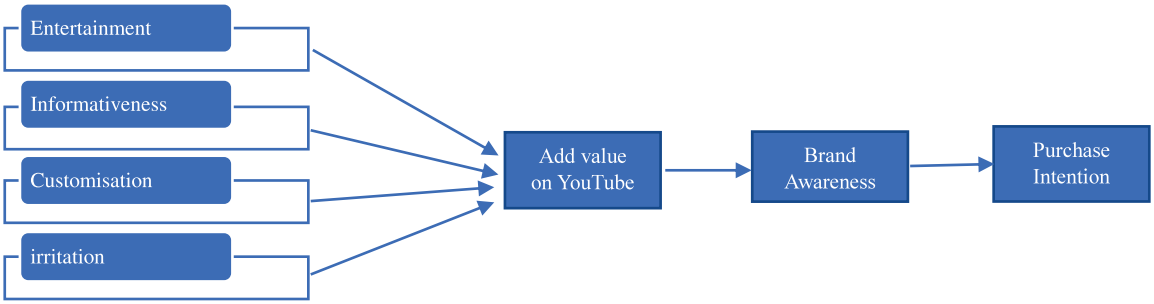

Fig. 1. Conceptual Model for consumer Acceptance of YouTube Advertising.

Studies have shown that customized advertising can make it more informative, fun, and trustworthy. But personalized ads can also make people less angry because well-written advertising ads customized to meet the needs and interests of the customer (Lee, Kim, & Sundar, 2015) say that tailoring has a secondary impact but no apparent direct impact on the value of ads impact by being interesting, credible, and full of useful information. Cobb-Walgren et al.'s research (Cobb-Walgren et al., 1995), promoting makes people aware of brands, which has an effect through social media channels, people show their plans to buy (Dehghani & Tumer, 2015). Kim and park (2010) did a real-world experiment and found that how people feel about advertising has a good effect on shopping goals. All of these add up to the total use that the chance of getting a customer's attention through social media advertising, as a group on YouTube. So, for our empirical study, we thought about the following hypothesis:

H1: People have thought that YouTube is helpful advertising, which is good for the value of advertising.
H2: People have gotten the impression that they can customize YouTube advertising, which is good for the value of advertising.
H3: Advertising on YouTube has made people feel annoyed, which is bad for the value of ads.
H4: Brand awareness will be helped by YouTube advertising, which offers advertising value.
H5: Awareness of a brand will improve because of a YouTube ad. on what buyers plan to buy.

Methodology

Samples

The information for this study was gathered in Pakistan among twin cities universities took part in this study via a questionnaire. 82% of people between the ages of 18 and 29 use YouTube. This is the same for many other social networking sites. 2014 used YouTube (Norman, 2010). In

terms of time and the data was gathered using a quota sampling method in order to account for the funding, depending on the composition of the university. 55 people were removed from the cluster because their answers were not complete or they didn't give enough information. Eight people were also taken out of this study because they didn't have enough information. Experience with seeing ads on online videos. 100% of the between one and seven and a half percent of the first group uses the internet. Hours every day, but 98% said that they were social networking veterans, so 8 out of the 378 surveys have been left out. 83% of the 315 polls that can be used can be used answer rate. Data on the chosen subjects' demographics show that they have on average, people have used social media for about 3.5 years. The average age is 23 years old. 55% of the students are women, and the rest are men.

Measurement

Since all assessment scales are Likert-type with a 5-point range, the relationships between the factors have been determined rather than the factors themselves. (Dehghani & Tumer, 2015) "1" denotes "strongly disagree," and "5" denotes "strongly agree" in a point system. The 15 data come from studies done in the past. (Rao & Minakakis, 2003; Speck & Elliott, 1997; Waters et al., 2011). Especially, different item is used to measure each form of fun, made measures for usefulness, personalization, and irritation (Kim et al., 2010). In addition, other factors are used to assess the link between advertising value and brand recognition as well as the likelihood that a customer will make a purchase previous study.

The reliability of the data was validated using the Cronbach's alpha value how well the study works. The rate of stability of the Cronbach's alpha score for the questionnaire came out to be 0.97.

Results

In line with what has been written before, the efficiency of advertising on YouTube has been looked at with four fun, information, personalization, and irritation are all parts of a game. (The first four hypotheses). As a result, we can support your conclusion about how well advertising works on YouTube by These are the four ideas.

Tests of Hypotheses

The claim of normality is made for standard t-tests. Not of the facts, however, of the tools. According to the Central Limit Theorem: Demonstrates that regardless of the original distribution, when there are more than 5 or 10 individuals in each group, the means are almost normally distributed. In addition, the fact that parametric statistics, such as the t-test with a Likert scale, with different means, and with non-normal distributions, can be used is a result that is generally accepted without worrying that they will "draw the wrong conclusion." These results are in line with scientific research going back to almost 80 years (Norman, 2010). They looked at

all the factors. t-test and Friedman test to see if there is a connection. In Table 1, you can see a list of the factors that have an effect on YouTube ad about how to get people to buy in the sample size. A Likert scale was used to rate how each person did on the assessment. For each of the factors, the mean is given. It displays that, among other things, all of the means and standard deviations are near to one another sample.

How ads that are fun affect their value

H1: Consumers think that YouTube ads are useful for fun, which is good for the value of the ads.

A t-test was conducted to determine whether the value of YouTube advertisements altered when they contained humor, as shown in Table 2. A significant no link was found, considering that the median (test number) was greater than the mean (3.2153), t = 5:59:05, and p = 0:05 Not enough evidence supports that assertion. Therefore, it is safe to say that customers' perceptions of entertainment on YouTube ads changes the value of the ads, which backs up H1.

How an ad's value is affected by how much it tells you

H2: Consumers think that YouTube ads are useful because they are helpful, which is good for the value of the ads.

The value of YouTube ads was tested using a t-test, as shown in Table 3, to see if it altered depending on how much information was provided. The mean was 3.1112, slightly above the test value (Median), and t 14 2:93:56; p>0:05, indicating that there was a clear impact on the link. Insufficient data exist to definitively rule out the theory. Therefore, it is safe to say that customers' perceptions of the value of advertising is affected by how helpful YouTube ads are, which backs up H2.

How customizing ads changes their worth

H3: Consumers think that being able to customize YouTube ads is useful, which is good for the worth of the ads.

A t-test was carried out, as shown in Table 4, to determine whether Customizing YouTube advertisements affected their value. Since the mean of 3.4321 was greater than the test value (Median), a significant lack of a link was discovered. Therefore, the conclusion is valid. t = 12:1173; p = 0:05 To support that premise, there is insufficient evidence. Therefore, it is safe to say that customers' perceptions of Customization of YouTube ads change the value of the ads, which backs up H3.

What ad annoyance does to the value of an ad

H4: The customer thinks that irritation of YouTube is useful advertising is hurting the worth of advertising.

The value of YouTube advertisements was tested using a t-test to see if it decreased when they became obtrusive, as shown in Table 5. Since the mean of 3.1581 is slightly higher than the test number (Median), which is 3 t = 4:02:52; p = 0.05, it was determined that the association has a detrimental impact. To support that premise, there is insufficient evidence. Therefore, it is safe to say that customers' perceptions of ad worth is affected by how annoying YouTube ads are, which backing up H4.

Variable Rating

By backing up the above theories, we can come to the following conclusion: that advertising on YouTube changes the value of advertising average differences between study variables in the community that was examined were also determined using the Friedman test. The Friedman Act The t-test is a variant of the Repeated-Measures ANOVA that can be utilized done on data that is ordered. So, the idea below is based on statistics measured:

H0: The average value of each variable is the same.

H1: There is a substantial difference between at least one set of the mean factor ranks different.

The significance can be seen in Table 6's first outcome, where chi square equals 420.625 and p 0.05. Consequently, the variables' average positions are not equal. The average positions of these factors in the second output are listed. Table 7 displays those of the third first in decreasing sequence, with a mean of 3.67, mean = 2.49, and third. The first had a mean of 2.23, while the second had a mean of 1.62.

Tying Together What a Customer Thinks and What He or She Plans to Buy

The goal of the following theories is to find a clear connection between them. What people think and what they plan to buy. Therefore, it is examined how advertising value affects consumer desire to purchase by examining how brand knowledge and recognition are affected by advertising value.

How ad value affects how well people know a brand

H5: Advertising value through YouTube ads will have a good effect on brand recognition.

A t-test was conducted to see if the effectiveness of YouTube ads had any impact on how well people recognized the brand, as shown in Table 8. Since the mean was 3.2117, slightly higher than the test value (Median), and t 14 5:49:63; p>0:05, there was no significant relationship between the two. Insufficient data exist to definitively rule out the theory. Therefore, it is safe to

say that advertising is worth it. Through YouTube, affects brand recognition in a good way, which helps H5.

How knowing about a brand affects what people buy intention

H6: Brand recognition will improve because of a YouTube ad on what buyers plan to buy.

A t-test was conducted, as shown in Table 9, to determine whether YouTube increased brand awareness among users, which might have had an impact on their decision to purchase certain products. Since the mean is 3.2117, slightly higher than the test value, it was discovered that the association had a significant impact. (Median), t = 13:4273, P = 0, It lacks sufficient support to be rejected as a theory. Therefore, it is safe to say that the brand Awareness of YouTube has a good effect on what people buy.

Table 1
Measures of central tendency and dispersion

Variance	Standard deviation	Means	Hypothesis
0.419	0.6476	3.2153	Consumers think that YouTube ads are useful for fun, which is good for the value of the ads
0.452	0.6723	3.1112	Consumers think that YouTube ads are useful because they are helpful, which is good for the value of the ads
0.400	0.6329	3.4321	Consumers think that being able to customize YouTube ads is useful, which is good for the worth of the ads
0.486	0.6971	3.1581	The customer thinks that Irritation of YouTube is useful advertising is hurting the worth of advertising
0.467	0.6836	3.2117	Advertising value through YouTube ads will have a good effect on brand recognition
0.388	0.6227	3.4711	Brand recognition will improve because of a YouTube ad on what buyers plan to buy

Table 2
Student's t-distribution

Test Value = 3						
Mean	**Std. deviation**	***t***	**df**	**SE mean**	**Sig.(2-Tailed)**	**Mean differences**
3.4522	0.5964	5.8112	314	0.0245	0.0000	0.4522

Table 3
Student's t-distribution

Test Value = 3						
Mean	**Std. deviation**	***t***	**df**	**SE mean**	**Sig.(2-Tailed)**	**Mean differences**
3.2145	0.5489	2.7419	314	0.0254	0.0036	0.1245

Table 4
Student's t-distribution

Test Value = 3						
Mean	**Std. deviation**	***t***	**df**	**SE mean**	**Sig.(2-Tailed)**	**Mean differences**
3.5671	0.5284	8.4869	314	0.0458	0.0000	0.5671

Table 5
Student's t-distribution

Test Value = 3						
Mean	**Std. deviation**	***t***	**df**	**SE mean**	**Sig.(2-Tailed)**	**Mean differences**
3.1581	0.6971	4.0252	314	0.0393	0.0001	0.1581

Table 6
The result of Friedman test.

Test result	**Error rate**	**N**	**The significance level**	**df**	**Chi-square**
Approved H1	0.05	315	0.000	3	420.625

Table 7
Friedman test and the rank of means.

Average rating	**Dimensions**
3.78	**H3**: Customization effects
2.57	**H1**: Entertainment effects
2.32	**H4**: Irritation effects
1.59	**H2**: Informativeness effects

Table 8
Student's t-distribution

Test Value = 3						
Mean	**Std. deviation**	***t***	**df**	**SE mean**	**Sig.(2-Tailed)**	**Mean differences**
3.2117	0.6836	5.4963	314	0.0385	0.0000	0.2117

Table 9
Student's t-distribution

Test Value = 3						
Mean	**Std. deviation**	***t***	**df**	**SE mean**	**Sig.(2-Tailed)**	**Mean differences**
3.4711	0.6227	13.4237	314	0.0351	0.0000	0.4711

Discussion and Conclusion

Consideration and a verdict in addition to establishing a connection between consumer perception and purchase intention, the primary objective of this research was to identify the variables influencing the ad value in YouTube advertising. The first five hypotheses in our study are related to communication, and the first four of them were used to analyses the YouTube ad content, while the fifth one was used to examine how advertising value affected brand recognition. Finally, yet importantly, we looked into how YouTube advertising affected consumers' desire to make a buy. Thus, the findings show that YouTube advertising has a significant impact on consumers' intention to make a buy. It follows that our main research query can be answered. This study says that there is a chance for experts to do something to learn more about what makes ads valuable in the YouTube environment. Also, this study of the YouTube account in relation to Practitioners could also find social media problems to be very important. Our study makes a number of theoretical and managerial contributions implications.

First, this study shows, from a theoretical point of view, that all when people get YouTube ads, four factors (entertainment, customization, informativeness, and irritation) play a big role in helping them become more aware of a brand ad and then deciding whether or not to buy something. The results show how entertaining and unique people thought it was of ads are the most important things that make them valuable. Irritation, on the other hand, is a bad driver, in support ofresearch (Aaker & Bruzzone, 1985; Lee & Choi, 2005; Waters et al., 2011). Also, in a smart advertising environment, customization plays a significant role in the worth of advertising. Contrary to previous research Zeng et al. (2009); Kim et al. (2010), which shown that there is a side impact to customization by the promotional value of usefulness, trustworthiness, and fun, tailoring was the most important factor in this study. There is something new that has been found that has never been looked into before. Even though Lee et al. (2015); Van-Tien Dao et al. (2014a, b) discussed the importance of advertising on social media by looking at how people feel about the ads; previous studies haven't looked at the relationship between our factors and add value, nor have they looked at the effect on company awareness and the desire to buy. Because of this, the results of this study adds to what is already known about online advertisements from a manager's perspective, both businesses can benefit from an investigation that spend money on ads on YouTube and YouTube itself, a commercial media. Businesses should always consider watching it was entertaining, particularly in the early going. Based on what we learned from our study, 73% of people often when watching online videos on YouTube, you can skip the video ads.

So, the choice to watch a video ad depends on how well it is made. Watcher to decide whether or not to watch the video. It is crucial to understand that marketing videos is just as essential as creating them because of this. Advertisers should prevent irritability because it reduces the value of their ads. Don't put up ads that customers might find useless or annoying. Also, online video ads are different from each other in many ways. Content and time is making people angry. So,

YouTube providers is better if it involves giving free services to viewers that are paid for by companies as part of their advertising. which could likely make people feel less upset. Today, the top 100 global brands know how effective Their business strategy heavily relies on YouTube. A lot more socially engaged and information-rich channels are replacing traditional TV as the primary medium for company exposure. Lastly, the current not only can smaller brands learn from study, but so can bigger ones to all businesses' marketing and advertising efforts.

What Can't Be Done and What Will Be Done

Finally, there are some problems with this study that should be thought about. First, this study's sample size couldn't be used to say everything about the thing we did our study, we looked at the whole population of YouTube users. based on how few people live there. Students in college are the looked into demographic. But only getting information from the university student is not representative of all YouTube users, which makes it harder for the results to be used in other places. Research to come It is important to use different samples that cover other parts. Also, another limitation has to do with how people might see advertising on YouTube is worth it if it's in line with the promise that they could use the movie on their YouTube channels. lastly, it is challenging to use the findings of this research as a whole for changes in how all customers felt about things because it employed a technique known as "judgmental quota sampling" across. So, more researchers should look into the reasons why people use movies on YouTube to get real-world information about the relationship to why people use the media.

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Analyzing Employee Performance through Workforce Diversity Management: Role of Workforce Diversity Characteristics

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Abstract

The present study explores how diversity management impact employee performance behaviors and identified the mediating role of gender, religion, education and age diversity between the relationship of diversity management and employee performance. To carry out this research, cross sectional design was employed. Data was collected with simple random sampling technique from 350 employees working in diverse cultures in textile organizations of Pakistan. Quantitative data was analyzed on SMARTPLS software by employing structural equation modeling technique. The results of the present study indicate that workforce diversity management has significant direct relation with employee performance and various diversity characteristics mediate this relation. It helps to understand the diverse culture and provide guidelines for management of workforce diversity. Limitations and future recommendations are discussed.

Keywords: Diversity Management, Employee Performance, Workforce Diversity Characteristics

Introduction

In current era, management of workforce diversity is significant broad area which affects employees' performance. Due to globalization, people with different background, education, regions, culture, languages and beliefs may work in the same organization in an organized manner. Management of workforce diversity has positively increased and maintained the employee performance in the organization. Sharing of different knowledge, beliefs and expertise enable employees to do more work in better quality (Ng et al., 2023). People are different from each other in two ways. Firstly there is primary level diversity among people that refer to differences in age, gender, physical and mental abilities, race, ethnicity, and sexual orientation.

Secondly, the differences in identity like difference in education, income, religion, experience of work, personality, social status and living life style. Diversity discuss many visible and invisible dimensions among people such as race, religion, social and marital status, ethnicity, gender, sexual orientation and disability (Hoang et al., 2022). Diversity refer to all complex ways that represent people by visible difference by age, gender, background, ethnic origin, religion, sexual orientation, political background and disability. Differences of people at work regarding age, ethnicity, education, socioeconomic background, sexual orientation and religion is called workforce diversity (Kroll & Schubert, 2023).

Diversity is the existence of people that are different from each other in many aspects mainly included gender, country of origin, religious beliefs, language, race, ethnicity and health status. Workforce diversity refers to accompany of employees in same work place that have different social, cultural and ethnic backgrounds (Steiner & Tuljapurkar, 2023). Diversity arises through differences. It included assimilation, neo assimilation and cultural pluralism. No two employees are similar. Hetero generosity is the basic factor of diverse workforce Employees may have similarities and differences in terms of physical abilities, age, cultural background, race, gender, sexual orientation, professional qualification, caste and religion, geographic region, attitudes and perception at workplace (Tajeddini et al., 2023). Workforce diversity is the perceptions and differences of employees at workplace about each other in terms of language, religion, race, health status, and gender (Barnes & Grayer, 2023). Workforce diversity and diversity management are interrelated. Diversity management deals with inclusive work place and creates equitable environment and provide fair opportunities where people having different needs, qualities and thinking work together, feel free and perform their skills energetically with awareness of diversified workplace (Campbell, 2023). Diversity management firstly create positive environment and further maintain this environment effectively in which all employees valued and individuals can make maximum contributions for achieving organizational goals. It emphasizes on organizational culture and institutional environment in which expectations requirements, and incentives of diverse workforce meet in the organizational context. Diversity management has positive effect on employee's performance (Maqsoom et al., 2023). Management of workforce diversity mainly included management of organizational culture, recruitment, retention of employees, right leadership style, mutual trust, respect, support, flexibility at workplace, customized reward, access to opportunities and diffused information, trapping into an extended workforce, training learning and development opportunities, performance evaluation and providing top management support at workforce in delivering their work (Alshaabani et al., 2022). Diversity management are core understanding and activities by managers in managing diverse workforce. These activities firstly included management of identity blind (individual differences e.g. personality, work style and cognitive abilities), secondly setting equitable transformation (achieving equitable outcomes for individuals from society advantages and disadvantages groups), thirdly managing inclusive differentiation (individuals from all social demographic groups), and finally assimilation (assimilation differences of demographic groups) (Atkinson et al., 2022).

Management of diversity is important for smooth and effective run of organization. Diversity culture needs to be sharpened from time to time and organizations provide ways to manage and improve environment of diverse workforce (Ng et al., 2023). Workplace diversity could be seen in number of ways and variety of differences. Important factors of workplace diversity are related to differences in age, physical attributes, and status of family, style of thinking, education, level of employment, religion, culture and area of origin (Singh & Ramdeo, 2023). There is need to enhance creativity, flexibility and innovation between the employees and develop ethical environment in which respect of individual ideas and group thinking be a part of organizational policies. There is always need to develop a cooperative and inclusive culture in diverse workforce (Inceet, 2023).

Textile industry of Pakistan is one of major industry in production which contributes in the export and significantly enhances the economic growth. Major production units are located in Lahore, Karachi and Islamabad. This industry offers large employment opportunities in accordance with local and international laws. Pakistan is major exporter of textile products such as fabric, cotton yam in the world. Employees working in this sector having various skills and abilities contribute in the overall performance of this industry (Abbas & Halog, 2021). The existing researches present knowledge on workforce diversity as antecedents of employee performance and indicate that many organizations engage in diversity management. Recent literature shows the role of workforce diversity and diversity management in employee performance is very important in the textile industry of world as well as in Pakistan (Abbas & Halog 2021; Amsi et al., 2023; Singh & Ramdeo, 2023). Workforce diversity is made up of people from different backgrounds, identities and work together for organizational performance (Mukhtar et al., 2022). Diversity management is an art to manage people having many differences. Management of workforce diversity can be helpful for enhancing work outcomes in textile sector organization in Pakistan (Qurrahtulain et al., 2022). The study of Mukhtar et al. (2022) indicates there is positive correlation between workforce diversity and employee performance in textile sector of Pakistan. This further emphasis for future researchers need to conduct more robust analysis on how diversity management can be helpful for improving employee performance in this sector.

Literature Review

Diversity management and employee performance are interrelated. People having different backgrounds have been influenced by organizational culture. Role of management has vital role to handle and solve these types of issues in diverse culture. Role of leadership in order to diversity management is not only aligning the people but to create inclusion among the diverse workforce. First of all, top leadership commitment has vital importance to create a diversified culture and include it in the strategic plan of the organization. Diversified culture must be aligned to the performance that enhances individual as well as organizational productivity. In managing diverse workforce, a system of accountability must be there to evaluate diverse culture. In the

process of recruitment as well, diverse workforce must be hired. Diversity training programs should be launched from time to time. There is need to set positive environment from the top management in which rights of minorities, women and diverse background individual must be protected.

Diversity management ensures that opportumt1es are provided to all employees for self-development and recognize individual creative ideas that enhance productivity (Harold & Vincent, 2012). Subsequently, research of Frank et al. (2016) examined behavioral intentions, attitudes, beliefs, ethnicity, norms and demographic characteristics of diverse workforce that enable management to understand and maintain workforce diversity. Workforce Diversity can be managed by considering ethnic identity (respect, self-concept and recognition), understanding of demographic characteristics (race, age, gender), status characteristics (income, level of education and job), and subjective norms (dignity and respect). Consistent with previous studies, Showkat and Misra (2022) discussed diversity management model: firstly, Friday and Friday's diversity implementation model (2003). This model identified six steps needed to be considered in managing and to maintain desired position of diversity. These included exposure, understanding, appreciation, knowledge, experience and respect. Secondly, Jones and George's diversity implementation model (2016) that related to effectiveness of implementation of diversity. Entire organization needs to implement diversity initiative successfully. Thirdly, Cox's diversity model (1993; 2008) in which factors (acculturation, institutional bias, intergroup conflict, informal integration and structural integration) that may impact on initiative of diversity discussed briefly.

Similarly, Sherbin and Rashid (2017) set six principals for leadership in case of how to manage diverse team. These are ensuring that team members speak up and are heard; empowering team members to make decisions; giving actionable feedback; making it safe to propose novel ideas; taking advice and implementing feedback; and sharing credit for team success. In addition, Gina (1996) explained four skills to manage a culturally diverse workforce. Firstly, Cross-cultural understanding needs to understand the cross culture values at work place). Secondly, Intercultural communication (make it easy to intercultural communication) .Thirdly, Facilitation skills (provide facilitation to skills of diverse workforce). Finally, flexibility or adaptability (there is need to develop flexible and adoptive environment in the workplace). According to Kharroubi (2021), the aim of organization in respect to diversity management is to create an environment in which potentials of employees and mutual understanding in work related problem must be addressed. Diverse workplaces are highly productive by adopting equality, provision of flexible work timing, intercultural training, participative performance assessment, work-family balance and flexible compensation. Subsequently, Mousa et al. (2021) elaborated that perception of employees about each other can lead to problems in relationship with gender at workplace. Research indicated that male employees have perception about female that they are less educated, less competent and less productive and vice versa. Further issues arise in gender diversity in respect of availing opportunities and cooperation. In addition, Lee et al. (2022) examined that perceived racial discrimination is issue in diverse workforce that affect negatively

to the performance of employees. Moreover, Mauerhofer et al. (2018) identified the causes and consequences of underuse of biological diversity. These create issues in managing cultural diversity. These causes mainly related with time, space, particular kind of human interventions, social economic and biological influence and bio cultural values.

Morover Pooja et al. (2018) also described challenges related to workforce diversity in regard of ASEAN organizations. Deviant behavior is one of dire challenge in managing diversity. Research indicated two types of deviant behaviors: constructive deviant behavior and destructive deviant behaviors. Constructive deviant behavior arises from perceived justice, job satisfaction, engagement and functional diversity. Destructive deviant behavior is outcome of perceived injustice, job dissatisfaction, disengagement and dysfunctional diversity. Issues arise in workforce diversity in case of absence of constructive deviant behaviors. Accordingly, Mukta (2015) described that language based feelings create problems in relationship of diverse workforce. In diverse culture, ignorance of native language create issues in the feelings of employees. Employees feel devalued in the organization. Language is considered source of identity, valuation and power. If employee works in multinational organization and are forced to use common language, it creates dissatisfaction.

Together with previous studies, Liuet al. (2023) discussed diversity approaches that affect negatively to employees within public, private and semipublic sector. Pro equality approach of diversity creates inequality. Pro-diversity approach also leads to immediate negative results on performance and create issues at workplace. To extent Khatri and Assefa (2022) added that issues and challenges in managing diverse workforce are chiefly related to prejudice, discrimination, ethnocentrism, backlash, stereotype and harassment which act as barriers in management of diverse workforce effectively. For this purpose, Rhea and Bettles (2012) discussed diversity issues at strategic level (framing diverse company vision), tactical level (designing and selecting appropriate diversity strategies) and operational level (implementation of diversified strategies with accountability). Firstly, diversity issues could be solved in the strategic level, ways must be provided in the company vision and mission. Rethinking of diversity strategies according to internal and external context and need to adopt which area must be focused. Secondly, diversity can be handled according to the culture and environment of the organization and laws of the country tactically. Finally issues come at the implementation of diversity strategies. These issues must be carefully communicated, monitored and evaluated when diversity strategies going to be implemented at operational level.

Furthermore, Janice and Kravariti (2023) identified six diversity challenges in the organizational context. First challenge is to retain diverse workforce. When diversity increased the attachment is decreased so it's hard for the management to retain diverse workforce in the same place. Secondly the acceptance of opinion is most important. No two employees think in the same way. When different people work together they have different opinions toward same task. To handle various opinions and to set collaborative environment is challenge in diverse culture. The third challenge is lack of empathy from management. Employees from minority groups perceived that

they face lack of empathy in diverse culture. Fourth challenge is Tokenism, Real and Perceived. When a low qualified employee hired over more qualified in the quota system this create environment of demotivation among diverse workforce. Fifthly, lack of participation from diverse workforce is issue that may decrease productivity. Finally management of time in diverse workforce is important issue. How to allocate time between employees and perceived pressure of employees in solving their matters need to be considered.

The study of Kim and Lee (2023) elaborated similarities and dissimilarities issues associated with diverse workforce. People like to work with same background people and dislike those who are not similar. This led to unproductive environment when management behave or support employees on the basis of similarities and show negative attitudes to other kind of employees. First challenge in the diverse workforce is communication challenge. When different people from different regions and countries have many languages, it's not easy to communicate between team members. Second major challenge is how to train diverse workforce in limited time and enable them to achieve vision of the organization. Finally, issue of discrimination could be seen in the workplace. Most issues in today's workplace diversity are related to gender inequalities and treatment of women in leadership. It also makes gap in work life balance (Karla et al., 2018). Potential response of leadership in respect of diversity management included deletion (one dominant identity and other is deleted), compartmentalization (approaches of organizational effectiveness focused and diversity focused separated in two detached entities), aggregation (approaches of organizational effectiveness and diversity focused do exist separately but does not overlap) and integration (combination of above two approaches) (Kuknor & Bhattacharya, 2022).

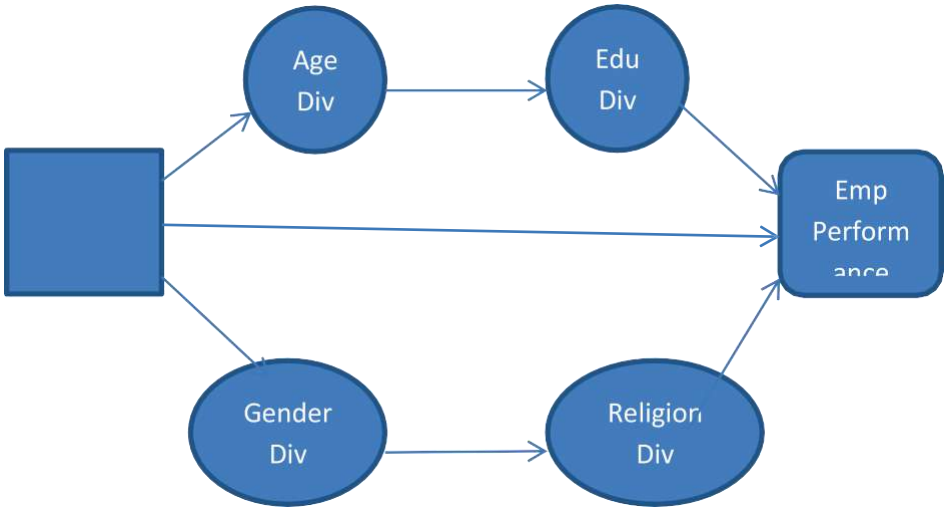


Fig: 1 Theoretical Model

Hypothesis

H1: There is a significant positive relationship between diversity management and employee performance.

H2: The relation between diversity management and employee performance will be serially mediated by Gender diversity and religion diversity.

HJ: The relation between diversity management and employee performance will be serially mediated by age diversity and education diversity.

Methodology

Study Design, Sample and Sampling Technique

Total workforce employed by the manufacturing sectors of Pakistan is 11.68 million. There are various studies available for consideration of power analysis to determine the sample of the population by using effect size (Serdar et al., 2021). Consequently, the statistical power analysis indicated that the current study required a sample size of at least 350 participants to have 95% power for detecting a small and medium-sized effect when the traditional .05 margin error criterion of statistical significance (Hazra, 2017). As a sample, we selected 350 workers from top three textile factories in Lahore. Date was collected from simple random sampling. It is a quantitative study and data collection was done by employing cross sectional research design.

Procedure

The research hypotheses were tested through collection of data from various organizations of textile industry located in Sunder industrial state Lahore and other cities as well. First, permissions were sought to collect data from organizations. Informed consent was taken from study participants and confidentiality of data was ensured. A total number of 350 questionnaires were distributed among subordinates of different educational and religious background having age and gender differences. 45 questionnaires were rejected or incomplete. Finally, 305 questionnaires were finalized for data analysis in which 190 were men and 115 were women. Data was analyzed using SMART-PLS.

Instruments/ Measures

Diversity management

1- ***Diversity management.*** It was taken as independent variable which was measured by three items scale developed by Pitts (2009).
2- ***Mediator variables.***
    I. **Age diversity, education and gender diversity** were measures by 12 items scale developed by Dongol (2022).

II. **Religion diversity:** Religion diversity was measured by Sultana et al. (2022).

3- ***Employee performance.*** Employee performance was measured by two items scale developed by Sultana et al. (2022) and three items by Pitts (2009).

Results & Analysis

The current research has adopted Partial least squares structural equation modeling (PLS-SEM) technique by using Smart-PLS software. This technique has been used in quantitative researches for multivariate analysis in area of human resource management. The PLS-SEM is used for complex model and establishes the direct indirect relationship between the study variables. The Smart-PLS mainly checks the relationship of variables in two phases. In the first phase, measurement of outer model .i.e. outer loadings, contracts validity and reliability, average variance extracted, outer weight and collinearity issues has been done by applying PLS-SEM algorithm. Second phase has seen the inner model validity and test the hypotheses by using bootstrapping analysis. Present study contained the reflective model and tests the hypotheses in which constructs are reflective to their items (Ramayah et al., 2018).

Measurement of Outer Model

Researchers verify the validity and reliability while use of reflective model in the study. The first step is to check the composite reliability of the constructs for internal consistency. Composite reliability evaluates internal consistency of the constructs in more appropriate manner. PLS-SEM algorithm estimate the model based on individual reliabilities of indicators. The researcher provides that value above 0.70 consider stable for model significance. Each item loadings higher than 0.70 think to be significant and above 0.6 is consider satisfactory (Hair et al., 2017). The next step is to judge the each construct's average variance extracted (AVE) which should be higher than 0.50. Various researches have provided the support to convergent validity that the AVE value higher than 0.50 with items loadings greater than 0.70 (Henseler et al., 2016).

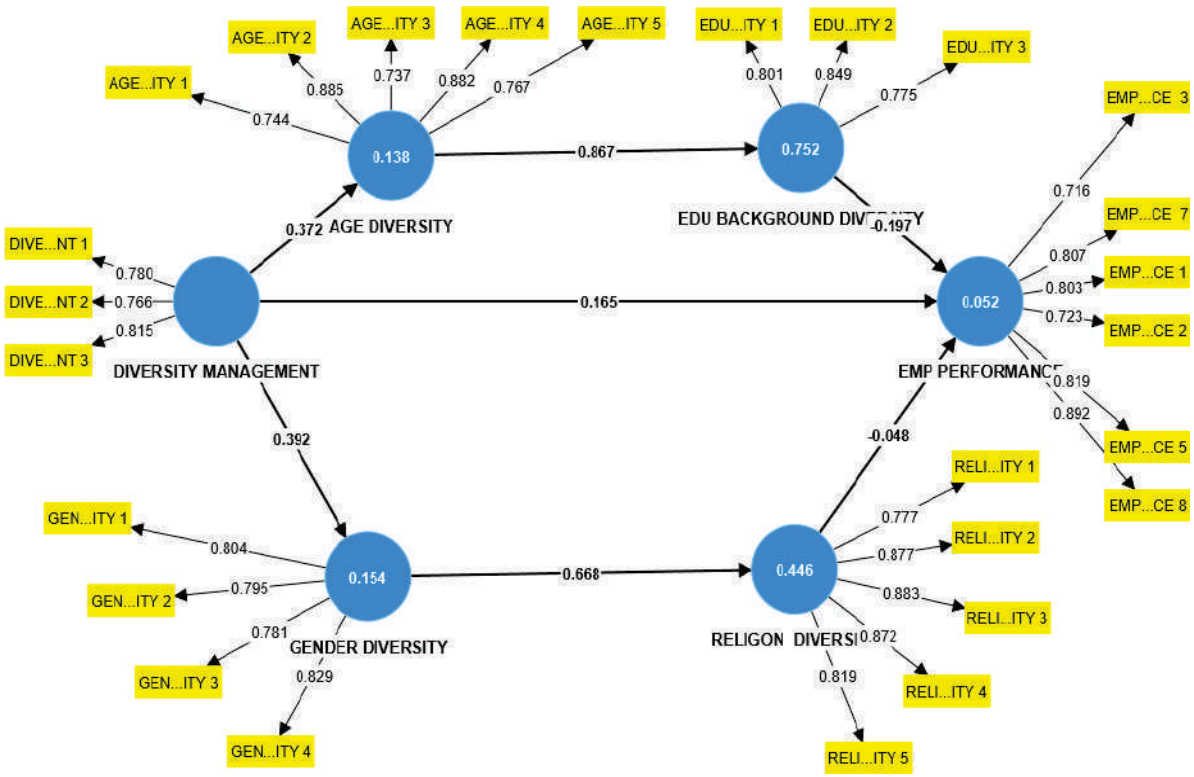
Table 1

Constructs Validity & Reliability

Constructs	Items	Loadings	AVE	VIF	CR
Age Diversity	Item 1	0.744	0.649	2.719	0.884
	Item 2	0.885		2.217	
	Item 3	0.737		6.551	
	Item 4	0.882		3.804	
	Item 5	0.767		1.608	
Edu Background Diversity	Item 1	0.801	0.654	1.382	0.744
	Item 2	0.849		1.299	
	Item 3	0.775		1.388	
Gender Diversity	Item 1	0.804	0.644	1.446	0.825
	Item 2	0.795		1.559	
	Item 3	0.781		1.404	
	Item 4	0.829		1.45	
Religion Diversity	Item 1	0.777	0.717	4.759	
	Item 2	0.877		2.547	
	Item 3	0.883		2.526	
	Item 4	0.872		4.944	
	Item 5	0.819		4.547	
Employee Work Outcomes	Item 1	0.716	0.633	5.511	0.898
	Item 2	0.807		1.611	
	Item 3	0.803		1.627	
	Item 4	0.723		5.779	

	Item 5	0.819		1.76	
	Item 6	0.892		2.804	
Diversity Management	Item 1	0.788	0.621	2.992	0.698
	Item 2	0.766		2.734	
	Item 3	0.815		2.158	

Table 1 shows the values of outer loadings, Average variance extracted, Variance inflated factors and composite reliability. Items loadings are above from 0.70 and values of Average variance extracted (AVE) are higher than 0.50 which presents the significance level of the constructs and items. Further the values of composite reliability are near to 0.7 and 0.8 which indicated the significance level of the model. Before assessing the inner model, the one important thing is to assess the issues of collinearity in the data set, which comes from variance inflation factor (VIF) of each item. with lower values being better , VIF values relies 1 to 3 presents that data is normal and there is no collinearity issue, and values fall between 3 to 5 shows that data is satisfactory. VIF values higher than 5 indicate there is issue in the data and mulitcollinearity exists in in the collected data (Diamantopoulos & Siguaw, 2006). Table 1 also presents the significance level of VIF values which indicated that there is no issue of multi-collinearity in the data.



The current research has indicated that diversity management has direct positive effect on employee performance, diversity management -> employee performance, 0.089. The mediating role of diversity characteristics show the indirect positive relation between the independent and dependent variables .e.g. gender diversity 0.154, religion diversity 0.446 and age diversity 0.138 educational background diversity 0.752 between diversity management and employee performance which presents the indirect significant positive relation.

The next step is to examine the value of Discriminant validity. This shows the study constructs are empirically distinct. This is related to what is intended to measure in the constructs. The Fornell and Larcker (1981) have been used for assessing discriminant validity. This describes that constructs states variance with indicators and highest squared correlation as compared to any

Table 2

Discriminant Validity

Constructs	AD	DM	ED	EP	GD	RD
Age diversity						
Diversity management	0.468					
Edu background diversity	1.057	0.527				
Emp performance	0.203	0.17	0.214			
Gender diversity	1.106	0.506	1.037	0.175		
Religon diversity	0.743	0.444	0.92	0.152	0.758	0.622

other constructs.

Table 2 indicates that each constructs' diagonal value is higher than their respective items and constructs, which presents the discriminant validity of the model.

Measurement of Inner Model & Hypotheses Testing

Hypotheses testing have been done by applying bootstrapping method. Bootstrapping is technique of resampling that reveals big number of subsamples and estimate model of subsamples (typically 5,000 or more) from original data (Hair et al., 2013). Significance of each constructs based on standard error can be assessed using relevant p values and using t values. The p values less than 0.045 and t values higher than 1.86 are considered significant for inner model estimation and establish the relationship of developed hypotheses (Henseler et al., 2015).

Table 3

Hypotheses Testing

Constructs	(M)	STD	T statistics	P values	Results
AGE DIV -> EDU BACKGROUND DIV	0.869	0.023	8.248	0.000	Supported
DIV MANAGEMENT -> AGE DIV	0.376	0.061	6.102	0.000	Supported
DIV MANAGEMENT -> EMP PERFORMANCE	0.168	0.106	1.554	0.122	Rejected
DIV MANAGEMENT -> GENDER DIV	0.397	0.06	6.569	0.000	Supported
EDU BACKGROUND DIV -> EMP PERFORMANCE	-0.203	0.123	1.89	0.001	Supported
GENDER DIV -> RELIGON DIV	0.671	0.036	18.645	0.000	Supported
RELIGON DIV -> EMP PERFORMANCE	-0.047	0.128	0.375	0.708	Rejected

Table 3 presents that most of hypotheses are approved by showing the relevant p values and t values with their level of significance.

Discussion

Creating diverse workplace culture that provide equitable, inclusive, respectful and cooperative environment for diverse workforce boosts the performance of organization and reduce the chances of problems related to work activities. In this study, researcher examined the issues and strategies for managing diverse workforce in organizations. Overall, study adds significantly to the field of diversity management and highlights the issues and challenges that diverse culture faces. The current research conducts quantitative analysis that determines role of workforce diversity management has impact on employee performance. The mediating role of diversity characteristics which are gender diversity, religion diversity, age diversity and educational background diversity show the indirect positive relation between workforce diversity management and employee performance. In support of current study researcher quotes a study on South Nigerian multinational companies which found that management of perception of marginalization, cultural diversity and conflict influences diversity management for employees. Further, diversity management and teamwork influences organizational efficiency (Inegbedion et al., 2020). Another comprehensive meta-analysis verifies based on multiple studies that workforce diversity makes performance of employees and outcomes better (Gomez & Bernett, 2019).

Diverse workforce culture has two aspects. Firstly, role of management to diversity is needed to discuss. Management style, process of recruitment, policies related to retention of employees and maintaining diverse culture importantly play role in workforce diversity. Secondly, feelings and perceptions of employees related to diversity also need consideration. Activities of diversity included both leadership styles as well as employees matters related to work (Pooja et al., 2018). Diversity environment enhance potentials of employees in which they can maximize their performance. Workplace has different types of constructive and destructive political behaviors. Management need to take these political behaviors as positive force in the diverse environment (Ng et al., 2023).

This study also describes number of challenges that are faced by diverse organizations. Practices of discrimination, prejudice, stereotypes, backlash, harassment, gender bias are the barriers to create a diverse working environment in the organizations. Organizations need to deal these barriers in strategic way. Short term management of diverse workforce is possible through pre workshop assignments, workshops, development discussions and providing continuous feedback. In the long term there is need to provide proper coaching, personal development programmed foster positive visibility, acceptance and friendship culture. There is need to discourage the environment of ethnocentrism, discrimination, prejudice, harassment and stereotype (Hoang et al., 2022).

Research highlighted some issues and challenges that are faced by diverse workforce in a common organization. Issues of inequalities, injustice, prejudice, ethnicity, fair recruitment and selection are commonly seen in the organizations. Main issues in managing workforce diversity are discrimination, racism, religious thoughts and structural inequality. If these issues are not properly managed then negative perceptions are created among the employees (Barnes & Grayer, 2023). These negative perceptions impact on the performance of the employees and create disturbance in diverse culture. Management of diverse workforce that come from different backgrounds, culture, ethnic groups, educational backgrounds, regions and religions is difficult task. Findings indicated that management adopted various strategies to manage and maintain diverse workforce. These strategies are mostly related to recruitment and selection process, creating a positive culture for all employees and providing equal work opportunities for diverse workforce (Maqsoom et al., 2023).

Organizational Implications

Diversity management must be within legal requirements and demographic demand of local communities. A defensive position must be provided that there is no discrimination in workplace. Issues of minority workforce should also be carefully handled. Diversity management should be aligned with key management functions which are planning, organizing, leading and controlling. In planning stage, diversity process involved in determining company's current status of diverse workforce and what it should be in near future. Objective should be measurable, time bound and specific. Secondly organizing, in this stage basic building blocks of

diversity set and put in organized way to accomplish diversity objectives. At this stage diversity oriented departments must provide equitable environment to minority members with adopting structural approach. Thirdly staffing, in this level manager should personally involve in recruiting, selecting and appointing diverse workforce. Fourthly directing, in this stage leadership practices like effective communication and motivation of employees involved. Finally in controlling stage a proper check system must be there to check the diversity policies and practices (Campbell, 2023).

Issues related to workforce diversity can be solved by adopting vanous suggestions like organizations should develop cooperative, interactive, flexible and inclusive environment in which all employees can work together (Khan et al., 2021). Employee's participation should be encouraged. Democratic, participative and problems solving styles of management should be adopted. Practices of discrimination, prejudice, stereotypes, backlash, harassment and gender bias should be discouraged. Rewards and promotion systems should be cleared (Khan & Mahvia, 2022). Communication barriers among different diversified employees should be removed.

Limitation & Future Recommendations

The present study has some limitation, which are needed to be considered in future studies. First of all, current research has adopted quantitative research design and has assessed the effects of diversity management on employee performance. Future researches can adopt qualitative method for analyzing workforce diversity and its characteristics in different manner (Maqsoom et al., 2023).

Secondly, we have used cross sectional research design and data collection was done in a single period of time. It is essential to analyze the workforce diversity with longitudinal research design and see the effects of diversity management in various time intervals. Thirdly, we have found the effects of diversity management on employee performance by mediating role of age, gender, education and religious diversity. Future researcher can add more relevant variables in other than textile sector .e.g. other public and commercial areas like banking, health, communications etc (Mushtaque et al., 2023; Paul et al., 2023).

Conclusion

The current research concludes quantitative analysis that diversity management has impact on employee performance. The mediating role of diversity characteristics which are gender diversity, religion diversity, age diversity and educational background diversity shows the indirect positive relation between diversity management and employee performance. Current study further provides insight on different managerial strategies that are used to manage workforce diversity in organization. Further it may help for better management practices related to diverse workforce.

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The Effectiveness of Institutions in Economic Growth in Developing Countries: A Panel Data Analysis

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Abstract

This study investigated the effect of institutions on economic growth for the panel of 17 developing countries which covers the period 2000-2014, using pooled ordinary least square model, fixed effect model, random effect model, and dynamic random effect model and generalized method of moments technique. It examined the direct impact of Institutions i.e., financial institutions, economic institutions, social institutions, and political institutions in economic growth in developing countries. This study shows that institutions significantly affect economic growth. This suggests that in emerging countries, institutions are the most important factor for an economy's growth. In this study we have estimated panel ordinary least square model, fixed effect model, random effect model and dynamic random effect model". F-test is used between pooled ordinary least square model and fixed effect model. According to the f-test results; it shows us that pooled ordinary least square model is suitable model between fixed effect model and random effect model. Whereas fixed effect model shows significant impact of independent variables on dependent variable and random effect model also shows significant effect of independent variables on dependent variable. Between fixed effect model and random effect model. According to f-test statistic and Hausman test statistic, fixed effect model is a valid model. Fixed model is also valid model because it shows that GDP and independent variables have significant results. Our other explanatory variables i.e., capital stock, trade openness and four institutions also show significant impact on response variable. Adjusted R-square is also in favor of this model. Thus, the estimates are reliable, and we can use these estimates for policy making.

Keywords: Institutions, economic Growth, Developing Countries, Panel Data, GMM.

JEL classification: C23, F6, **11, 12,** 05

Introduction

Economic Growth

Economic growth is particularly the most important instrument for an economy specifically in developing economies to reducing poverty, increasing national output, and improving quality of life (Tran et al., 2021). Many studies examined the relationship between energy consumption and economic growth (EG). Some studies have investigated single countries while others have chosen many countries simultaneously in a panel data analysis framework (Barro, 1991).

The social and investment model of economic growth is one of the most topical contradictions and manifestations of the differences between developed and developing countries. The socioeconomic systems of developed countries have by now achieved such a high level of progress and the gap between them and other participants of global economic relations has become so large that they could ignore the rate of economic growth (temporarily) to raise the quality of life (Ellahi et al., 2021; Kapetanovic et al., 2022). This is what takes place in the social and investment model of economic growth, which ensures its moderate rate but a serious contribution to human development and realization of intellectual and innovative potential (Brown et al., 2022; Salamzadeh et al., 2022).

The origins of cross-country disparities in economic development and growth are arguably the most important problems in social science. What causes certain countries to be significantly poorer than others? Why do certain countries thrive economically while others remain stagnant? And, to the degree that we can create some answers to these issues, as well as the following ones: what can be done to stimulate economic growth and raise societal living standards?

A society's output per person is correlated with the quantity of human capital, physical capital, and technology available to its workers and enterprises, according to economists who have known this for a long time (Awais et al., 2022; Muhammad et al., 2023). The capacity of a civilization to grow its physical capital, human capital, and technological capital is also related to economic growth. In this context, technology is interpreted broadly; technological distinctions include both the organizational structures of production and the tools available to businesses, allowing certain nations to utilize their resources more effectively.

Differences in these three sectors raise the question of why certain nations have lower levels of physical capital, human capital, and technology and make poor use of their resources and opportunities. On the other hand, these differences are only proximate reasons. To produce more sufficient answers to questions like why some countries are considerably richer than others and why some countries grow much faster than others, we need to investigate potential fundamental causes that may be behind these proximal variations among countries. We can only establish a framework for making policy recommendations that go beyond platitudes (such as "upgrade your technology") and limit the possibility of unanticipated negative repercussions if we understand these underlying reasons (Hsiao & Mei-Chu, 2003).

The objectives of the study are: There is a broad agreement in academia that institutions play a fundamental role in economic development. Nevertheless, the question about which specific types of institutions relate to specific economic outcomes is not adequately addressed. Our

primary research interest is to identify the channels through which development outcomes are affected by economic and political institutions directly.

Research Questions

Against this background, our key research questions can be summarized as a series of related themes as follows: (a) Exactly what development outcomes are directly affected by institutional quality? (b) Are these development outcomes affected by economic or political institutions, or macroeconomic policies or other economic fundamentals? (c) Given that institutional changes do occur, do economic and political institutions cause changes in macroeconomic policies? Similarly, do macroeconomic policies cause institutional changes? (d) Other than domestic institutions, do external institutions have any role to play in the development process?

Significance of Study

Cross-country empirical analyses, in combination with micro-level studies, provide strong support for the overwhelming importance of institutions in predicting the level of development in countries around the world (Hall & Jones, 1999; Acemoglu, Johnson & Robinson, 2001). Protection of property rights, effective law enforcement, and efficient bureaucracies, together with a broad range of norms and civic mores, are found to be strongly correlated to better economic performance over time.

The performance of institutions is determined by a country's economic structure. Many less developed countries have some form of "inclusive" institutions-the primary problem is that these are only written in law and hardly or only selectively enforced. This article argues that this is the outcome of decreasing returns production structures. Enforcing institutions are not costless and diminishing returns economic activities simply do not produce sufficient value added to cover the costs of enforcement. The reverse is true in rich countries with increasing returns economic structures.

Literature Review

Institutions are the rules of the game in a community or, more technically, are the humanly constructed limits that govern human interaction (Northt, 1990). This definition highlights three fundamental characteristics of institutions 1) They are "humanly manufactured," as opposed to other potential fundamental causes, such geographic conditions, which are out of human control 2) they are "game rules," placing "constraints" on human behavior 3) and they will primarily affect behavior through incentives (North, 1981).

The human-made limitations that govern political, economic, financial, and social interaction are referred to as institutions. They are made up of both legal (laws, property rights, and constitutions) and informal (sanctions, norms, traditions, and codes of conduct) restrictions. In this definition, institutions are the kinds of structures which make up the stuff of social life. According to Williamson (2009) institutions are widely believed to be important for the economic development of a country. Every institution has a purpose, and they are permanent, which means they do not end when one person is gone.

The manner that economic and political life is organized varies greatly from country to country. Wide cross-country disparities in economic institutions, as well as a substantial association between these institutions and economic success are documented in a large body of work. For

example, Knack and Keefer (1995) looked at property rights enforcement measures produced by international business groups, Mauro (1995) looked at corruption measures, and Djankov et al. (2002) looked at entry barriers among countries. Numerous more studies examine how changes in educational institutions affect human capital.

For one hundred twenty-seven nations, Hall, and Jones (1999) used ICRG dataset for the indicator institutions. Human capital, education, and productivity were all factors that influence organizational change, according to the researchers. As per their findings, differences were related to differences in institutional factors among cross-country.

Antweiler et al. (2001) analyzed how pollution levels were affected by access to international goods markets. They created a theoretical model that divided trade's impact on pollution into scale, technique, composition effects, and then tested it with data on sulphur dioxide concentrations. When international commerce modified the composition of national output, they found that pollutant concentrations move only slightly. Estimates of trade-induced techniques and scale effects suggested that pollution from these sources will be reduced net. When they added together these estimates for all three effects, they arrived at an unexpected conclusion: more open trade looks to be good for the environment.

From 1982 to 1997 data, Drury et al. (2006) studied the connection between corruption, democracies & non-democracies and used panel data from over a hundred nations (taking data from ICRG). They discovered that in democracies corruption had a minor impact on economic growth while it had a substantial impact in non-democracies, and this substantial impact had a negative economic impact.

The causal connection between total energy use and Pakistan's economy's contribution to financial development was also examined by Kakar et al. (2011) using a separate set of data from 1980 to 2009, co-integration and the Vector Error Correction model were applied. The empirical results of the Granger Causality test showed that the bond between the two variables were unidirectional running from EC to EG. Their study confirmed that any energy shock through financial development in Pakistan will help the economy to grow in the long run.

In a theoretical framework, Siddique et al. (2016) investigated how institutional indicators influence economic growth. Principal component analysis was used to extract variables from thirty-one indicators encompassing 84 nations during a five-year period (2000-2006). These institutional elements were then incorporated into a formal growth model using panel OLS and GMM-based estimation techniques. According to the findings, favorable institutions had a positive impact on economic growth.

For a panel of 91 nations between 1999 and 2014, Siddique et al. (2016) used random effect models and System GMM techniques to analyses the relationship between institutional governance and economic growth. For a small panel of nations, the findings show that institutional governance had a direct and considerable impact on economic growth. This study wants to investigate institutional governance to enhance economic growth both directly and indirectly.

While most studies present a linear linkage between institutions and growth, there is also an empirical growth literature that deals with the non-linearities in the canonical cross-country growth regression. For instance, using data on 100 countries over the years 1995-2018, Li and

Kumbhakar (2022) propose a quantile regression model in which countries are grouped according to their growth rates, finding a positive effect of economic freedom on per capita GDP growth.

In the long term, under the effect of the dialectical law of transition from quantity to quality, large-scale social investments will be accumulated in the volume that would ensure acceleration of economic growth rate based on the capabilities of the fourth technological mode (Industry 4.0), the transition to which has only started (Nja et al., 2022). Developing countries cannot allow for a reduction in economic growth rate, but they are also interested very much (as compared with developed countries) in social investments (Batchaev et al., 2021). Therefore, there emerges a problem in the search for a new, special approach to implementing the social and investment model of economic growth in developing countries, which would allow increasing social investments and preserving a high rate of economic growth, avoiding its reduction (Slisane et al., 2022).

Review of literature shows that most of the studies found positive role of institution in economic growth, but some studies also found the negative impact also. Hence, this study will help us to determine the impact of institutions on economic growth and to compare the fixed effect model (FEM) with random effect Model (REF) and dynamic effect Model (DEM) in 17 developing economies.

Model Specification

Using the statistical model proposed by Hall and Jones (1999); Romer and Weil (1992) we may assess the impact of institutions in economic growth. Four institutions, including financial institutions, Social Institutions and Political Institutions, capital stock, trade openness. Economic Institutions can all is used as control variables in this model. As a result, this model expressed by McManus (2015) as follows:

$$y_{it} = \beta_0 + \beta_1 k_{it} + \beta_2 T_{it} + \beta_3 F_{it} + \beta_4 E_{it} + \beta_5 S_{it} + \beta_6 P_{it} + \mu_{it} \qquad (1)$$

Where,

Y_{it} represent real GDPPC which is dependent variable

β_0 is the intercept of the model and independent variables are as follows:

k_{it} Represent Capital Stock, T_{it} represent Trade Openness, F_{it} represent Financial Institutions, E_{it} represent Economic Institutions, S_{it} represent Social Institutions, P_{it} represent Political Institutions and μ_{it} represent residual term of the model.

Panel Data Regression Models

There are three main types of data with respect to time periods and cross-section units. These types are as follows: Data with respect to time is known as time series data i.e., observations varying with respect to time-period represent time series data. The time-period may be a second, a minute, an hour, day, week or years etc. Data of particular variable collected from different units at the one specific point of time is known as cross-sectional data e.g. data of institutional indicator of 17 developing countries for the specific year 2015. Data of particular variable collected from different units for multiple time periods is called pooled data i.e., observations

vary with respect to a time period as well as with respect to cross-sectional units e.g. data of institutional indicator of 27 developing countries for 1990-2014. Panel data is a particular type of pool data where the same units are surveyed over different time points. Simply put, panel data has two dimensions of space as well as time. Additional names of panel data are cohort analysis, event history analysis, and longitudinal data. As linked to cross-sectional and time series data, panel data can measure better effects.

The general form of panel data regression model by Shah et al. (2019) may be written as follow:

$$Y_{it} = F(x_{it}) + \mu_{it} \qquad (2)$$

In the model 2 indicates the general form of the panel data model. Where Y_{it} is the dependent variable and $F(x_{it})$ is the deterministic part of the model and μ_{it} is the error term.

Estimation of the above model depends based on assumptions. Based on these assumptions, there are different models for panel data formed such as "Pooled Ordinary Least Square Regression Model", "Fixed Effect Model", "Random Effect Model" and "Dynamic Random Effect Model". If we assume that the model's parameters represent a common effect with respect to time or cross-sectional units with assumptions of Classical Linear Regression Model (CLRM) followed by error term, it is called a Pooled OLS regression model. Greenland and Robins (1985) use "estimation of a POLS parameter from sparse follow-up data". We can write POLS model 1.

The above model is estimated using the least square method. If endogeneity is an issue, we can use any Instrumental Variable (IV) method i.e., 2SLS or GMM to solve the problem. A fixed effect model is one in which at least one of the model's parameters fluctuates with respect to time periods or cross-sectional units. For heterogeneity, the Fixed Effect Model (FEM) assigns intercept values to all potential entities.

Consider the following model by McManus, 2015:

$$y_{it} = \beta_{0i} + \beta_1 k_{it} + \beta_2 T_{it} + \beta_3 F_{it} + \beta_4 E_{it} + \beta_5 S_{it} + \beta_6 P_{it} + \mu_{it} \qquad (3)$$

Because each country has its own characteristics, the subscript i in the preceding equation suggests that it may allow intercept to vary among countries. Capital Stock, Trade Openness, and four institutions are examples of these qualities. Since each developing nation has a unique intercept that is time invariant and does not change with respect to time, a FEM is the name given to the overhead model. For all time periods, we can include time dummies in the model if the variable fluctuates over time. So here is a query raised up that how can it allow FEM intercepts to vary by country? Using the dummy variable method, it can easily manage the situation. McManus, 2015 write this model as follows:

$$y_{it} = \beta_0 + \beta_2 D_2 + \beta_3 D_3 + \beta_4 D_4 \dots \dots . + \beta_{16} D_{16} + \beta_1 k_{it} + \beta_2 T_{it} + \beta_3 F_{it} + \beta_4 E_{it} + \beta_5 S_{it} + \beta_6 P_{it} + \mu_{it} \qquad (4)$$

Where, D2=1 for country 2, Otherwise 0, D3=2 for country 3, Otherwise zero and so on.

We currently have 17 nations and 16 dummies to launch. "This approach for analysis of combining ability for seed oil content in cotton" is used by Kaushik et al. (1984).

If numerous cross-sectional units are surveyed, using an LSDV or fixed effects model could be expensive in terms of degree of freedom. To convey information if dummy variables are unable to do so, proponents of the Error Component Model (ECM) or Random Effect Model (REM) suggested adding an error term to the model.

Simply, we can define REM, if random variation in the model parameters with respect to time or units is anticipated. So, in resultant, random variations of the parameters can be measured by adding a random error term. Random Effect Model is the name given to such a panel data model.

Estimation Method for Panel Data Models

Heterogeneity in Panel Data

The panel data model where the coefficients in the model differ for each cross-section in the panel dataset which means that there is variability in data. Observed heterogeneity usually consists of covariates and unobserved heterogeneity consists of any unobserved difference like ability or effort.

Endogeneity Problem

Endogeneity refers to the relationship between the observed and unobserved variables, namely that they are dependent on one another. In econometrics, the word "endogeneity" is used to characterize situations in which an explanatory variable is linked to the error term (Wooldridge, 2009).

The hypothesis is as follows:

H_0: All variables are exogenous and against H_1 : All variables are endogenous.

Data and Methodology

This section includes the variables, data sources and techniques of analysis. Broadly the chapter is divided into two parts. One part consists of sources of data, description of variables and background of the model specification. The second part includes estimation of the model.

Data Description

In order to investigate the relationship between institutions and economic growth by using panel data from the years 2000-2014 for 17 developing countries. Population growth has slowed everywhere except sub-Saharan Africa but still accounted for almost half of world economic growth over the period 1990-2015 (United Nations 2016). This study took data for the institutions from International Country Risk Guide (ICRG) dataset and the data for GDPPC, capital stock and trade openness are collected from the World Development Indicators (WDI).

We used data from 2000 to 2014 in this research investigation. The institutions use the International Country Risk Guide (ICRG) as a source of variables. In the cross-country literature, a large variety of variables, both with and without time variation, have been presented as growth determinants. However, data for many of the latter is not accessible for the whole sample period studied in this article. We limit our selection of time-varying variables to those for which data is

available across the whole period 2000-2014 because our major purpose is to work with a panel data set.

In order to investigate the relationship between institutions and economic growth by using panel data from the years 2000-2014 (15 years) for the instance of 17 developing countries and the World Development Indicators (WDI) was used to compile data for the 17 developing countries. The data for GDPPC and capital stock creation is collected from a variety of sources (WDI). Data from various types of organizations is collected using the International Country Risk Guide (ICRG) data source. The International Crisis Response Group (ICRG) was ready to foresee political, economic, social, and financial dangers. The ICRG make statistics available on annual basis for 17 developing countries (Asian and others). The advantage of using ICRG dataset is that it allows you to understand the political, economic, and financial risks that might affect investment, company, and, ultimately, the country's economic growth.

List of the countries included in the study

1	Bangladesh	5	Gambia	9	India	13	Côte d'Ivoire	16	Haiti
2	Burkina Faso	6	Ghana	10	Kenya	14	Ethiopia	17	Honduras
3	Burundi	7	Guinea	11	Liberia	15	Pakistan		
4	Congo	8	Guinea –Bissau	12	Madagascar				

Description of variables

Real per capita GDP growth: Annual percentage growth rate of real per capita GDP which is measured by constant 2010 US$.

Trade openness: It is calculated as the sum of merchandise exports and imports divided by the value of GDP which is measured by constant 2010 $US.

***Capital stock*:** Using 2010 as the base year, real gross capital creation in dollars.

***Economic Institution*:** Budget balance, real GDP growth, yearly inflation rate, and GDP per person, current account

***Financial Institution*:** Foreign debt, percentage of exports of goods and services, Current account of goods and services, Net international liquidity of import, exchange rate stability

***Political Institutions*:** Govt. stability, investment profile, internal conflict, external conflict, corruption, military in politics, law and order, democratic accountability, bureaucracy quality.

***Social Institutions*:** Ethnic tension, religious tension

Results and Discussion

The descriptive statistics with and without logarithm form of the data and then check the normality for all countries and then individually for each country by using normality test i.e. Shapiro-Wilk Test. we estimates Pooled OLS model. The estimate of Fixed Effect model.

The VIF values for all the institutions and other independent variables. It is clear that all variables are not correlated to each other, and they are quite satisfactory. Overall, there is no

evidence of a significant multicollinearity problem because the values are all lower than 2 and its mean is also 1.09.

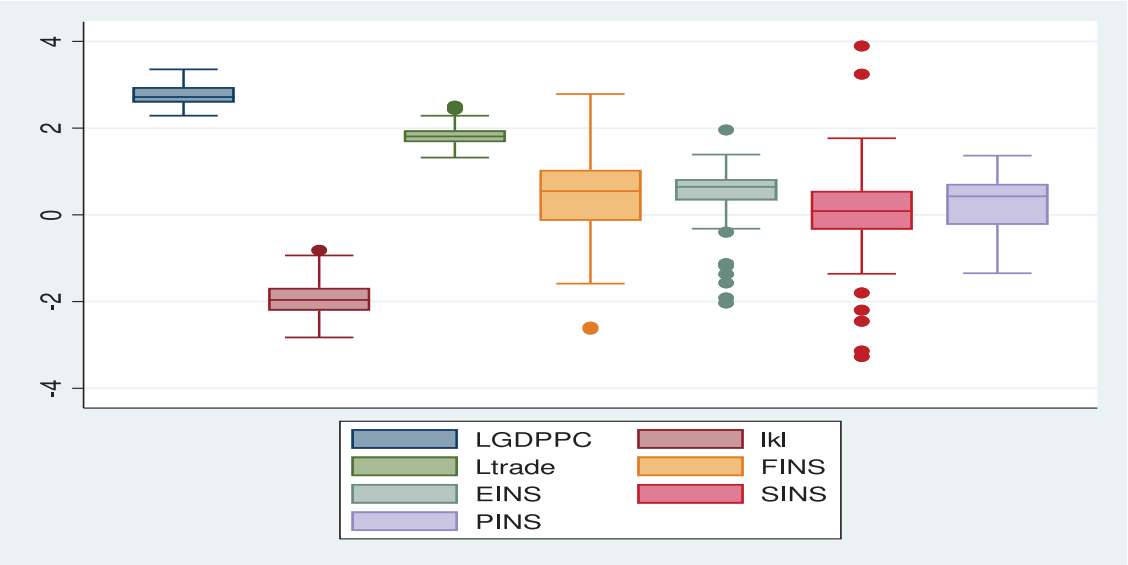
Table 4.1

Test of Normality for each variable (Shapiro-Wilk W Test)

Variables	n	W	Prob>z
GDPPC (log)	255	0.968	0.000
Kl (log)	255	0.993	0.287
Trade Openness (log)	255	0.975	0.000
FINS	255	0.983	0.004
EINS	255	0.835	0.000
SINS	255	0.937	0.000
PINS	255	0.922	0.000

Table 4.1 shows that the statistical test of Shapiro-Wilk for is significant for the variable GDPPC (in log) it means that this dependent variable is not normal. The variable Kl (in log) is normally distributed as its P>0.05. The statistical test of Shapiro-Wilk is significant for the independent variable Trade Openness (in log) which means that this variable is not normally distributed. Furthermore, next four variables FINS, EINS, SINS and PINS are not normal according to Shapiro-Wilk test as P value is less than 0.05.

Figure 1: Boxes Plot



Estimation of Pooled Ordinary Least Square Model

Parameters of the model represent Pooled Ordinary Least Square Model w.r.t time or units and all assumptions of Classical Linear Regression Model (CLRM) followed by error term; it is called Pooled Ordinary Least Square Regression Model.

Table 4.2

Results of Panel Ordinary Least Square Model

Coefficients	Estimate	Std. Error	P
Intercept	3.529	0.115	0.000
Capital stock	0.504	0.027	0.000
Trade Openness	0.167	0.052	0.002
FINS	0.080	0.012	0.000
EINS	-0.014	0.021	0.505
SINS	-0.024	0.012	0.054
PINS	-0.036	0.016	0.029

Table 4.2 shows that financial institution plays a positive significant role while other three indicates a negative impact on the dependent variable.

Table 4.3

Goodness of Fit and Diagnostic Test

R square	0.6539
Adjusted R square	0.6444
Prob.	0.0000
F test	90.80
Endogenity	0.1241

In Table 4.3, R-square shows that 65% influence of independent variables on the GDP. F value is 90.80 and its p value is less than 0.05 so it shows that model provides a better fit and the endogeneity (P-value) is 0.1241 which is greater than 0.05 so we accept null hypothesis that the variables are exogenous.

Estimation of Fixed Effect Model

At least single parameter of the model varies with respect to time or units then such a model is known as a Fixed Effect Model. FEM allows heterogeneity by allocating intercept to all its entities. For the estimation of FEM generalized method of moment can be used.

Table 4.4

Estimation Results of Fixed Effect Model

Coefficients	Estimate	Std. Error	P
Intercept	3.908	0.065	0.000
Capital stock	0.607	0.020	0.000
Trade Openness	0.022	0.033	0.050

FINS	0.020	0.012	0.400
EINS	0.162	0.019	0.020
SINS	-0.029	0.012	0.015
PINS	-0.037	0.008	0.000

Table 4.4 shows that change of one unit in Capital Stock cause 0.6068 units increases in GDP with P<0.05 along standard error 0.0203 which concludes significant impact on dependent variable. Similarly, a change in Trade Openness of one unit causes 0.0216 units increases in GDP with P>0.05 along standard error 0.0329 which indicates minor effect on dependent variable.

Table 4.5

Goodness of Fit and Diagnostic Test

R square	0.611
Adjusted R square	0.631
Prob.	0.000
F test	19.40

In Table 4.5, R-square shows that 61% influence of independent variables on the GDP.

F value is 19.40 and its p value < 0.05 so it shows that model provides a better fit.

Estimation of Random Effect Model

If the model's parameters are anticipated to vary arbitrarily with respect to either time or units, the term "random error term" may be used to describe these variations. Consequently, it is known as the Random Effect Model (REM). There are two elements to the REM composite error term, “the cross sectional or individual specific error component and the combined time series and cross-sectional error component”.

Table 4.6

Estimation Results of Random Effect Model

Coefficients	Estimate	Std. Error	P
Intercept	3.49	0.12	0.00
Capital stock	0.51	0.28	0.00
Trade Openness	0.13	0.53	0.01
FINS	0.66	0.12	0.60
EINS	0.01	0.22	0.09
SINS	-0.02	0.14	0.00
PINS	-0.06	0.17	0.00

Table 4.6 shows that a change in Capital Stock of one unit cause 0.5059 units increases in GDP with P<0.05 along standard error 0.2820 which concludes significant impact on dependent variable. Furthermore, a change in PINS of one unit causes -0.0616 units decreases in GDP with P<0.05 along standard error 0.1709 which shows negative impact on dependent variable.

Table 4.7

Goodness of Fit and Diagnostic Test

R square	0.6539
Adjusted R square	0.6785
Wald chi square	411.84
P-value	0.000

In Table 4.7, R-square shows that 65% influence of independent variables on the GDP.

Estimation of Hausman Test

The Hausman test is a statistical hypothesis which evaluates the consistency of an estimator when compared to another. It is used to select which model is best between FEM and REM. In the Hausman test, if P<0.05 it means that FEM is suitable model and if P>0.05 then REM is the suitable model.

b = consistent under H_0 and H_1 or B = inconsistent under H_1, efficient under H_0

Test: Ho: difference in coefficients not systematic

X^2 (7) = (b-B)'[$(Varb - VarB)]^{-1}$ (b-B) = 184.22, Prob = 0.0000

The hypotheses is as follows: H_0: REM is selected , H_1: FEM is selected

Table 4.8

Estimation Results of Hausman Test

	Coefficients		**(b-B) Difference**
	(b) Fixed Effect	**(B) Random Effect**	
Capital Stock	0.607	0.506	0.101
Trade Openness	0.216	0.131	-0.109
FINS	0.195	0.066	-0.047
EINS	-0.016	-0.011	-0.005
SINS	-0.029	-0.029	-0.006
PINS	-0.037	-0.016	0.024

Table 4.8 shows the P<0.05 with statistic 184.22. If P<0.05, we reject the null hypothesis and accept alternative one. As our result shows that P<0.05 so in this case we conclude that Fixed Effect Model is an appropriate model.

Estimation of Dynamic Random Effect Model

When we include lag term of the response variable as an explanatory variable then the random effect model is called dynamic.

Now we must face a specific problem in the above model. This problem is due to the violation of the assumption of CLRM. The assumption of CLRM is that the regresses are exogenous to error term.

Table 4.9

Estimation Results of Dynamic Random Effect Model

Coefficients	Estimate	Std. Error	P
L1	0.593	0.315	0.040
Intercept	4.012	0.147	0.000
Capital Stock	0.600	0.226	0.000
Trade Openness	0.528	0.046	0.256
FINS	0.031	0.144	0.071
EINS	0.039	0.021	0.000
SINS	-0.051	0.014	0.000
PINS	-0.546	0.147	0.000

Table 4.9 shows that a change in Capital Stock of one unit cause 0.5997 unit increases in GDP with P<0.05 along standard error 0.2256 which concludes major effect on dependent variable.

Table 4.10

Goodness of Fit and Diagnostic Test

R Square	0.687
Adjusted R square	0.680
Wald chi square	911.8
P-values	0.00

In Table 10, R-square shows that 68% influence of independent variables on the GDP.

Firstly, describe the summary of statistics and then plot their histogram as well but two variables are highly skewed i.e. GDPPC and trade openness. So, in this case we apply log transformation and then find out again descriptive statistics. To test the normality of data of all countries we use Shapiro-Wilk test for this purpose, and it indicates significant results. Finally, the Hausman test is used for selecting best model between FEM and REM. As P-value= 0.0000 so reject our null hypothesis and accept alternative one that is FEM is best model.

Summary and Conclusion

In this study we have estimated Panel Ordinary Least Square Model, Fixed Effect Model, Random Effect Model and Dynamic Random Effect Model". F-test is used between Pooled Ordinary Least Square Model and Fixed Effect Model. According to the F-test results; it shows us that Pooled Ordinary Least Square Model is suitable model between Fixed Effect Model and Random Effect Model. But still Pooled Ordinary Least Square (POLS) is not a valid model among all the models. Random Effect Model and Dynamic Random Effect Model are also not selected because their standard error shows high values between GDP and the independent variables. Whereas Fixed Effect Model shows significant impact of independent variables on dependent variable and Random Effect Model also shows significant effect of independent variables on dependent variable.

Fixed model is the valid model because it shows that GDP and independent variables have significant results. Our other explanatory variables i.e., Capital Stock, Trade Openness and four institutions also have a significant impact on our response variable. Adjusted R-square is also in favor of this model. So, their estimates are reliable, and we can use these estimates for policy making in the case of selected developing countries.
Finally, we can conclude that Fixed Effect Model is an appropriate model among all the other models. Unlike other models, it has a low standard error.

Future Recommendation

In the light of our empirical results and limitations, we propose the following dimensions for further investigation and for polishing our work:

Firstly, we could consider a micro level analysis investigating how firm or sector level development relates to institutional change. Such kind of micro level investigation has been started in recent years. However, most of these works relate to qualitative analysis on one hand and mostly land reform on the other (Nunn, 2009). Empirical work in respect to the manufacturing and services sectors remain limited. As institutional measures are largely macro in nature, case studies for specific data needs at sectoral level may have to be built up. Alternatively, we could also investigate how macro institutional arrangement could be differently felt by sectors and industries.

Secondly, a theoretical model to incorporate the bilateral causal relationship between democracy and economic reforms may need to be considered. How and why economic reforms are more likely to be implemented in democracy have been previously studied in the literature. However, a model to explain the reverse causality is perhaps more interesting, especially with reference to the experiences of emerging markets like China, where economic reforms have taken place but democratization progress has been slow.

The third is how to formalize institutional quality - regulatory environment in particular - as a source of comparative advantage which ultimately determines the pattern of capital flow. Models relating institutional quality and trade have been built.

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Takaful (Islamic Insurance) Adoption in Pakistan:

A Moderating effect of Religiosity

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Abstract

The purpose of this research study is to explore the moderating effect of religiosity against the intention to adopt Takaful insurance products and services in Pakistan. Earlier studies in the field of Takaful insurance have highlighted the degree of interaction between these two factors. The study includes four independent factors in addition to the dependent variable. The dependent variable is the intention to use Takaful Insurance products and services and independent variable are relative advantage, compatibility, social influence, and customer awareness of Takaful Insurance. Data from various regions of Pakistan were collected using a convenient sampling technique and a series of questionnaires as the survey instrument. The moderate effect of the factors has been predicted using moderated multiple regression analysis. The results show that religiosity significantly moderates the interplay of relative advantage, compatibility, social influence, awareness of Takaful, and intention to use Takaful Islamic insurance products. The result suggests that religious considerations influence Pakistani Takaful Insurance seekers' decisions to use Takaful Islamic Insurance goods and services in a significant way and it support hypothesis. The results of this study should help financial institutions develop marketing strategies that take these variables into account.

Keywords: Takaful adoption, Religiosity, Relative advantage, compatibility, social influence, awareness.

Introduction

The development of the Islamic financial system has now evolved a significant shift to a new standard in the economic models specifically in Islamic insurance and banking, which have gained a progressively important share in the financial market all over the world. According to research the Takaful derives from the Arabian noun "Kafala," that called "Guaranteed each other," (Billah, 2003). The ancestry of Islamic insurance may be followed back to the "Aquila" mechanism, which was used by tribes of Mecca and Madina for the purpose of mutually compensating or paying indemnity in the event that one member of the tribe suffered a loss as Prophet Muhammad afterward agreed to the same (Cheikh, 2013). Another researcher claimed Takaful mechanism is an anatomical structure where members pool their resources and subsequently reinvest them in accordance with Islamic Sharia law (Allen, 1990). This definition was given by the Oxford Dictionary of English. In the Malaysian Takaful Act of 1984, Noordin contended that this definition, which said that Takaful is a design built on brotherhood, harmony,and collective benefits offering financial help if a case of catastrophe or loss happens to indemnify the accused one, whereby all participants have confirmed upon collectively participating (Noordin, 2014). The first Takaful operational company is "The Islamic Insurance Company Ltd of Sudan," which was developed in 1979 (Rusin, 2016).

The Takaful mechanism is a wholly mutual design as in conventional insurance; the transfer of risk from the policyholder to the operator of the insurance business is done (Alhumoudi, 2013). The concept of takaful is based on voluntary contributions from both sides, which allows for the risk component to be shared between the Takaful operator and policyholders. Contributions are made to the fund by political participants. Profits from the investments in many Sharia-compliant initiatives were kept in the fund. In the future, if any members are lost, they will be compensated by the pool. Under Islamic law and Sharia regulations, the Takaful system is in operation (Awais et al., 2020). According to another author Islamic jurisprudence, or "Fiqh," is a collection of laws and regulations found on the Holy Qur'an, Sunnah, analogical reasoning ("Qiyas"), and legal unanimity ("Ijma"), whereas Sharia is God's holy decree. The Takaful process must adhere to Shariah regulations and must not miss any deadlines (Esposito, 2014).

Noordin (2014) claims that the Malaysian Takaful Act, 1984 offers the best definition of Takaful, which reads as follows: Takaful is a social structure based on brotherhood, solidarity, and mutual aid that offers participants equivalent financial support and reimbursement in times of need in exchange for their mutual agreement to contribute to the project (Noordin, 2014). The Takaful interpretation makes use of two requirements that are fairly understood. The primary objective of insurance is to protect against financial loss, and the Takaful fund will give candidates financial compensation in that situation. The participants who qualify for financial assistance from the Takaful fund are used in the second condition even if there is no uncertainty present and they are the owners of any leftover excess. Islamic philosophy has consistently emphasized collectivism among societies, and this idea is founded on solidarity and cooperation (Hassan, 2019).

Takaful Adoption at the Global Level and Pakistan

The Takaful industry is expanding quickly in the international market (Kazranian, Goud, & Saeed, 2015). By the end of 2014, the cost of the Takaful inputs was pegged at USO 14 billion.

Additionally, by the end of 2017, they would exceed US$17 billion. In the same vein, Young (2012) anticipated that by the end of 2015, the global Takaful market would be worth $20 billion (Young, 2012). According to Kazranian (2015), Kuwait, Qatar, Bahrain, Oman, and Saudi Arabia make up the Gulf Cooperation Council, which is the region that is the hub for Takaful products adoption. In the South Asian territory, it is also increasing its volume. Saudi Arabia is in the lead with the top slot, followed by Malaysia. Globally, there are 93 Takaful windows and roughly 308 Takaful enterprises. Ahmad (2013) made a compelling case for why Takaful's worldwide market advancement rate is much lower than that of the traditional insurance market. Furthermore, there is just a big untapped market out there, especially in nations with a majority of Muslims (Ahmad, 2013).

Furthermore, the first Islamic insurance company that started its operation back in 2005 under the license of Pakistan is Pak-Kuwait Takaful insurance, according to authors Wahab (2013) and Kaunain (2016). The late start of Takaful insurance was blamed on the absence of a regulatory framework. Even though Pakistan has a majority of Muslims, the country's Takaful proportion is still quite small. At the end of 2014, the gross Takaful premium was estimated to be worth PKR 8 billion.

Factors Influencing Takaful Adoption

There is the number of factors observed by the researchers that might affect Takaful adoption all over the world. The researchers initiated these factors check with the adoption of Islamic financial system and especially Islamic financial products, particularly in the banking and insurance industries. Starting back in 2011 Syed Shah Alam has investigated Relative and Contextual factors like Trends in fashion, Price of the product, Brand name, Quality Image, Peer pressure, Good sales presentation, and Good customer service with religiosity to observe consumer buying behaviors towards Islamic products (Alam, Mohd, & Hisham, 2011). In 2013 Thambiah in his study had highlighted various factors that influence consumer behaviors to invest in Malaysian Islamic banking products (Thambiah, Ismail, Musa, & Khin, 2013). Thambiah has investigated the adoption of Takaful by relative advantage, and awareness of Islamic retail banking attributes; observe ability, uncertainty, complexity, and compatibility. She has also introduced region and religion as moderating factors that can influence the adoption of Islamic banking products. We have selected this model as our research base paper, but we have also included the model of a researcher Hassan who investigated almost similar factors in 2019 for Takaful Islamic insurance in Pakistan with any moderating variable (Hassan & Abbas, 2019). The researcher has investigated the effect of relative advantage, compatibility, awareness, social influence and religiosity (Hassan & Abbas, 2019). Likewise, there are number of researchers who had investigated almost similar factors in their papers for the adoption of Islamic financial products. Ahmad (2016) had introduced as an additional factor attitude to observe adoption of Islamic products. In 2016 researcher has introduced the factor of service quality as an additional factor with previous studies factors to observe the adoption of Islamic financial products (Ali, 2016).

Literature Review

The Takaful strategy is focused on shared accountability, solidarity, and cooperation (Alhumoudi, 2013; Awais et al., 2021). Additionally, it is a suitable representation of

collectivism, which is the central tenet of Islamic philosophy (Dahnoun, 2018). Contrary to conventional insurance, which is a risk transfer mechanism, the Takaful system shares responsibility among its participants and stakeholders (Abdulsater, 2014). Additionally, it developed the genuine mutual construct (Jaffer et al., 2010).

The goal set for the current learning is to learn more about the perception and conduct of investors regarding Takaful insurance. In the literature review, consumer and corporate behavior related to takaful will be specifically explored to support the research project with prior material. According to numerous experts throughout the world, a Muslim customer would hesitate to buy something because the premise is Islam, which has restrictions according to his or her faith, and he or she would lean to lend something that is allowed (Abdulsater, 2014; Awais et al., 2022). Further research into Islamic finance and Takaful will undoubtedly aid in determining the precise aspects that contribute to a favorable client attitude.

According to a study, Takaful insurance is replacing conventional insurance as a viable alternative for Muslims. According to Islamic doctrine, takaful is charge less from unlawful components like usury, uncertainty, and gambling because these made traditional insurance prohibited (Khan, 2013). Similarly, to this, Hussain and Pasha pointed out that under the Takaful mechanism, a common benefit is shared with an association of reciprocal responsibility and harmonization inside the Takaful union (Hussain, 2011). In line with this, Beck and Webb asserted that traditional insurance typically employs a risk transfer mechanism that transfers risk from the policyholder to the insurance provider (Beck, 2003). Ariff and Iqbal further claimed that in Takaful insurance, the risk is shared among the members. Takaful encourages social cohesion through the promotion of others' well-being (Ariff, 2011).

The Theory of Planned Behavior

The "theory of reasoned action" which previously been provided is extended by the researcher Ajzen's "theory of planned behavior" (TPB) theory. The TPB hypothesis links intents, convictions, and explanations of human action (Ajzen,1985). The theory enhances the idea by including a component called "perceived behavioral control." Intention to act and subsequent actions are positively correlated (Norberg, 2007). However, it doesn't necessarily result in actual behavior due to a number of circumstances. Ajzen attempted to analyze people's non-volatile behavior to forecast their intentions and subsequent actions (Sheppard, 1988). A person is more assured and likely to act in accordance with his or her behavioral goal if they feel themselves to have great behavioral control.

TPB, as opposed to TRA, is a superior predictor and explanatory of behavioral intentions (Albarracin, 2001). As a result, it is frequently employed in medical research and yields results that are of great significance. In a study, Linden (2011) added that the TPB theory was useful for studying pro-social actions, and the results are generally consistent (Linden, 2011). TPB is a reliable predictive model and a useful tool for analyzing the attitudes and behaviors of people.

Innovation Diffusion Theory (IDT)

The conceptual foundation of the present research is based on Rogers' (2003) Innovation Diffusion Theory (IDT). Observability, relative benefit, compatibility, complexity, and trial

ability have been identified as the top five characteristics of inventions. Customers' understanding of IRB qualities has been enclosed in the scheme in addition to these five factors. IRB adoption in Malaysia may be constrained by clients who lack knowledge about or are unaware of the benefits of IRB services (Dusuki, 2007; Rosly, 2008); (Thambiah, Eze, Tan, Nathan, & Lai, 2010). Furthermore, it has been emphasized (Kotler, 2001) and even (Rogers, 2003) that awareness is the initial step in the acceptance of an innovation. The exceptions to this rule are the research of Kader (1995) and Baron (1994), which looked at consumers' knowledge of the existence of Islamic banking and its core concepts. However, some studies had studied customers' understanding of Islamic banking qualities. In addition, recent research on the factors influencing the use of Islamic banking in Malaysia (Dusuki, 2007; Rosly, 2008) highlighted the importance of educating the general public about the unique features of Islamic banking products and services and how they can help consumers in their financial dealings.

Variable of Study

A study investigated how consumer behavior characteristics (variables) like relative benefit, social influence, compatibility, and awareness impacted the uptake and usage of Takaful (Hassan & Abbas, 2019). Additionally, a research study that employed religion as moderating variable also found that the adoption of Islamic financial products was moderated by several characteristics, including relative advantage, awareness, compatibility, observe- ability, complexity, and uncertainty (Thambiah, Ismail, Musa, & Khin, 2013). The objective of this research project, which was informed by a review of the literature, is to examine consumer behavior as a dependent variable and relative advantage, awareness, social impact, and compatibility as an independent variable. To determine the influence of independent variables on the dependent variable of consumer behavior, religion is utilized as a moderating variable. Now, with the aid of literature, we discuss each of these factors.

Religiosity

The way that religion affects a person's attitudes, knowledge, and beliefs is a good indicator of how religion has an impact on that person's life. There are a variety of religious groups with different religious beliefs, including Muslims, Christians, Buddhists, and others. When examining a civilization, it is impossible to avoid these views (Fam, 2002). These religious commitments and beliefs have an impact on how people feel and see consumption (Jamal, 2003). Because of their allegiance to particular communal or religious groups, Indian society and indigenous white British society in England, for instance, have different spending patterns (Lindridge, 2005). Furthermore, the consumer's choice of what to buy is influenced by religion, which lists what is prohibited and what is not. For instance, beef is taboo in Hinduism but permitted in Islam. While it is forbidden to eat pork in Islam and Judaism, it is permitted in Christianity. Religion actually has an impact on consumer beliefs, preferences, and dislikes (Fam, 2002).

There is a significant correlation between religious patronage and Islamic financial products (Bley, 2004). Siala (2013) also discovered a strong connection between religious motivation and the use of religiously conforming services (Siala, 2013). Furthermore, Echchabi (2015) and Husin (2016) backed the claim that religious values have a substantial influence on the acceptance of Takaful insurance.

Malaysian researcher used religion as a moderating variable to check its impact for adoption Islamic banking products (Thambiah, Ismail, Musa, & Khin, 2013). With reference to this research we had choose to put religiosity as moderating variable for this research. For this purpose 5 Likert scale is developed for religiosity which can help us to find Takaful adoption in Pakistan and how much religiosity impact on customer's perception to adopt Islamic financial product in Pakistan.

Relative Advantage

According to Rogers (2003), a product's relative advantage is the level of innovation that distinguishes it from rivals. It is stated in a range of research domains that relative advantage had a significant role in the choice to embrace an invention. Researchers Aziz (2015), Ecchabi (2013), and Rahim (2011) have shown through their research findings that relative advantage has a substantial impact on the adoption of Takaful. Therefore, conventional insurance policies have a higher comparative advantage over Takaful products, according to the researchers (Salman, 2014). This evidence that relative advantage has a substantial impact on the adoption and use of Takaful products has been approved by Ali Hassan as well (Hassan & Abbas, 2019). Additionally, (Thambiah, Ismail, Musa, & Khin, 2013) came to the conclusion that intentions to utilize Islamicfinancial products appeared to be significantly moderated by religion.

Compatibility

According to Rogers (2003), compatibility describes how well an innovation fits into the adapter's current requirements, perceptions, and beliefs. An individual shows a keen interest in innovation if it is relevant to his or her culture, religion, societal values, and subjective norms, according to studies cited by Gerrard and Cunningham (2003). Similarly, to this, according to Langer's (2014) argument, a person will reluctant to adopt an innovation if it is against the teachings of their religion. Takaful insurance operates in accordance with Islamic Sharia law, according to certain additional study findings (Thambiah, 2010; Hussain, 2011; Echabi, 2015). Because Takaful insurance is consistent with religious beliefs and social conventions, people who lean more toward religion likely to adopt it. This evidence showing compatibility has a substantial impact on the adoption and use of Takaful goods has been approved by Ali and Hassan as well (Hassan & Abbas, 2019). Additionally, Thambiah, Ismail, Musa, and Khin (2013) came to the conclusion that intentions to utilize Islamic financial products appeared to be significantly moderated by religion.

Social Influence

According to an author People are subjected to peer pressure from their family, friends, and surroundings, and this influences their decision to engage in particular behaviors (Ajzen, 1985; Ellahi, Awais, & Raza, 2018). In 19th century an author asserts that social influence has a favorable impact on behavioral intention in diverse contexts (Taylor, 1995). Peer pressure and cultural norms typically influence decisions about Islamic banking and Takaful insurance (Alam, 2011; Cheikh, 2013; & Echchabi, 2013). This evidence showing social influence has a substantial impact on the adoption and use of Takaful products has also received the approval of Ali as well (Hassan & Abbas, 2019). Additionally, it was determined by (Thambiah, Ismail, Musa, & Khin, 2013) that religion appeared to have a strong moderating effect on intention to

adopt the Islamic financial products.

Awareness

Rogers (1995), in his book Diffusion of Innovation, said that buyers' awareness of an innovation or product is the only element that influences their decision to purchase it. It also held that the acceptance of any product is highly dependent on consumer knowledge (Boztepe, 2012). The aforementioned idea is consistent with Takaful: if people are aware of its benefits, they will undoubtedly purchase it. According to (Thambiah, Ismail, Musa, & Khin, 2013) and (Alhumoudi, 2013), numerous research results revealed awareness positively influences the adoption of Takaful. This evidence that awareness significantly influences the adoption and use of Takaful goods has been approved by Ali Hassan as well (Hassan & Abbas, 2019). Additionally, (Thambiah, Ismail, Musa, & Khin, 2013) came to the conclusion that religion proved a very strong moderating variable that influences people to adopt Islamic financial products.

According to Ali (2019), Pakistanis are ready to adapt new ideas and are eager to take part in takaful, that adheres to their religious principles, morals, and cultural valuesbut also offers more advantages for the participants as well as the broader community. Given thefore going, it asserts that Pakistan's population is 97% Muslim. As a result, it is often believed that people tend to engage in takaful. This is now a fact exist that Takaful has a significant market share with lot of potential in the Pakistani insurance sector with the availability of sufficient awareness and creative products (Hassan & Ali, 2019).

Hypothesis Development

H 1: Religiosity moderates the strength between the relative advantage and intension to adopt Takaful.

H 2: Religiosity moderates the strength between the compatibility and intension to adopt Takaful.

H 3: Religiosity moderates the strength between social influence and intention to adopt Takaful.

H 4: Religiosity moderates the strength between the awareness and intension to adopt Takaful.

Research Model

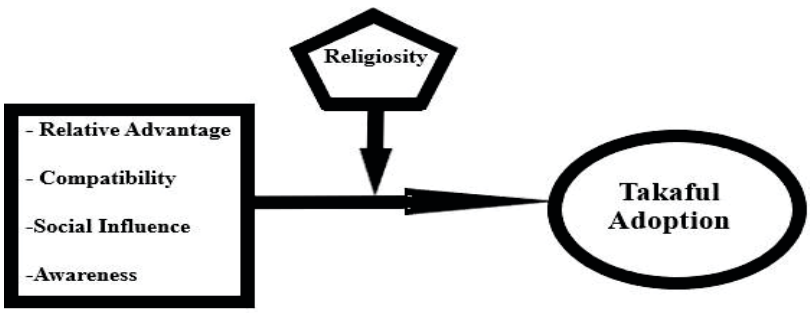

Figure 1: Conceptual Framework

Sources: Adopted from Rogers, (1995); Thambiah, Ismail, Musa, & Khin (2013); Hassan & Abbas (2019)

Research Methodology

This study is based upon primary data and questionnaire was developed for this purpose based upon the standard set by renowned scholars to examine the new product responses as the prime purpose of this research is to examine moderating effect of religiosity for Takaful adoption. In this causal study, the influence of independent variables relative advantage, compatibility, social influence, and awareness will be measured on the basis of respondents' self-reported perceptions of these variables in relation to their intentions to adopt and use Takaful products, with religiosity serving as moderating factor.

Faculty members and students from private and public universities in Rawalpindi and Islamabad make up the study's population. A suitable number of questionnaires are delivered to the teaching staff and students and their parents at the private and public institutions in Rawalpindi and Islamabad based on a convenient sampling of the population. Similarly some sole proprietors were also considered for data gathering. You may examine the specifics of the date gathering. The questionnaire distributed among 257 respondents through the Google forms. All respondents have responded correctly so no problem is faced in data gathering.

On a Likert scale with 1 being strongly disagreed and 5 being strongly agree, all study variables will be scored. The full list of questions is provided towards the conclusion of the thesis. The correlation and regression statistical methods are adopted to check the impact between the moderating, dependent band independent variables. The multiple linear regression econometric models have been selected in the study in which each of the independent variable is separately tested along with its interacting term. For example independent variable relative advantage is tested with moderating interacting term Religiosity-Relative advantage to check impact on Takaful usage. The regression is run in three steps in which first step has included with control variable (age, gender and marital status) and second step included with independent variable that is relative advantage and religiosity and in third step moderating interacting term has been added Religiosity-Relative advantage. The same is done with other three independent variable compatibility, social influence and awareness.

Demographic Analysis and Frequency Distribution

According to Table I, the sample respondents are split between 184 non-users (71%) and 73 Takaful users (29%). Only 31% of female participants in the research analysis, despite the fact that the participation rate for men is relatively high at 69%. Although there is evidence of a male-dominated culture, the tendency is slowly shifting. Regarding age, 69 percent of the responses came from respondents who were between the ages of 21 and 30. Twelve percent came from respondents who were between the ages of 31 and 40. With 60.3%, the single demographic is more inclined to adopt, and the married demographic is not far behind with 39.7%. People who earn more than PKR 50,000 per month are significantly more likely to invest in Takaful, with a difference of 38.4%.

Table 1

Demographical Analysis

Sr. #	Measures	Scale	Frequency	%
1	Gender	Female	78	31%
		Male	174	69%
2	Age	Below 20	56	22.2%
		21-30	174	69%
		31-40	14	5%
		Above 40	18	7%
3	Marital Status	Single	212	
		Married	40	
4	Education	Matriculation	10	4%
		Intermediate	49	19.4%
		Graduate	148	58.7%
		Post- Graduate	35	13.9%
		Above Post- Graduate	10	4%
5	Income Level Rs.	Below 20,000	136	54%
		20,000-50,000	60	23.8%
		50,000-75,000	22	8.7%
		75,000-100,000	17	6.7%
		Above 100,000	17	6.7%
6	Saving level (%)	Below 10%	77	30.6%
		10%-20%	43	17.1%
		20%-30%	23	9.1%
		Above 30%	16	6.3%
		Don't Save	93	36.9%
7	Professional Qualification	No	87	34.5%
		Yes	165	65.5%
8	Occupation	Public	39	15.5%
		Private	103	40.9%
		Self-owned	110	43.7%
9	Takaful Usage	Uninsured	184	71%
		Insured	73	29%

Descriptive Analysis

Table 2 displays the "descriptive analysis" that was produced using data analysis techniques

and SPSS IBM 21. Lowest, highest, mean, standard deviation, skewness, and kurtosis values of the study's variables. The greatest and lowest mean values for the data average, which should be around "3," are 4.23 and 3.11 respectively. Additionally, when skewness and kurtosis are both zero, the response distribution is regarded as normal (a circumstance that researchers are extremely unlikely to ever discover). According to a general guideline for skewness, a distribution is said to be significantly skewed if the value is more than +1 or lower than -1.

Kurtosis values should be between 10 and +10 when using SEM, while skewness values should be between 3 and +3 (Brown, 2006). If the number is more than +1, the general rule for kurtosis states that the distribution is excessively peaked. Similar to this, an excessively flat distribution has a kurtosis of less than -1. Distributions that exceed certain boundaries in skewness and/or kurtosis are seen to be aberrant in Hair et al. (2017). The ranges of Skewness and Kurtosis—1 to -1 and 3 to -3, respectively—are described. A value between -0.5 and 0.5 is a sign of skewness since it shows that the distribution is symmetrical. Therefore, the result outcome are fair.

Table 2

Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
Takaful Usage	0	1	0.28	0.45	0.96	1.08
Relative Advantage	1	5	3.65	0.68	-0.64	1.1
Compatibility	1	5	3.57	0.88	-0.62	0.3
Social Influence	1	5	3.23	0.95	-0.25	-0.43
Awareness	1	5	3.12	0.99	-0.2	-0.49
Religiosity	1	5	4.25	0.87	-1.43	1.53

Correlation Analysis

Table 3 shows the degree of connection between the independent and dependent variables as well as the influence of religiosity as a moderating variable on Takaful adoption. The table shows a favorable association between the use of Takaful and relative advantage, compatibility, social impact, and awareness. It is evident that there is a bad link between using Takaful and religiosity. A favorable association between relative advantage, compatibility, social influence, and knowledge of Takaful adoption is also produced by the moderating effect ofreligiosity.

Additionally, there is a (0.093) correlation between the relative advantage and the use ofTakaful, showing that any change in one of them will have a favorable impact on the other variable's 0.093 change. The interacting term RA-REL is showing a positive correlation 0.52 with Takaful adoption as it confirms that there is no issue exists of multicollinearity in the study. As a result, when the findings of this study are compared to those of other studies like (Rahim & Amin, 2011; Aziz et al., 2015; Shabiq & Hassan, 2016; Hassan, 2019; Thambiah, Ismail, Musa, & Khin, 2013).

With a value of (0.091), the next variable, Compatibility, similarly illustrates the same link between the use of takaful and a relative advantage. However, compatibility's association with relative advantage is weaker as evidenced by the value of (0.615). The interaction COM-REL is showing 0.061 a positive association with Takaful adoption and no issue of multicollinearity exist. Consistent findings were seen in (Faisal, Akhtar, & Rehman, 2012; Echchabi, & Ayedh, 2015; Husin & Rahman, 2016; Hassan, 2019).

Table 3

Correlation Table

	1	2	3	4	5	6	7	8	9	10
1.Tu	1									
2.Ra	.09	1								
3.Com	.09	.61*	1							
4.Si	.06	.39**	.45**	1						
5.Awr	.15*	.26**	.28**	.52**	1					
6.Rel	-.05	.38**	.27**	.16*	.02	1				
7.Ra-Rel	.05	.84**	.55**	.34**	.17**	.80**	1			
8.Com-Rel	.06	.65**	.87**	.41**	.20**	.70**	.82**	1		
9.Si-Rel	.05	.50**	.49**	.87**	.43**	.60**	.66**	.67**	1	
10.Awr-Rel	.12*	.40**	.36**	.53**	.87**	.50**	.53**	.51**	.67**	1

The above table showing correlation among dependent, independent and moderating variable. The dependent variable TU=Takaful usage, also Independent variable includes RA= Relative advantage, COM=compatibility, SI=Social influence, AWR=Awareness, REL= Religiosity. The moderating variable interaction terms are RA-REL= Relative advantage*Religiosity, COM-REL= Compatibility*Religiosity, SI-REL= Social influence*Religiosity, AWR-REL= Awareness*Religiosity.

When social influence compared to other variables, it has a favorable but less significant association with the use of takaful (0.062). The interaction SI-REL is showing 0.047 assosiation with Takaful adoption. The correlation between relative advantage (0.615) and compatibility (0.446) is also consistent with earlier literature such as Cheikh (2013).

The connections with awareness are highly intriguing since they include associations with using takaful (0.149), relative advantage (0.261), compatibility (0.277), and social influence (0.515). The only factor that significantly positively correlates with adoption of takaful is awareness. The interacting term to examine moderator AWR-REL is associated at 1.24 with Takaful as higher association is in line with previous researches. Alhumoudi (2013), Echchabi and Echchabi (2013), Abdulsater (2014), Husin and Rahman (2016), and the results are consistent with (Hassan, 2019).

More significantly, the correlation between the adoption of Takaful and religiosity is (-0.047), followed by associations with relative advantage (0.381), compatibility (0.270), awareness (0.020), and social impact (0.159). Social influence and religiosity can both be used to measure how the society has an impact, which is why there is less of a link between the two in this context. As the moderator, religiosity is more strongly positively correlated with the adoption of

Takaful than the independent factors. As discussed above the adoption of Takaful is positively correlated with religiosity interacting terms to examine moderating effect with relative advantage at (0.052), compatibility (0.061), social influence (0.047), and awareness (0.047). (0.124). The findings agree with those of Thambiah et al. (2010), Alam et al. (2011), and Obeid and Kaabachi (2016).

Regression Analysis

We used the Moderated Multiple Regression (MMR) analysis to determine the impact of moderator religiosity with independent variables relative advantage, compatibility, social influence, and awareness on the adoption of Takaful (Islamic Insurance), which is the dependent variable of the study, in order to assess the strength of interaction of religiosity between the four independent variables. As a result, the hierarchical Regression method, or moderated multiple regression, or MMR, is used in this study (Aguinis, 2004). First, data were gathered on the categorical moderator of religion, which is an independent variable. Calculating the interaction term or product term is the next step. Relative advantage, compatibility, social impact, and awareness were multiplied by the moderator variable of religiosity in order to produce the hypothesized moderator variables, also known as the interaction term or product term.

Based on the model's statistical significance, its moderating impact on the independent-dependent connection was computed, and its substantive relevance is also looked at. The statistical significance and its degree of significance (p-value 0.05) are examined using the t-value. While the two-stage multiple regressions was used to assess the moderating effect of religiosity. The first stage only includes first-order effects (i.e., the intention to adopt Takaful; all four independent factors; a moderator variable); the second stage includes the product term (each independent variable multiplied by religiosity); and the third stage includes all three terms.

Therefore, the change in R-square value from the first-order level of the model to the second-order level model must be significant in order to determine the significant level for a moderating (Aguinis, 2004; Hair, 2010). The R^2 number is used to determine how well the model fits. A R^2 number that is closer to 1.0 indicates that the stated variables account for almostall of the model's variability (Hair, 2010). In order to have a more objective measurement of the coefficient, an adjusted R^2 was referred to, despite the relatively large number of independent variables (four independent variables) that are used in this research, representing urban and rural customers with different sample sizes throughout Pakistan. The correction is an adjusted R square based on the number of independent variables in relation to the sample size that systematically discounts the rise in R square caused by the addition of non-significant variables (Aguinis, 2004; Hair & Andreson, 2010).

Additionally, the unstandardized regression coefficients (B) were used to interpret the direction of the positive and negative relationships between the independent and dependent variables for this study. If a B coefficient is positive, this relationship between the variable (Coefficient B) and the dependent variable will be considered to be positive. The dependent variable can also be used to explore negative relationships if the B coefficient is negative.

In Table IV we have analyzed the first moderated multiple regression analysis performed with

independent variable relative advantage to check its effect on Takaful adoption. The moderation effect of religiosity is also observed with relative advantage (RA-REL). The control variables are age, gender and marital status. From table IV it is observed that that relative advantage is showing positive relationship with Takaful adoption as B=0.095 and it is also significant at p<0.05. Also moderator religiosity is showing negative relationship with Takaful adoption as B=-0.059 and also has significant value p<0.05. The interaction term RA-REL that Relative advantage multiplied with religiosity is showing a strong positive relation with Takaful adoption as B=0.104 with a p value significant at p<0.01. So this result support our hypothesis that H1= Religiosity moderates the strength between the relative advantage and intension to adoptTakaful. The results are in line with the previous studies as well. As relative advantage has creating a change in Takaful adoption by beta 2.9 (Hassan & Abbas, 2019). Similarly relative advantage and religion interaction term has a beta of 0.085 to create an effect on Takaful adoption (Thambiah, Ismail, Musa, & Khin, 2013).

Table 4

Moderated Multiple Regression Analysis for Relative Advantage

Predictors		**Takaful Adoption**	
	B	**R^2**	**▲R^2**
Step 1			
Control variable	0.110_{ns}	0.008	
Step 2			
Relative Advantage	0.095*		
Religiosity	-0.059*	0.029	0.021
Step 3			
RA-REL	0.104**	0.051	0.022

*N=257, *p<0.05, **p<0.01, ***p<0.001, RA-REL= Relative advantage*Religiosity*

In Table V we have analyzed the second moderated multiple regression analysis performed with independent variable compatibility to check its effect on Takaful adoption. The moderation effect of religiosity is also observed with compatibility (COM-REL). The control variables are age, gender and marital status. From table V it is observed that that compatibility is showing positive relationship with Takaful adoption as B=0.063 and it is also significant at p<0.05. Also moderator religiosity is showing negative relationship with Takaful adoption as B=-0.047 and also has no significant value that is p<0.05. The interaction term COM-REL that compatibility multiplied with religiosity is showing a strong positive relation with Takaful adoption as B=0.092 with a p value significant at p<0.05. So this result support our hypothesis that H2= Religiosity moderates the strength between the compatibility and intension to adoptTakaful.

Table 5

Moderated multiple Regression Analysis for Compatibility

Predictors		Takaful Adoption	
	B	R^2	▲R^2
Step 1			
Control variable	0.110_{ns}		
Step 2			
Compatibility	0.063*		
Religiosity	-0.047_{ns}	0.025	0.017
Step 3			
Com-Rel	0.092*	0.045	0.020

*N=257, *p<0.05, **p<0.01, ***p<0.001*

In Table VI we have analyzed the third moderated multiple regression analysis performed with independent variable social influence to check its effect on Takaful adoption. The moderation effect of religiosity is also observed with social influence (SI-REL). The control variables are age, gender and marital status. From table VI it is observed that that social influence is showing bit weak positive relationship with Takaful adoption as B=0.037 and it is also not significant at p<0.05. Also moderator religiosity is showing negative relationship with Takaful adoption as B=-0.036 and also has no significant value that is p<0.05. The interaction term SI-REL that Social influence multiplied with religiosity is showing a strong positive relation with Takaful adoption as B=0.075 with a p value significant at p<0.05. So this result support our hypothesis that H3= Religiosity moderates the strength between the social influence and intension to adoptTakaful.

Table 6

Moderated multiple Regression Analysis for Social Influence

Predictors		Takaful Adoption	
	B	R^2	▲R^2
Step 1			
Control variable	0.110_{ns}		
Step 2			
Social Influence	0.037_{ns}		
Religiosity	-0.036_{ns}	0.017	0.009
Step 3			
SI-REL	0.075*	0.033	0.016

*N=257, *p<0.05, **p<0.01, ***p<0.001*

In Table 7 we have analyzed the first moderated multiple regression analysis performed with

independent variable awareness to check its effect on Takaful adoption. The moderation effect of religiosity is also observed with awareness (AWR-REL). The control variables are age, gender and marital status. From table VII it is observed that that compatibility is showing positive relationship with Takaful adoption as B=0.074 and it is also significant at p<0.01. Also moderator religiosity is showing negative relationship with Takaful adoption as B=-0.047 and also has no significant value that is p<0.05. The interaction term AWR-REL that awareness multiplied with religiosity is showing a strong positive relation with Takaful adoption as B=0.118 with a p value significant at p<0.01. So this result support our hypothesis that H4= Religiosity moderates the strength between the awareness and intension to adoptTakaful.

Table 7

Moderated multiple Regression Analysis for Awareness

Predictors		**Takaful Adoption**	
	B	**R^2**	**▲R^2**
Step 1			
Control variable	0.110_{ns}		
Step 2			
Awareness	0.074**		
Religiosity	-0.032_{ns}	0.037	0.029
Step 3			
AWR-REL	0.118**	0.064	0.027

*N=257, *p<0.05, **p<0.01, ***p<0.001, AWR-REL= Awareness*Religiosity*

Summary of accepted and rejected hypothesis

The research study has developed four hypothesis and the results of the hypotheses based on the regression analysis are shown in the table VIII below:

Table 8

Results of Hypothesis test

H	**Hypothesis**	**Status**
H1	Religiosity moderates the strength between the relative advantage and intension to adoptTakaful	Supported
H2	Religiosity moderates the strength between the compatibility and intension to adopt Takaful	Supported
H3	Religiosity moderates the strength between the social influence and intension to adopt Takaful	Supported
H4	Religiosity moderates the strength between the awareness and intension to adopt Takaful	Supported

Research Finding and Discussion

The results and findings are relevant with the previous researches of (Hassan, 2019; Thambiah, 2013). As this research have a R square change with 0.070 and significance F change 0.033 which implies that this research model is acceptable and religiosity have significant moderating impact on relative advantage, compatibility, social influence and awareness to adopt Takaful Insurance. This positive coefficient B values that is relative advantage-religiosity is 0.051, compatibility-religiosity is 0.034, Social influence-religiosity is 0.09 And awareness-religiosity is 0.073. It signifies that 1 unit increase in Takaful adoption has been possible with above factors and positive relationship has been examined from it. Although the values are less as 0.051, 0.034, 0.09, 0.073 values are too less as fewer people are willing to adopt Takaful insurance although positive relationship amongst religiosity as moderating variable and dependent independent variables has examined from this research. There can be possibly some other factors that can influence people to adopt Takaful products. As people are highly religious in Pakistan but their Takaful adoption rate is very low.

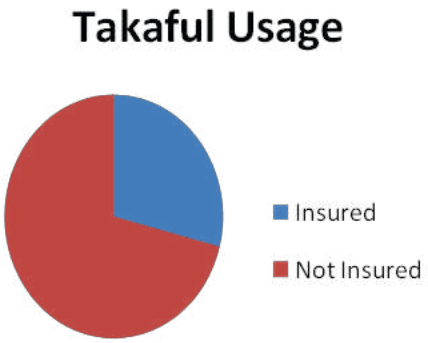

Chart I: Takaful adoption percentage

From chart I we can examine that only 29% are willing to adopt Takaful products in Pakistan as data shows they are highly religious but possibly there are some other factors that need to be examine that influence people behavior to adopt Takaful products. As religious reason are still influencer but not have significant impact to adopt Takaful insurance products (Thambiah, 2013). Likewise, Ali has added to discussion in 2019 that lack of awareness in Pakistan hasled to low adoption rate of Takaful in Pakistan also Takaful products are not as competitive and innovative as conventional insurance products (Hassan, 2019). Our research has also contributed in line with the previous researches that religiosity is not much influencing moderator to adopt Takaful products, there are some other factors which need to examine for lower adoption rate of Takaful Insurance.

Conclusion

There are various factors which have highlighted the research framework, most importantly the people behavior regarding Takaful usage are widely studied to investigate the hypothesis. The study's findings indicate that Pakistan has significant growth potential for the Takaful industry. Religiosity significantly impact Pakistani people behavior to adopt Takaful as concluded from

above results. Because the Takaful idea is in harmony with their beliefs, Pakistani people are quite hopeful about it. It addresses their cultural, social, and subjective standards. According to research, the biggest obstacle to the expansion of Takaful in Pakistan is a general lack of knowledge about the practice, and people's reluctance to invest in Takaful is also influenced by various prejudices. Furthermore, the underdevelopment of Takaful is due to the lack of innovative and competitive products are also responsible. At last, the research effort suggests that more new techniques are required to produce more innovative and beneficial products must be adopted by the Takaful operators for further development of Takaful. Takaful products and Takaful mechanism must grow with awareness and advertisement programs at various levels like universities. Therefore, it is vital for Islamic insurance businesses to increase customer understanding about their competitive advantage compared to traditional insurance services in order to enable consumers assess the value and utility of Islamic insurance. They should emphasize in their advertising campaigns the advantages of adopting Islamic insurance services. Pakistan Islamic insurance should emphasize that their purpose is to contribute to the growth of the nation's economic and social development in addition to the religious and financial benefits. This is crucial in Pakistan, which has seen social unrest and economic difficulties since the Asia Spring. Moreover, there are lot of other factors and aspects that need to be discovered and created to influence people so that more may adopt Takaful products. Resultantly, people are willing to buy Takaful products and it also set a benchmark for conventional insurance users, and they will surely switch toward Takaful insurance.

The credible predictor of Pakistani consumers' acceptance of this new insurance service turned out to be their level of religiosity. This result is consistent with studies by Souiden and Jabeur (2015); Souiden and Marzouki (2015) that found a significant influence of religion on Pakistani consumers' decisions to adopt Islamic banking as well as a 2013 report by Thomson Reuters that found Pakistani consumers' likelihood to use Islamic insurance products and services is significantly influenced by their commitment to following Islamic law. This implies that Pakistani Islamic insurance should target groups or individuals that have a strong sense of religious devotion while marketing their services. Some religious subgroups demand that all financial dealings, acts, and investments made by Islamic insurance be in accordance with Sharia. They may view this as a sign of trust in these financial institutions. As a result, authenticity is crucial to the expansion of Islamic insurance in Pakistan. Because of this, Islamic financial institutions must persuade prospective customers that they offer safe insurance solutions that are entirely compliant with Islamic standards.

In conclusion, In Pakistan it is obvious that religious reason is very important to certain extends to adopt Takaful Islamic insurance products. The presence of social influence is even very strong in the society to adopt Takaful products but absence of awareness abstains Pakistani people to invest for Takaful products. The significance of awareness factor to increase the importance of takaful products can never be neglected in case of Pakistan. The findings of this study have a number of significant ramifications for Islamic insurance. Clearly, the quick growth of Islamic insurance in Pakistan will depend heavily on customer education and confidence. Therefore, in order to draw in potential customers, Takaful enterprises should be careful to uphold their authenticity with regard to Sharia compliance as well as their communication strategy. Takaful managers should choose appealing and educational ads that emphasize the "Islamacity of

Product." It is advised that businesses use their advertising efforts to let customers know that "the Sharia committee" constantly checks on Islamic institutions to make sure all financial operations and transactions adhere to Sharia law. These justifications could appeal to a certain demographic of customers who desire to adhere to their religion's rules, which would increase their faith in Islamic insurance. Our findings are in line with previous research of (Hassan, 2019). Islamic financial institutions can take some help from our findings to serve a useful guidance for the formulation of a good product development and marketing strategy to increase the adoption of Takaful products.

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An Exploration of Moral Identity's Role in Mitigating the Impact of Despotic Leadership on Organizational Culture and Organizational Agility in the Public Sector of Pakistan

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Abstract

This study investigates the mitigating role of moral identity (Ml) in the relationship between despotic leadership (DL) and organizational agility (OA) while considering the intervening role of organizational culture (QC). This study examines the relations that are based on the integration of social identity theory (SIT), social learning theory (SLT), and social exchange theory (SET). Data is collected using a questionnaire survey from 271 employees from different public sector organizations in Pakistan. The data analysis is conducted through SPSS, MPlus, and AMOS. The findings suggest that DL has a significant but negative relationship with OA. The study findings also uncovered that DL has a significant and negative impact on the OC *that significantly but positively predicts OA. Furthermore, the results revealed that MI moderates the relationship between DL and* OC*, such that a high level of moral identity weakens this relationship, hence followers with high moral values will be less influenced by the despotic leaders. This study theoretically as well as practically contributes to the existing literature. Limitations and future directions are also discussed.*

Keywords: Organizational Agility, Despotic Leadership, Organizational culture, Moral Identity, Public Sector of Pakistan

Introduction

Change is an inescapable need of human life that takes place everywhere people live. The frequent changes in customer needs and demands have made it inevitable to adapt to changes (Akkaya & Tabak, 2020), and organizational leaders have commenced focusing more on agility as a key driver to success (Ludviga & Kalvina, 2023; Nafei, 2016). Organizational agility can be considered a potential path for any paradoxical situation (Cunha et al., 2020). The term agility is a new paradigm that was first officially introduced to the public in 1991 by Iacocca Research Institute (Dove, 1991; Qin & Nembhard, 2015). The roots of agility lie in lean manufacturing which through the agile manifesto makes the organizations agile (Sahid et al., 2020; Zaitsev et al., 2018). Organizational agility is supposed to be a basic

source of competitive edge for being a combination of speed, flexibility, and nimbleness (Singh et al., 2013) hence, it is hardly linked with the public sector (Rieckhoff & Maxwell, 2017). Most researchers argue that organizational agility is practically meaningless in the public sector due to its bureaucratic and hierarchical structure (Hamalainen et al., 2012; Rahimiatani et al., 2018). The public sector also faces specific restraints including a slow democratic decision-making process, absence of market pressure, requiring public backing, and employment constraints (Ludviga & Kalvina, 2023). The public sector demands more agility as compared to the private sector owing to more client frequency and also for the elimination of public needs (Kalimullah et al., 2019; Melian-Alzola et al., 2020). So, leaders play an effective role to improve organizational performance and responsiveness in achieving their goals and objectives.

Leadership and organizational culture are very important in achieving organizational agility (Felipe et al., 2017). Not only a good strategy but an upright culture will always lead to organizational agility (Griffin & Moorhead, 2014; Moran, 2015). A negative culture not only spoils the life of the organization but also influences the individual and overall performance of the organization (Chakrabarti et al., 2023; Xenikou & Furnham, 2022). The organizational culture is framed and influenced by leaders and also the other members of an organization (Jamali et al., 2022). Successful leaders can always sense or anticipate any awkward situation and hence can prepare themselves and their followers through coaching and learning (Harvey & Valerio, 2022; McKenzie & Aitken, 2012). Leadership helps in increasing the responsiveness of organizations by making them learning organizations (Joiner, 2019; Uyun, 2019). Leadership as well as OA both play important and direct roles in organizational performance (Lokman et al., 2019).

Despotic leadership is related to the exploitation of subordinates, and hence they reciprocate in such a way that results in their diminished job performance, and creativity, which adversely impacts the whole organization (Adiguzel, 2019). Despotic leaders treat followers in a self-centered manner because such leaders have low ethical values. Their actions create demotivation among the subordinates that result in low productivity with workplace incivility among the employees (Asiah, 2020). This sense that efforts are not being valued creates a sense of injustice among the employees which results in less collaboration and hence the organization suffers from the negative output of despotic leaders (Aydin, 2018; De Hoogh & Den Hartog, 2008). It is evident from the existing literature that the leaders' behavior trickles down to affect the employees negatively or positively at the lower level of the organization (Taylor et al., 2019). All the employees are not similarly influenced by the leaders (Abasilim et al., 2019). In response to negative leadership, the employees may use coping tactics by inducing counterproductive work behavior to preserve their emotional and psychological resources (Krischer et al., 2010). Negative leadership can also harm an organization by lowering the employee's performance and well-being (Shoss et al., 2016).

Several boundary conditions and mechanisms have neutralized the detrimental impacts of despotic leaders. The quality of work-life buffers the deleterious influence of despotic leaders (Nauman et al., 2020), and despotic leaders may also promote positive employee outcomes through the mechanism of impression management (Rasool et al., 2018). High moral standards will help organizations to reduce supervisory abuse and its downstream consequences (Taylor et al., 2019). The people self-regulate themselves by setting some moral standards which are influenced by moral identity and people act consistently with their moral identity. It indicates that employees with high moral identities behave ethically under

the influence of ethical leaders and employees' high morals deter employees' unethical behavior (Gan, 2018). That's why it would be thought-provoking to explore the brighter side of despotic leadership that may lead to constructive outcomes for the subordinates and also introduce boundary conditions and mechanisms in the despotic leadership and outcome relationship (Rasool et al., 2018).

Most erstwhile research has focused on the optimistic side and positive impacts of leaders on the followers and organization (Islam et al., 2022) but the negative and unethical side of leadership has not gotten too much attention (De Clercq et al., 2018; Hassan et al., 2023; ltzkovich et al., 2020; Naseer et al., 2016). For example, entrepreneurial leadership significantly and positively predicts organizational agility (Khalid et al., 2020). According to Akkaya and Tabak (2020), transactional and transformational leadership significantly predicts OA whereas laissez-faire leadership doesn't seem to influence OA. However, to the best of our understanding none of the researchers have studied the despotic leadership role in terms of organizational agility, hence it is yet to be investigated. Though destructive leadership has been studied where negatively affect organizational outcomes (Karabati, 2021) and despotic leadership positively affects organizational deviance (Erkutlu & Chafra, 2018). Hence, this study intends to investigate the effect of DL on OA with the intervening role of OC in the public sector of Pakistan, as to the best of our understanding no single study has yet explored this framework. This study will further examine the buffering role of moral identity.

Review of Literature

Theoretical Framework

Drawing from social exchange theory, social identity theory, and social cognitive theory a research framework including outcomes of despotic leadership and organizational culture as a intervening variable, is presented in

Figure 1. Despotic leadership erodes organizational culture and hence alleviates outcome i.e., organizational agility. Organizational culture mediates the influence of DL on OA. Furthermore, moral identity moderates the impact of despotic leaders in such a way that it's weaker when the moral identity values are high.

According to social exchange, there is an interdependent relationship between the leaders and followers, as the rule of mutual exchange justifies that the actions of one cause the reaction of another (Crapanzano & Mitchell, 2005). Despotic leaders exploit and treat followers unfairly which makes the followers unwilling and less contributive to the organizational progress and performance (Naseer et al., 2016). Leadership is not a trait of an individual, but it is a characteristic of the whole organization. When leaders act with the organization's identity in mind, then they are less liable to propose any action or strategy that is not aligned with the prevalent organization's culture (Lawler & Worley, 2009). The leaders' attitudes and behaviors have a strong impact on organizational performance and both leadership and OA play an important role to improve organizational performance (Akkaya, 2019).

Abusive leadership behaviors don't need to trickle down to the individuals at the lower level, they may manifest less abusive or even ethical behaviors (Taylor et al., 2019). Individuals usually model their leaders' behaviors via the social learning process as proposed by social cognitive theory (Bandura, 1986; Darvishmotevali & Altinay, 2022). To investigate the question posited by social cognitive theory, "Why negative leaders' behavior can be less

abusive and even ethical towards subordinates"? The extant research pinpointed moral identity as a boundary condition (Taylor et al., 2019) that has turned researchers' attention to social identity theory. According to the SIT, when individuals consider themselves a part of a vis-a-vis role relationship, they behave ethically otherwise they follow modeled behavior (Buil et al., 2019). The followers do not model leaders' behavior if their internal standards are not consistent with the norms and values. This confers that individuals having high moral standards would be less likely to follow their despotic leaders.

Despotic leadership (DL)

For a long time, leadership has been romanticized as a positive trait, and the absence of that specific leadership trait has been considered an absence of leadership (Rasool et al., 2018). In recent times many categories of the dark side of leadership have been studied including abusive supervision (Tepper, 2007), toxic leadership (Lipman-Blumen, 2010), destructive leadership (Einarsen et al., 2007), autocratic (Maseti & Gumede, 2011), and despotic leadership (De Hoogh & Den Hartog, 2008). DL is the most arrogant and destructive style of leadership whereby leaders advocate absolute dominance and supremacy over their subordinates and demand unconditional abeyance from their followers (Albashiti et al., 2021). Despotic leaders can be described as having four distinctive manifestations. Firstly, they always have a harsh attitude towards subordinates and wish that they obey them unconditionally. Secondly, they never accept any suggestions from their followers. Thirdly, they always credit success to themselves and blame subordinates for failure. Fourthly, they always try to manipulate information and take advantage of others (Zhou et al., 2021). Employees who become victims of such leaders feel powerless and hence induce deviant behaviors which result in negative outcomes (Jabeen & Rahim, 2020). Individuals have more tendency to pay attention to negative behaviors as compared to positive ones (Schilling, 2009).

Organizational agility (OA)

Organizational agility is the capacity of an organization to identify and respond quickly to environmental change to achieve the strategic goals of the organization and to gain a sustainable competitive advantage (Kirkpatrick et al., 2021; Lootah et al., 2020; Sharifi & Zhang, 1999). Sharifi and Zhang (1999) have proposed a conceptual model covering four main organizational capabilities i.e. speed, competency, flexibility, and responsiveness which make an organization agile (Motwani & Kataria, 2023). In a similar vein, a four-dimension framework comprising quickness, competency, responsiveness, and flexibility has been suggested for bringing agility to an organization (Khoshnood & Nematizadeh, 2017). Speed is the capability of an organization to execute activities swiftly and speed up its decision-making process so that the operations can run smoothly to deliver the product and services efficiently. Competency refers to the efficient use of resources to accomplish organizational goals bringing integration, cooperation, workforce competency, and technological improvement. Flexibility is the use of similar facilities required for the smooth running of processes for the accomplishment of diverse objectives (Attar & Abdul-Kareem, 2020) and employing a diversified workforce, organizational structure, and alternative resources to fulfill the needs of the organizations and increase productivity and profitability (Akkaya & Tabak, 2020). Responsiveness is the capability of any organization to forestall and respond to changes in the internal as well as external environment to take timely and appropriate actions to attain problem-solving (Akkaya & Tabak, 2020).

Organizational culture (QC)

The word culture expresses the notion of how something develops, nurtures, matures, improves, and retains itself (Cooren, 2015). OC is an array of common basic beliefs and assumptions learned by a group of individuals to resolve its worries about external adaptability and internal assimilation and can be educated new members to identify, think, and recognize those problems (MacQueen, 2020). Culture is a multifaceted and complex phenomenon and hence a variety of important dimensions emerged at different times, so it this necessary to take a multidimensional approach to understand the culture and its impacts on different prospects of society (Prajogo & McDermott, 2011). According to Wallach (1983), Organizational culture comprises three major dimensions namely innovative, bureaucratic, and supportive (Sarhan et al., 2020). Bureaucratic culture is a more organized dimension that is centered on power and control with definite obligations. Organizations having this sort of culture are more stable and less responsive due to strong internal, hierarchical, and power-oriented control (Burchardt & Maisch, 2019). An innovative culture is considered more creative, result-producing, stimulating, and risk-taking. Supportive culture is characterized by teamwork and is more people-oriented, promoting a credulous work environment (Quy, 2017; Sarhan et al., 2020). A strong culture demonstrates how well the core values, beliefs, and assumptions are being held and widely ordered and shared among the members of the organizations (Dan Barnwell, 1998; Meng & Berger, 2019). Whatever culture an organization has, the managers and leaders play a key role to develop a strong culture which would surely increase the performance both of employees and organizations (Shahzad et al., 2012).

Moral identity (Ml)

Moral identity means the extent to which the individuals analyze themselves in terms of moral traits (e.g. care, compassion, honesty, etc.) and self-concept that is structured around moral characters. These not only help to sense their behavior but also encourage others' moral actions as well (Ismail et al., 2021; Ruiz-Palomino et al., 2021). The researchers have described two main dimensions of moral identity: One of them is the internalization perspective, which is interior and indirectly captures the significance of these moral characteristics to one's self-concept (Qin et al., 2018). The other one is the symbolization dimension, which is external and clearly expresses the external manifestation of these moral traits, such as the dresses people wear and the products that they prefer to buy (Aquino & Reed, 2002; Cohen & Ehrlich, 2019). Moral identity can be regarded as a self-regulating mechanism that inspires employees to behave psychologically better (Farmaki et al., 2022). Individuals with high moral identities are expected to have moral consciousness during moral implications in any condition as they focus more on moral thinking and actions. As a result, they would not engage in unethical behaviors (Wang et al., 2019).

Despotic Leadership and Organizational Agility

Ethical leadership behaviors encourage positive behavior whereas destructive leadership exerts a negative impact on employee performance and behavior (Brandebo, 2020). Despotic leaders due to their self-dominance, don't like to involve subordinates in decision making and there is less collaboration and communication among the leaders and followers, this can harm work behaviors and attitudes (Aydin, 2018). As despotic leaders are morally corrupt and work for their self-interest hence, they do not own or praise the work of subordinates, they are less engaged resulting in low creativity and performance (Al-Sada et al., 2017). Leadership is not only an attribute of one individual but it is a characteristic of an organization as a whole (Ibrahim & Daniel, 2019). So leadership can develop a culture that

can be supportive or not depending on the behavior of leaders (Lawler & Worley, 2009; Young, 2013). Leadership can influence the behavior of the members to achieve goals (Hamidifar, 2010). Many researchers have highlighted that different leadership styles play an important role in building OA (Hosseini et al., 2014; Karimi et al., 2016; Khalid et al., 2020; Raeisi & Amirnejad, 2017; Veiseh & Eghbali, 2014). Researchers have also theorized that the behaviors of leaders have an impact on organizational agility (Holbeche, 2019; Lawler & Worley, 2009).

The social exchange theory is likely to better explain the reciprocal interdependent relationship between despotic leaders and their followers. This theory posited that the parties in mutual exchange always respond in a way as treated by the other members in an exchange relationship. In this situation, as the despotic leaders exploit the followers for their self-interest and asking unquestioning abeyance, the followers are likely to be less satisfied due to emotional and psychological distress, resulting in less performance and creativity this leads to organizational deviance and non-accomplishment of individual and organizational goals (Erkutlu & Chafra, 2018).

The current study focused on the public sector of Pakistan where the autocratic leadership style is more prevalent. The bureaucratic structure is characteristic of the public sector and the chain of command and authority lies at the top (Wakabi, 2016). Most of the important decisions are made by the higher authority that is then communicated to the lowers' in the hierarchy who are directed to follow a stereotyped mechanism to obey these orders. (Asghar & Oino, 2017; Kaur & Randhawa, 2020). The tenure of stay in the public sector organizations is usually longer and individuals hold a particular position for a long time (Kim, 2018). So, despotic leaders may have a greater impact on their followers, and they are more likely to exploit their followers. Such behavior can create distress and disengagement among the followers which would result in diminished performance that would not lead to the accomplishment of the organizational objectives (Farmanara, 2021). So, it can be assumed that

HJ. Despotic leadership has a negative and significant relationship with organizational agility.

Despotic Leadership and Organizational Culture

Cultural differences change the impact of one variable on the other. The importance of culture argued by researchers is that as much leadership influences the culture and similarly culture affects leadership (Areiqata et al., 2020; Bass & Avolio, 1993). Pakistan is characterized by high power distance, high uncertainty avoidance, collectivism, high masculinity, and a short-term planning country (Bashir et al., 2012; Mubarak & Naghavi, 2019). Low individualism produces centralization, discrimination, and fraud practices by individuals in administrative positions, and also strong kinship and family structure supports collectivist behavior in Pakistan (Ameer & Khan, 2019). Due to the power distance culture, the person holding the power is considered more respectful and privileged with all the powers (Matthews et al., 2021). The high uncertainty avoidance demonstrates the situation of greater stress, hostility, and extreme abeyance of rules and regulations (Zahidi & Siddiqui, 2023; Hofstede, 2011).

According to social exchange theory, the relationship between the leaders and followers is a two-way relationship based on giving and taking tires. Despotic leaders induce emotions and psychological issues among the followers which affect their psychological well-being and family life, resultantly followers may avoid these despotic leaders or may reduce interaction

with them (Nauman et al., 2018; Nauman et al., 2020). Sometimes they try to find an easy way of doing things and may behave unethically. They may form a cohesion group to counter this treatment from the leadership which would be resisted by the abusive leaders. This will cause less collaboration and communication between the two confronting groups and will result in a clash of interests (Zhao et al., 2019). So, it means the despotic leaders' behaviors with their followers will influence the common values, norms, and beliefs in the organization. Leadership and organizational culture are two sides of a single coin which means leadership influences the shared values and norms that represent a prevailing culture and culture also has an impact on the leadership style (Akanji et al., 2020; Chong et al., 2018; Schein, 1985).

Ethical and positive leadership styles have a significant and positive impact on OC (Aggerholm & Asmub, 2016; Belias & Koustelios, 2014; Li et al., 2017) conversely unethical leaders try to please seniors to earn personal favors and hence overlook subordinates and harm the environment and culture of an organization (Zheng et al., 2021). Supportive and bureaucratic dimensions significantly predict employee and organizational commitment while the innovative dimension of culture is found to be non-predicting (Sarhan et al., 2020). A control-oriented leader's behavior promotes bureaucratic culture whereas a flexible leader's behavior would be more likely to encourage a supportive and innovative culture (Taormina, 2008). Despotic leaders being authoritarian would discourage a supportive and innovative culture while bureaucratic culture will prevail (Yaghi, 2019). This- prompts the hypothesis that

H2. Despotic leadership has a negative and significant relationship with organizational culture.

Organizational Culture and Organizational Agility

Culture is not an intrinsic characteristic of an organization, but it is learned and acquired. The social cognitive theory proposed that individuals learn from their leaders by copying behavior just like a child learns from their parents. This modeled behavior then perpetuates to the others lower in level, then becomes part of shared values and beliefs (Bandura, 1986). Culture creates a framework for managers and employees (Hofstede, 2011; Mamatha & Geetanjali, 2020). This is not only the strategy but also the culture that brings success to the organization (Griffin & Moorhead, 2014; Griffin et al., 2016). The effect of OC has already been studied by many researchers that have argued that it has a significant and positive association with OA (Amirnejad, 2017; Fahami et al., 2017; Felipe et al., 2017; Moran, 2015; Sarshar & Hezarjaribi, 2016). A favorable culture will develop the behavior of the employees in such a way to achieve OA. The behavior of the individual is characterized by their cultural background which may differ from the OC (Gomez & Taylor, 2018). Cultural diversity may have an influence on different variables including communication, integration, satisfaction, conflict, creativity, and cohesiveness between the teams which eventually impact the team performance (Stahl & Maznevski, 2021). Power distance is a characteristic feature of Pakistan culture and also in the public sector, the followers cannot directly connect to authority to address their grievances (Ahmad & Begum, 2020; Islam, 2004). Hence, they are more likely to become distressed, and to counter they might involve in unethical behavior. Such behavior leads to an organizational culture that is non-supportive. So, it means the individual would retaliate against the whole organization instead in the form of their diminished individual performance. In most organizations there prevails an autocratic leadership style due to which the environment tends to adopt the bureaucratic culture (Bashir

et al., 2012). Similarly, two out of the three dimensions namely supportive and bureaucratic culture significantly predicts individual performance while the innovative dimension of culture doesn't seem to predict individual performance in the public sector (Isa et al., 2016; Sarhan et al., 2020). Successful leaders promote supportive and innovative culture (Sarros et al., 2002), conversely, negative leaders will have adverse effects (Javed et al., 2019). So, it can be hypothesized that

H3. Organizational culture has a positive and significant relationship with organizational agility.

Organizational Culture as Mediator

The OC mediates the relationship between entrepreneurial leadership and OA (Khalid et al., 2020). According to the social learning theory, individuals learn from the behaviors of others through the modeling or copying mechanism because then they are part of the collective norms (Lian et al., 2022). This contributes to the shared values and beliefs as the culture is learned not built in any organization. Effective leaders play a major role in making organizations agile by promoting a culture where open and candid communication provides a forum to question organizational assumptions (Meyer, 2016). These leaders would foster a learning climate within the organizations. Those leaders realize that their position is not merely about authority and power as they don't have an answer to every query and therefore they should engage everyone in formulating organizational strategies (Brown et al., 1998; Holbeche, 2015). These leaders promote such systems within the organization that help in defining the objectives of the organization, setting clear goals, creating an appropriate feedback mechanism, and an effective appraisal system so that the incentives are aligned to achieve these goals (Worley et al., 2014). Conversely, despotic leaders do not want to be problem solvers because they are accustomed to unquestioning abeyance and they don't want to involve anyone in decisions making this would create fewer effective ways to accomplish the mission of the organization (De Hoogh & Den Hartog, 2008). Leadership and organizational culture, both play a major role in achieving organizational agility (Joiner, 2019; Moran, 2015). The leaders have an impact on the beliefs, assumptions, and shared values that exist within an organization, and these shared values and beliefs are linked to the overall organizational identity (Ehrhart et al., 2013; Hogan & Coote, 2014). Khalid et al. (2020) have advocated that leadership has an indirect impact on OA through OC. So, it can be said that the right culture will direct the behavior of the employees in a way to achieve OA and hence, it can be assumed that

H4. There is a relationship between despotic leadership and organizational agility that is mediated by organizational culture.

Moral Identity as Moderator

Consistent with cognition theory, moral identity enables individuals to keep consistency between moral standards and behaviors (Weaver, 2006). The effect of ethical leaders is not always similar, personality traits like moral emotions, moral awareness, and mindfulness augment the impacts of ethical leadership on employee outcomes (Haller et al., 2018). Unethical leadership produces negative outcomes but the impact of negative outcomes can be minimized using an intervening variable (Ruiz-Palomino et al., 2021). Employees high on moral identity strive to behave ethically towards others by engaging themselves in public service and extra-role performance (Arain et al., 2017). Various researchers have explored

different boundary conditions e.g., quality of work life (Nauman et al., 2020), and self--concordance (Syed et al., 2020) have moderating impacts on the association between DL and other outcome variables. Research has further advocated that moral identity moderates the impacts of despotic leadership (Akhtar et al., 2021), ethical leadership (Gan, 2018; Wu, 2017), and work-related deviance (Fan et al., 2021) on individual behavioral outcomes. Drawing on social cognitive theory, the followers model the behavior of their leader through the learning process but not all the followers exhibit the same behavior as that of leaders. Furthermore, the identity theory, posits that only those will behave unethically by modeling the abusive leader's behaviors that consider themselves part of their social identity while others being disidentified themselves behave ethically (Taylor et al., 2019). Additionally, based on the self-regulatory mechanism, it is proposed that moral identity promotes moral actions (Al Halbusi et al., 2023). The internalization dimension of MI is a more consistent and robust forecaster of individual moral behaviors as compared to the symbolization dimension (Mesdaghinia et al., 2019; Wang et al., 2021; Yan et al., 2022). So, on the above logical grounds, it can be hypothesized:

HS. Moral identity** is **likely to moderate the relationship between despotic leadership and organizational culture. This means high moral identity values will weaken the negative relationship and vice versa.

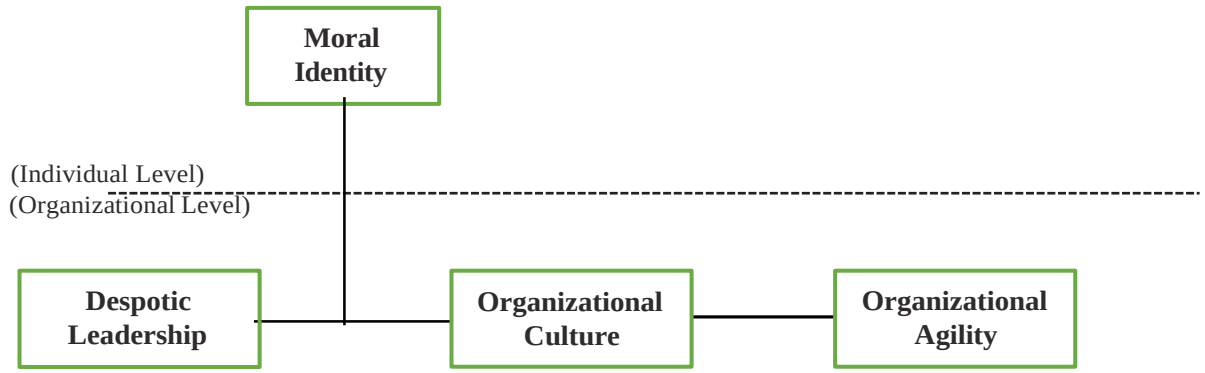

Figure 1: Theoretical Framework for Moral Identity's Role in Mitigating the Impact of Despotic Leadership on Organizational Culture and Organizational Agility in the Public Sector of Pakistan

Methodology

Data and Methods

Organizational agility is commonly associated with the manufacturing sector as it is considered a source of competitive advantage (Rahimiatani et al., 2018; Rieckhoff & Maxwell, 2017) but the public sector organizations demand more agility owing to rendering quick services to the public (Kalimullah et al., 2019; Melian-Alzola, Dominguez-Falcon, et al., 2020) which adds to the significance of research on this novel notion. Moreover, this study can provide insights for practitioners and researchers into how a despotic leader's longer tenure in the public sector of Pakistan affects follower and how followers' moral identity mitigate its impacts resulting in positive outcomes for individuals as well as organizations.

Cross-sectional data is collected from employees working in different positions in the public sector of Pakistan, especially the Water and Sanitation Agency (WASA), Pakistan Broadcasting Corporation (PBC), and Punjab Education Department from the cities of Lahore and Faisalabad. Convenient sampling is used to reach the respondents as the personal

links and contacts made the data collection more convenient and due to time and resource constraints. This sampling technique is widely adopted in public sector research (Kayani & Alasan, 2021; Kayani et al., 2021). This study is conducted by online survey method through self-reported questionnaires developed on Google Forms and distribution is made through emails and different social media platforms like Facebook, WhatsApp, etc. Each questionnaire included general information about the research and researcher to acquaint the participant with the purpose and goal of the research. It was ensured that employees have completed at least one year of tenure in the organization.

The common method bias may occur as the data is cross-sectional in nature and social desirability bias may also occur as the data is collected from human beings who rely on personality traits and personal liking and disliking as well. The occurrence of CMB and social desirability bias is reduced by following the recommendations (Podsakoff et al., 2003). To reduce the social desirability bias, the anonymity of respondents is guaranteed not asking for any information about them and their organization. Firstly, CMB is minimized by designing the questionnaire in such a way by presenting independent, dependent, and contextual variables in separate and unrelated sections. This is further ensured by keeping the questionnaire simple, clear, and specific. Secondly, Harman's single-factor test is conducted to check the presence of CMB. Table 1 showed that the total variance extracted by one factor was 37.11% which is less than the threshold value of 50% and this suggests CMB is not present in this study (Aguirre-Urreta & Hu, 2019; Podsakoff et al., 2012). The elimination of these biases insured the validity and reliability of our constructs.

According to Roscoe (1975), a sample of more than 30 but less than 500 is considered most suitable for most behavioral and social sciences studies as a sample size of more than 500 respondents may lead to type-II error (Memon et al., 2020; Sekaran & Bougie, 2016). Therefore, 500 structured forms were distributed and only 281 questionnaires were received from the respondents. 10 questionnaires were found useless as the answers given by the respondents didn't seem to be logical and hence were excluded. 271 were completed in all respects and are found workable for data analysis. There were no omitted values in the questionnaire as the answer to every question in Google Forms are set as mandatory.

A post-hoc power analysis is also conducted using G*power software latest version 3.1.9.4 to check the adequacy of the sample size for the current research mediation and moderation model (Faul et al., 2009). The analysis indicated a high power value of 0.99 while the acceptable threshold is 0.80 (Cohen, 2016). Existing researchers also believe that a sample of more than 200 is adequate for a complex theoretical model involving both moderation and mediation (Boomsma, 1983; Kotrlik & Higgins, 2001). Hence, the final sample size of 271 can be considered adequate for conducting research. The final response rate of the study was 56.2%. The possible reasons for the lower response rate were that participants were voluntarily asked to fill out the online questionnaire survey and the average response rate for such online surveys is 44.1% (Wu et al., 2022). Similar research conducted with comparable lower response rates didn't much affect the results (Majeed & Fatima, 2020; Nauman et al., 2018).

Demographics

Pakistan is a male dominating society, so the majority of our respondents are male. 82% of the respondents are male while 18 % are female. 32% of the respondents are between the age of 25-30, 33% are between 31 to 35, 16% are between the age of 36 to 40, 12% are above 40 years of age, and only 7% are less than 25 of the age. Most of the participants are young and are between 25 to 35 years. Only 3% are matric, 6% are inter, 45% are graduates, 44% are

masters, and 3% are with Ph.D. degrees. Most of the participants are bachelor's or master's degree holders. Only 4% have O to 1 year of experience, 30% have 2 to 5 years of working experience, 42% have 6 to 10 years of work experience, 14% have 11 to 15 years of working experience, while only 10% have 16 and above years of experience. Most of the participants i.e., 84% are working in non-managerial posts while only 16% are working in managerial posts in our selected sample from the public sector of Pakistan.

Measures

All self-reported measures were rated using the 5-Point Likert Scale ranging from 1 (strongly disagree) to 5 (strongly agree). As all the scales are adapted from already tested measures, their reliability and validity were not a concern.

Despotic Leadership

Despotic leadership is measured by a six-item scale developed by De Hoogh and Den Hartog (2008). Adiguzel (2019) and Erkutlu and Chafra (2018) reported reliability a=0.892 and a=0.89 respectively. The sample item for these measures includes, "Our leader is an absolute authoritarian". Convergent validity is established as factor loadings for all six items of the scale range from 0.739 to 0.827 with AVE= 0.747. The reliability coefficient of the scale is showing strong internal consistency (a=0.946).

Organizational Agility

Organizational agility is measured by 10 items scale Pantouvakis and Bouranta (2015) with a reported a=0.92. The scale was originally developed by (Sharifi & Zhang, 1999) that is based on four proposed distinct capabilities i.e. responsiveness, competency, flexibility, and quickness. The sample item of this scale comprised, "Our organization senses, perceives and anticipates changes". Convergent validity is established as factor loadings for all ten items ranged from 0.617 to 0.909 with AVE= 0.720. The reliability coefficient of the scale is 0.962 which represents high internal consistency.

Organizational Culture

Organizational culture is measured by 24 item scale OCI (Organizational cultural index) developed by Wallach (1983). The OCI is the index comprising three dimensions of OC including bureaucratic, supportive, and innovative (Wallach, 1983). Suvaci (2018) reported scale reliability a=0.98. The sample question of this scale includes, "Our organization has a hierarchical structure". Convergent validity is established as all the factor loadings ranged from 0.533 to 0.817 with AVE = 0.524. The reliability coefficient of the scale (a=0.962) indicated high internal consistency.

Moral Identity

It is measured by 10 items scale developed by (Aquino & Reed, 2002). There are two dimensions of the scale, internalization, and symbolization, each includes five items. The scale is already used and tested by Erkutlu and Chafra (2019) with a reported a=0.93. The reliability coefficient of the scale is 0.970. Convergent validity is established as all the factor loadings ranged from 0.765 to 0.913 with AVE= 0.768. The sample item of this measure is, "The kinds of books and magazines that I read identify me as having these characteristics".

Results

Measurement Model Fit

CFA is performed to test the discriminant and convergent validity of all the constructs using AMOS software (23 version). According to Fornell and Larcker (1981), any measured construct is said to have convergent validity when it satisfies these three criteria (a) the value of CR is greater than 0.80; (b) all the loading factors exceed 0.65, and (c) the AVE for each construct is higher than 0.50. ***Table 1*** showed that our constructs fulfilled all three conditions required for convergent validity. The discriminant validity of the constructs is evaluated on the bases that the MSV of any latent variable should be less than the AVE (Fornell & Larcker, 1981). ***Table 1*** displayed that the AVE for all the latent variables is higher than their respective value of MSV. So, our measurement model ensures discriminant validity.

Table 1

Convergent and Discriminant Validity

Variable	CR	AVE	MSV	Factor Loading	% Variance
Despotic Leadership	0.947	0.747	0.416	.739 - .827	37.11%
Organizational Agility	0.962	0.720	0.685	.617 - .909	
Moral Identity	0.970	0.768	0.685	.765 - .913	
Organizational Culture	0.963	0.524	0.122	.533 - .817	

N=271; CR=Composite Reliability; AVE=Average Variance Extracted; MSV=Maximum Shared Variance

The extant literature has suggested validation of the proposed model before examining the study hypotheses to check the uniqueness of study variables (Liao et al., 2021; Lin et al., 2019). Our four-factor measurement model is tested through fit statistics. the value of all fit indices should be more than 0.90, and the RMSEA value should be less than the cut of 0.08 (Hu & Bentler, 1999). The CMIN/DF value should be less than the acceptable threshold of 3 (Kline, 2010). Researchers proposed that the model will be considered a good fit for CFI, TLI, and IFI values higher than 0.80. The value of SRMR and RMSEA should be ideally less than 0.08 (Spector, 2001; Yu, 2002). The value of CMIN/DF = 2.94, GFI = 0.92, CFI = 0.895, TLI = 0.89, RMSEA = 0.06 and SRMR= 0.08. The value of a few fit indices is found less than the acceptable threshold of 0.90 as it is highly dependent upon the proposed sample size (Hooper et al., 2008; Karatepe et al., 2020).

Table 2

Mean, standard deviation, Pearson Correlation

Variable	Mean	SD	DL	OA	MI	OC
Despotic Leadership	2.24	1.17	**(.86)**			
Organizational Agility	3.44	1.00	-.619**	**(.85)**		
Moral Identity	3.76	.763	-.596**	.645**	**(.87)**	
Organizational Culture	4.12	.370	-.285**	.282**	.318**	**(.72)**

*N=271**, Correlation is significant at the 0.01 level (2-tailed). DL= Despotic Leadership; OC = Organizational Culture; OA= Organizational Agility; MI= Moral Identity*

Pearson correlation coefficients range between +1 and -1 and the value of the correlation coefficient demonstrates the strength of the relationship while the sign with the coefficient depicts the direction of association (Pearson, 1920). Table 2 shows the correlations between all the study variables are significant at p<0.01 (two-tailed).

Direct and Indirect Effects

Table *3* showed there is a significant but negative relationship between DL and OA as the value of the regression coefficient (B=-0.530) is significant at p<0.01. Despotic leadership negatively and significantly influences the organizational culture of the public sector of Pakistan (B=-.090, t=-4.8, p<.01). There is a positive and significant relationship between OC and OA (B=.768, t=4.823, p<.01). Hence, Hypothesis H1 to H3 are supported and accepted. We used Andrew Hayes Macro Process Model 4 to check the mediation. Two-tailed normal theory test assuming the normal distribution is found positive and significant for organizational agility (Sobel Effect=.028, z=-2.06, p<0.05). Bootstrapping also confirmed the results of Sobel test and indicated that the indirect effect (a x b = -.03) of despotic leadership on organizational agility through the organizational culture is also significant as the values of Bootstrapped 95% LLCI= -.06 and ULCI= -.01 do not contain zero between them and both the confidence intervals bear the same sign, therefore, mediation exists between the variables. Hypothesis H4 is supported and hence accepted. As both the direct and indirect effects are significant and also the path from X to Y has decreased in size but is still non-zero. According to Baron and Kenny (1986), if both the direct effect (c') and indirect effect (a x b) are significant and also in a similar direction either positive or negative then such mediation is termed complementary partial mediation. Our results show that some effects are passing directly from the predictor to the outcome variable and a portion of effects is passing indirectly through the intervening variable, so it means organizational culture partially mediates the relationship between despotic leadership and organizational culture.

Table 3

Regression results for direct and indirect effects

Direct Effects	B	R^2	ΔR^2	SE	t	Sign.
DL ⟶ OA	-.530	.383	.381	.041	-12.9	.000
DL ⟶ OC	-.090	.081	.078	.018	-4.8	.000
OC ⟶ OA	.768	.080	.076	.159	4.8	.000

Bootstrap results for indirect effects				
	M	SE	LLCI	ULCI
Effect OC (a x b)	-.03	.01	-.06	-.01

Indirect effect and significance using a normal distribution				
	Effect	SE	Z	p
Sobel Test	.028	.01	-2.06	.04

DL= Despotic Leadership; OC = Organizational Culture; OA= Organizational Agility;

MI= Moral Identity, B= unstandardized regression coefficient are reported. Bootstrap Resample =5000; SE = Standard Error; CI = Confidence Interval, LL = lower limit; UL = upper limit

Moderating Effects

Moderation is tested through the Hayes Process Macro Model 1 and a simple slope test is also used for confirmation of moderation. Table 4 indicates that the interaction term (DL x MI) has a significant impact on organizational culture (B= .24, ΔR^2=0.21, p<0.05). Adjusted R square value demonstrates that the moral identity brings about a decremental variance of 21% in the impact of DL on OC. The bootstrapping results of conditional effects for despotic leadership and organizational culture low, medium, and high levels of moral identity are found significant at p<0.05 and 95% CI as the bootstrapped ULCI and LLCI do not contain zero. So, hypothesis H5 is supported and accepted. The MI moderates the relationship between DL and OC.

Table 4

Regression results for Moderation

Predictor	Moral Identity	R^2	B	SE	T	p
Step-1		0.32				
Constant			5.63	.25	22.75	.00
Despotic Leadership			-.79	.08	-9.40	.00
Moral Identity			-.43	.07	-6.42	.00
Step-2	ΔR^2	0.21				
Despotic Leadership*Moral Identity			.24	.03	9.10	.00

Conditional direct effects of X on Y at values of the moderator

Moral Identity	Effect	Boot SE	T	p	LLCI	ULCI
-1 SD (3.00)	-.08	.02	-3.79	.00	-.11	-.04
M (3.76)	.11	.03	4.09	.00	.06	.15
+1 SD (4.53)	.29	.04	6.90	.00	.22	.36

Note. *N=271; Unstandardized regression coefficients are reported. Bootstrap Resample =5000; SE = Standard Error; CI = Confidence Interval; LL = lower limit; UL = upper limit*

A simple slope test interaction plot using the mean-centering approach (Aiken et al., 1991) as Figure 1 showed as the function of conditional direct effects of MI changes, the relationship between DL and OC also changes. The simple slope for low moral identity is steeper as compared to that for high moral identity which shows the negative relationship between DL and OC is stronger when the moral identity is low but it is weaker and less significant when the moral identity is high.

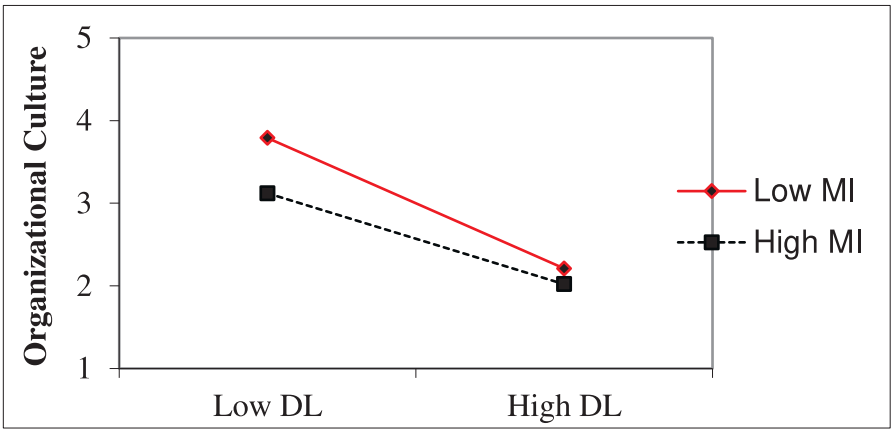

Figure 1: Interaction Plot

Model 7 of the Andrew Hayes Process is used to test the moderated mediation and conditional indirect effects. Table 5 shows the results of the index effect test for moderated mediation suggested by Hayes (2012), the effect index is 0.07 and bootstrapped 95% (LLCI=.02 LLCI=.13) both have the same positive sign and zero does not lie between the confidence interval. Hence, we can say that the mediation effect between the DL and OC is moderated by moral identity. The indirect conditional effects result shows that for all levels of moral identity, the boot LLCI & ULCI does not contain zero so, it confirms there exists moderated mediation in our model. It means at a high level of moral identity the indirect effect from DL to OA through the organizational culture will be weaker.

Table 5

Regression results for Moderated Mediation

Conditional indirect effects of X on Y				
Moral Identity	**Indirect Effect**	**Boot SE**	**LLCI**	**ULCI**
-1 SD	-.02	.01	-.05	-.01
M	.03	.01	.01	.06
+1 SD	.09	.03	.04	.16
Index of Moderated Mediation				
Mediator	**Index**	**SE**	**LLCI**	**ULCI**
O C	.07	.03	.02	.13

Note. *N= 271; Unstandardized regression coefficients are reported. Bootstrap Resample =5000; SE = Standard Error; CI = Confidence Interval, LL = lower limit; UL = upper limit*

Discussion

This study has investigated despotic leadership as a central predictor of OA in the public sector of Pakistan prior research has mostly explored OA from the manufacturing perspective. The mediating role of organizational culture with organizational agility as the outcome variable and ethical leadership as a predictor has already been advocated in the existing literature (Khalid et al., 2020) but this relationship has not been studied in despotic leadership as an independent variable. This study has explored the moral identity's role as a moderator and has found that moral identity mitigates the impacts of despotic leaders. Though it is not an organizational-level study in a context where responses are gathered only from individual employees, the individual as well as organizational level factors are considered and their inter-relationship is examined. Many studies at the individual level have

revealed that despotic leadership significantly but negatively affects the followers (Chaudhary & Islam, 2022) and despotic leadership positively and significantly influences the employee outcome i.e. emotional exhaustion and turnover intention (Iqbal et al., 2022; Khan, 2022). This study is also of great importance as it explores how these effects on individuals impact the overall performance and goals of the organization.

The statistical findings supported all the proposed hypotheses. In congruent with the social exchange theory proposed that despotic leadership significantly but negatively influences organizational agility and also results are in line with the existing literature (Erkutlu & Chafra, 2018). The study findings disclosed a significant negative relationship between DL and OC that was based on the axiom from the social cognitive theory. Our study findings are also consistent with (Aubrey, 2012), that bad leadership will influence the weakening of OC which means leadership plays a role in creating and strengthening organizational culture. As findings suggest that the bureaucratic dimension is weakly but negatively correlated with despotic leadership, which interprets that such leadership indicates the prevailing of more controlled, authoritarian, and hierarchical attributes in the public sector of Pakistan (Taormina, 2008). In contrast, there is a moderate and negative correlation between DL and supportive and innovative cultural dimensions interpreted as discouraging collaborative, sociable, and friendly cultures (Arfat et al., 2017). Results revealed that culture is one of the key components of an organization to gain OA. This is not the only strategy that brings success to organizations but culture also plays a role (Griffin et al., 2016). Our study results are also in line with the existing research that organizational culture significantly and positively predicts organizational agility (Fahami et al., 2017; Khalid et al., 2020; Sarshar & Hezarjaribi, 2016).

The results indicated that there exists a significant but negative relationship between DL and OA that is mediated by OC. Our study results are also congruent with Khalid et al. (2020), that OC mediates the relationship between leadership and OA. The results of our study are also consistent with the previous study that the organizational culture partly mediates the association between toxic leadership and employee outcome because all the direct and indirect effects are significant (Brouwers & Paltu, 2020). The results of the study unveiled that the dispositional variable MI weakened the relationship between DL and OC in such that employees with moral identities are less involved in immoral actions and unethical behaviors. The findings are also consistent with those of Taylor et al. (2019), the internalization dimension mitigates the impacts of abusive leaders on their followers. The results are also congruent with Akhtar et al. (2021) that MI moderates the impacts of DL in such a way that it is weaker in the case of high moral identity. Our study results are also in line with those of Gan (2018), who advocated that moral identity moderates the relationship between ethical leadership and moral justification in such a way that a high moral identity strengthens this relationship.

Theoretical Implications

This study has theoretical implications for extant literature in various ways. Firstly, our study is the novel concept of organizational agility in the public sector context. As mostly organizational agility has been studied from the manufacturing perspective where it is advocated to implement the agile manifesto for increasing productivity and gaining a competitive advantage. Organizational agility is more important to the public sector owing to providing quick services to the public and managing duplication of tasks among the different departments. So, leadership can play an important role in making this possible by implementing effective strategies and developing a supportive culture to improve performance. Secondly, the study has significant implications for understanding the best

strategies that leadership can develop for the promotion of an effective organizational culture because culture is not built but learned. The social cognitive theory also posited the same concept that the followers usually modeled the behavior of their leaders just like children learn from their parents. As culture is a set of beliefs, shared values, norms, and assumptions, individuals' characteristics have an important role to build an effective organizational culture. So, those organizations which want to improve their organizational performance should focus more on building a strong learning culture. Thirdly, this study was performed both at individual and organizational levels. These add to the existing literature to have a better understanding of how the individual factor may aggregate to become characteristic of the whole organization. The relationship of leaders with a subordinate as well as moral identity is based on individual traits, and these contribute to the development of the overall culture and agility of the organization.

Practical Implications

This piece of work has important implications for the management and followers as well. Firstly, organizational management may identify the intensity of the impact of despotic behaviors on the subordinates and hence can take preventive measures by educating the leaders through leadership development programs, seminars, workshops, or even individual coaching for their personal development and bringing ethical awareness among them. Secondly, the human resource department and recruitment teams can address the issue of ethical and moral standards beforehand in the participant applicants. Moral identity has a moderating effect that helps in diminishing negative behavior among followers. Moral standards help them maintain ethical behavior despite facing despotic leaders. The human resource department may introduce a fair appraisal and performance system assuring the followers that their services will be valued and regarded and hence they are less likely to be involved in counterproductive behaviors. Finally, this study helps to identify the important glitches in the working environment that are caused due to despotic behaviors. This would help the management to suggest important improvements in the conducive work environment which would improve individual performance as well as relieve distress and exhaustion among the workers. It would also help employees to maintain a balance in their professional and family lives.

Limitations and Future Directions

This study also presents a few potential limitations as well. This is a cross-sectional study, and no causal relationship can be established. Future research should use a longitudinal study using the time lag approach. As the participants are willingly accessed using self-reported questionnaires and can't provide a representative sample of the population, hence, study findings can't be generalized. Future researchers should use a mixed design exploring both self-reported and observed reported questionnaires as the qualitative method can provide more in-depth information about the key constructs and relationships investigated.

The current study is performed with a single moderator and a single mediator, so future researchers may explore more contextual factors as boundary conditions or can replicate this study by including other mediation and moderating mechanisms. The public sector of Pakistan is explored as the population of study including only a few departments or organizations. The other researchers should replicate the study by including more public sector organizations and even exploring the public as well as private sectors of Pakistan for the generality of results. The research can be replicated from different cultural perspectives in the context of other countries. The study has only used despotic leadership as a central predictor of an outcome variable i.e., organizational agility, future researchers should use

other forms of dark leadership and even ethical leadership to view their influence on organizational agility.

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Socioeconomic Development: The Role of Impact Investments and CPEC

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Abstract

This paper investigates the modes of impact investing to overcome the socioeconomic challenges of Pakistan. A descriptive analysis of different social indicators for the period 2006 to 2017 is conducted which includes health, education, tourism, vocational training, agriculture, and access to water. Each socioeconomic indicator is examined as a possible mode of impact investment. This study reports that a better alignment of impact investing in the second phase of the China-Pakistan Economic Corridor (CPEC) will offer maximum development. The study recommends the most efficient and effective ways to achieve the greater goal of a prosperous Pakistan. The author strongly recommends the policymakers of CPEC to focus on impact investing along with conventional investment plans to combat the socioeconomic challenges in Pakistan.

Keywords: Impact Investments, Socioeconomic Development, CPEC

Introduction

Socioeconomic development is the progression towards enhanced lifestyles of families, individuals, communities, groups, and societies. It is a process of knitted development in the economy and society (Roy et al., 2021). Socioeconomic development refers to developing economic and social policy initiatives according to public concerns. It includes better living standards for the population of the country, which is usually achieved through greater stocks of human and physical capital and hence better technology. The fundamental goal of development is to ensure a better environment for the masses to enjoy a healthy, long, and creative life. However, usually, it is left behind in immediate concern with a collection of financial wealth and commodities (World Bank, 2001). The evaluation of socio-economic development in any country is of great significance to identify the shortcomings and then find efficient financing options. Human development is highly uneven and heterogeneous in countries due to various factors; therefore, the financing options are to be identified carefully to cater for the requirements of individual countries (You et al., 2020).

Impact investments are the new asset class that has grown many folds in the past decade. It offers positive social and financial returns to socially responsible investors. Impact investors go for investments that offer not only financial returns but also social and environmental impact. There are different sources of impact investing including individual investors, nonprofits, commercial banks, development finance institutions, foundations, and governments. It aims at gaining the social impact on different socioeconomic quarters which includes healthcare, water access, education, housing, agriculture etc. along with the financial returns. Impact investment can be in the form of equity or loans. Impact investments are considered an upcoming new asset class and in the past decade, it has grown many folds (Agrawal & Hockerts, 2021). It is worth considering, due to awareness of socioeconomic development and the role of individual investors, economists are exploring the possibilities where investors value societal externalities as equally important along with the financial returns (Barber et al., 2021). To achieve the full impact on the socio-economic development of the economy, socially responsible investors have to cautiously exercise their rights in the formation of corporate policy (Berk & van Binsbergen, 2021).

CPEC is believed to accelerate industrialization, job creation, and investment opportunities and offer socioeconomic development in Pakistan. Since CPEC has already entered the second phase with a greater focus on socioeconomic development, the better alignment of impact investments will offer maximum development. China-Pakistan Economic Corridor (CPEC) links China and Pakistan through a 2700km long road, rail and oil and gas pipeline. It will have numerous positive socioeconomic impacts on the indigenous inhabitants of Pakistan. It is the main artery of the Belt and Road Initiative (BRI) that has attracted policymakers and researchers around the globe. This project is a blend of loans and grants. It is quoted as a game changer for Pakistan, but the main question arises, whether geostrategic objectives and socioeconomic development will be achieved through this project or not. Many policymakers believe it will mitigate the energy crisis, create jobs and lower the socioeconomic challenges in Pakistan (Ali, 2020). It will also attract trade opportunities and strengthen the economy of Pakistan through revenue generation (Ali et al., 2016). CPEC will make it convenient to approach the fundamental needs of the general population living in the outskirts of Pakistan. Hence, numerous opportunities will be created due to CPEC projects to improve the social standard of the residents directly and indirectly.

Socio-Economic Challenges in Pakistan

This section discusses the socioeconomic challenges of Pakistan in the following areas: Poverty, Health, Education, Tourism, Agriculture and Water. The national poverty headcount ratio refers to the percentage of the population living below the national poverty line. National estimates are measured by household surveys based on population-weighted subgroup estimates. It is reported that 24.3% of people were living below the poverty line in Pakistan in 2015-16. Whereas comparing this to China, it has significantly reduced the poverty headcount ratio to 3.1% in the year 2017. Pakistan can learn from the Chinese model to bring the masses out of poverty (Mirza et al., 2019). The life expectancy ratio in Pakistan is one of the lowest in the region. As far as the

neonatal, infant and under-5 mortality rates are concerned, they are greater in numbers than in other regional countries. This indicates that Pakistan needs to enhance its investment in basic health services such as nutrition, vaccinations, sanitation, and clean water. Moreover, disparities in the health conditions of different regions and income groups may also be considered while investing in the health sector.

Education is one of the major issues in Pakistan since the school enrollment rate is very low in the country and a huge number of children are still out of school. The quality of education is a serious concern though. Many children in villages are even unable to read English. Pakistan is an undeveloped country but has a huge potential in the tourism sector due to its diverse culture, heritage, and natural endowment. However, until now, this sector couldn't develop due to various reasons like the war on terror, minimal marketing, and poor public and private sector investment in infrastructure and services. A developed tourism sector promises employment generation, it will attract tourists from other countries, enhance the services exports services in Pakistan and ultimately lead to more foreign reserves.

Agriculture is the major contributor to Pakistan's Gross Domestic Product (GDP) with its share being around 21% of the total domestic production. Therefore, the economic growth of the country is heavily dependent on this sector. It offers employment through farming and non-farming divisions, and the development in this sector will lead to poverty alleviation in rural areas.

The Current Landscape of Impact Investment in Pakistan

Impact investment is "investments made with the intention of contribution to positive environmental, economic and social impact alongside the monetary returns". Impact investments expand the availability of goods and services and create jobs. Following the international standards and norms to mitigate the environmental, social and governance (ESG) risks, investors are willing to invest with social considerations. Impact investment has a positive impact on society. Currently, around 2 billion dollars have been deployed in Pakistan through development financial institutions whereas 162 million dollars through other impact investors. Investors can have different benefits while investing in Pakistan such as an improved regulatory system, higher return potential, a deep and great pool of well-educated youth, international exposure, and better entrepreneurial culture (Lanka, 2015; Munir et al., 2022). The space of impact investment in Pakistan is diverse. Impact capital is deployed through debt which is mostly driven by Development Financial Institutions (DFI) owing to low risk and less investment management requirements and due diligence. Non-DFI investors tend to invest in equity capital than DFis.

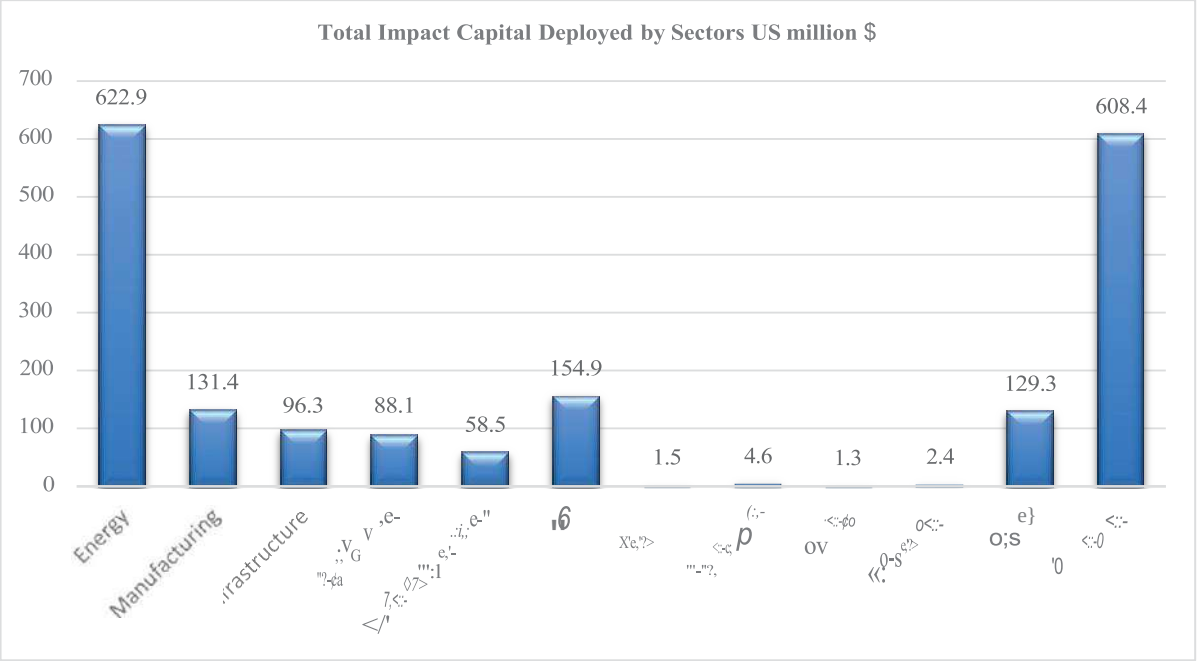
Impact Capital Deployed by Different Instruments

Capital Instrument	Development Financial Instrument			NON-Development Financial Instrument		
	USD	USD	Percentage	USD	USD	Percentage

	Millions	Billions	of Total	Millions	Billions	of Total
Debt	1189.2	1.189	65%	127	0.127	78%
Equity	134.0	0.134	7%	26.0	0.026	16%
Murabaha	20.5	0.020	1%			
Guarantee	153.4	0.153	9%			
Unknown	333.0	0.333	18%	9.0	0.009	6%
Total	1830.1	1.830	100%	162.0	0.162	100%

Source: "The Landscape for Impact Investing in Southeast Asia, Pakistan Spec/fie, Global Impact Investing Network 20I8"

Sector-Wise Deployment of Impact Capital in Pakistan



Source: "The Landscape for Impact Investing in Southeast Asia, Pakistan Specific, Global Impact Investing Network, 2018"

Potential of China-Pakistan Economic Corridor (CPEC) for Socio-Economic Development

CPEC offers industrial collaboration between Pakistan and China to initiate economic cooperation and people-to-people exchanges. CPEC project aims at prosperity and socioeconomic development through numerous collaborative initiatives for industrial development, infrastructure construction and livelihood improvement (Abid, 2015; Mirza et al., 2019).

These projects are believed to accelerate industrialization, job creation, investment opportunities and ultimately socio-economic development in Pakistan. The question which is in the minds of the masses is what CPEC is going to bring to the public. Social scientists, economists and researchers relate this investment with the prosperity of the people of Pakistan and China. The development of the social sector has not been up to the mark in Pakistan for a long time. Currently, human development is a serious issue in Pakistan that needs instant attention.

Due to the mounting concerns and socio-economic challenges in Pakistan, Impact investment is very relevant to address the current economic and environmental concerns. New financial models can offer innovative solutions in these scenarios. Hence, this paper presents some new ways of impact investing along with the socioeconomic development approach of CPEC to overcome the social challenges in Pakistan. The next section discusses the existing evidence on socioeconomic development and its importance for any economy.

Literature Review

The term impact investment was initially coined in 2007, after that this industry has grown at a very fast pace (Hehenberger et al., 2019). Investors from around the world have been attracted towards capital investment to address the increasing environmental and social problems through impact investments. More than 50% of the active impact investment enterprises made their initial investment in the last decade.

The total number of active impact investment enterprises around the world is about 1340 that conjointly manage 502 billion-dollar investments to make positive changes (Mudaliar & Dithrich, 2019). Most of the impact investment enterprises are comparatively small and most of them are managing less than 29 million dollars each, however, some enterprises are managing more than 1 billion dollars each. CPEC project would improve the socio-economic conditions of Pakistan through different road and railway lines, special economic zones, energy projects, fiber optics and numerous other projects. Furthermore, improvements in accessibility technology, healthcare, vocational training and access to clean water are expected in the underdeveloped areas of Pakistan to augment the quality of life for the masses (Abid, 2015).

Sinnathurai (2013) examines the relationship between economic growth, employment, poverty, and dependency ratio in emerging nations. The findings maintain that it's a two-way relationship that the age dependency ratio has a significant effect on poverty and vice versa. The results indicate that industrial employment, economic growth and poverty have a significant impact on the age dependency ratio, and it is consistent with economic theories. Ighodalo (2012) argues that sustainable socioeconomic development is not possible without the empowerment of the masses in making choices and participating in decision makings in the country.

The health sector is integrated with other sectors of the socioeconomic system, so it is not possible to plan the health sector development without taking into view the other socioeconomic components Ballard et al. (2019) argued that investment merely in the economically productive

sectors instead of social sectors, would not help in the long term development of any country. Jalal-ud-Din (2014) asserted that the health sector can have a significant impact on the socio-economic development of a developing country like Pakistan due to its significance in human development.

While highlighting the monetary and non-monetary advantages, Kayani et al. (2017) studied the economic and social advantages of education in emerging nations in general and Pakistan in particular. They concluded that education offers employment, earnings, reduction in poverty better health, social responsibility and governance knowledge. Therefore, investment in the education sector is highly recommended in Pakistan. Webber (2002) scrutinizes different stages of education i.e., primary, secondary, and tertiary and reports a significant positive impact on economic growth. Although human capital positively impacts economic growth, tertiary education has greater influence over primary-level education, Chi (2008) argued that tertiary education has more benefits for developed provinces in China whereas secondary and primary education has more benefits for underdeveloped provinces (Zhang & Zhuang, 2011).

Khalil (2007) reported an endogenous relationship between tourism and economic growth. Tourism enhances economic expansion in the short term while economic growth is mandatory for the development of tourism in a country. Public sector initiatives like infrastructure development, better transport, information system and security are the key components of sustainable tourism development.

Agriculture is the basic pillar of Pakistan's economy, Awan (2012) asserted that Pakistan owns immense reserves of untapped natural resources, fertile soil, and large areas of cultivation with the potential to grow various crops. The agriculture sector of Pakistan promises higher returns if better planning and new technologies are adopted in this sector.

China Pakistan Economic Corridor has its own significance for the socio-economic development not only in the cities but in the suburban areas of Pakistan too (Rahim et al., 2022). CPEC, in its second phase, has more focus on sustainability aiming at environmental agendas. Policymakers are more inclined towards environment-friendly strategies along with socioeconomic development. Sustainable energy projects through green financing can have much more impact and benefit than the traditional ways (Ullah et al., 2023). This study investigates the impact of socioeconomic development through impact investments and the role of CPEC. The next section discusses the data and methodology of this study.

Data and Methodology

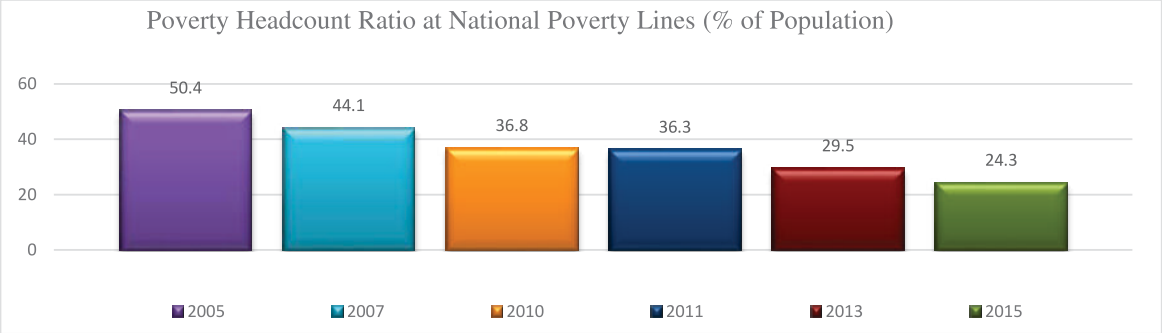
This study conducts descriptive analysis because it employs naturalistic environments to study the behavior of data. In policy research, descriptive analysis offers a clear and concise picture of data in a very meaningful manner. It is the most used method to identify trends in the datasets and offers comprehensive assessments. The methodology is well adapted to study the data holistically, (Osei & Alagidede, 2023). This study uses the descriptive analysis of various

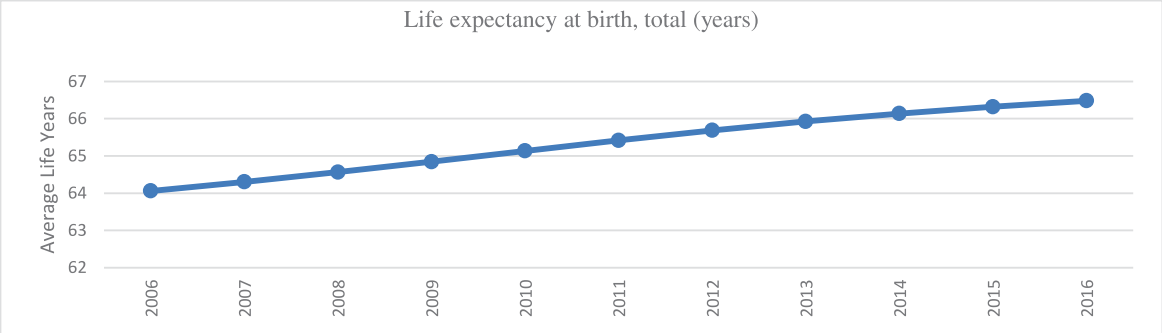
indicators of socioeconomic development including health, education, tourism, vocational training, agriculture, and access to water. Each socioeconomic indicator is examined as a possible mode of impact investment. Data for the social indicators are collected from the World Bank's Development Indicators.

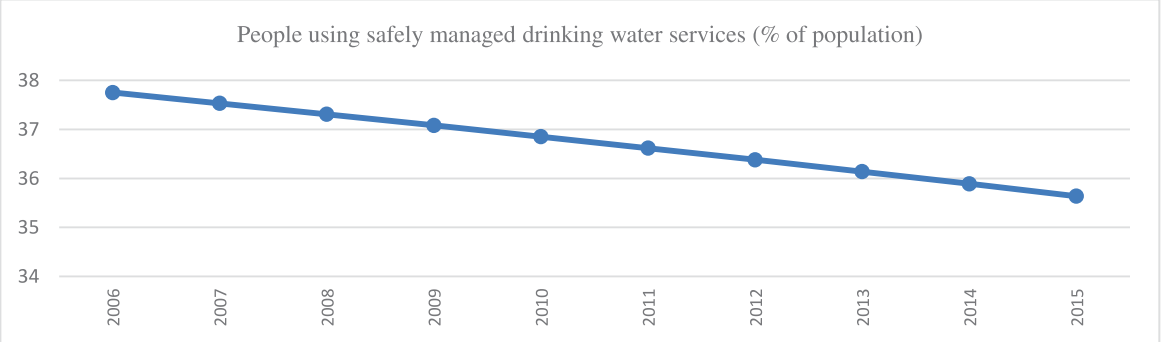
The below graphs offer a clear picture of all the socioeconomic indicators of Pakistan. Poverty alleviation is one of the most essential tasks of this century. Poverty Headcount Ratio at National Poverty Lines (% of Population) on next page shows the graphical representation of people living below the poverty line. Pakistan has observed a significant reduction in poverty since 2007, however, further improvement is required. To study the health performance in Pakistan, the indicator of life expectancy at birth has been observed, it is a widely used indicator, an improvement in this indicator definitely contribute to the economic growth. The graph on next page reflects a continuous improvement in this indicator. However, further suitable and appropriate social policies, political stability, and government interventions are pre-requisite to achieve the required level (Muhamad et al., 2013). Clean drinking water as a percentage of the population is very important for health. A decreasing trend means people are deprived of clean water access and the trend is deteriorating from 2006-15.

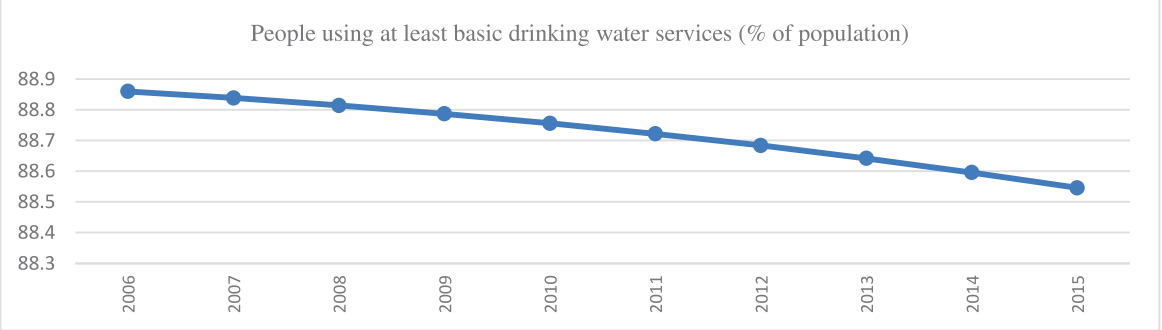
Education has a direct link with the economic growth and countries with less inequality grow faster as compare to the others (Aiyar & Ebeke, 2020). Net secondary enrolment rate is the ratio of the children of official secondary school age who are enrolled in secondary school to the total population of official secondary school age. As shown in the graph, secondary enrollment is gradually increasing but remains below 50%. Pakistan needs to prioritize this area for development. Vocational Education improves the formation and development of a skilled workforce. Pakistan had around 400,000 students in technical institutes in the year 2009, but a decreasing trend can be observed depicting a decline in skilled workforce after 2009. In 2011, the agriculture sector contributed 25% to the gross domestic product of Pakistan. However, a dwindling trend after 2011 requires further development in this sector.

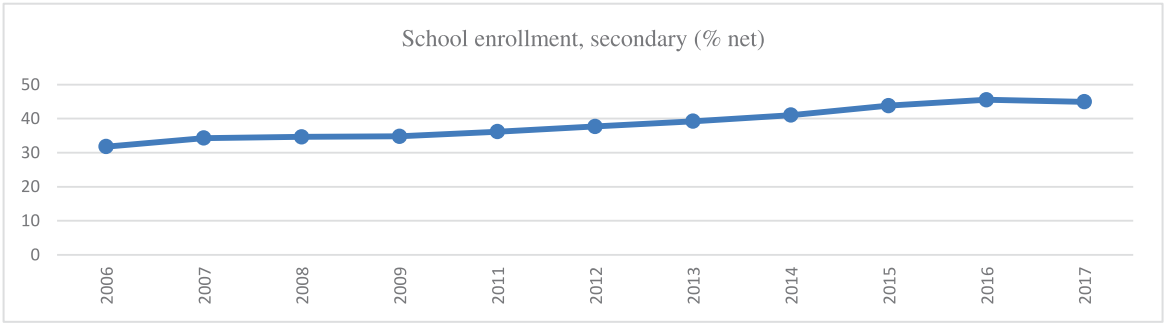
The World Trade Organization (WTO) defines international tourism receipts as payments of international visitors including international transport payments to national couriers. These payments include the payments for goods and services availed by the nation. There is decreasing trend in tourism receipts since the year 2011 in Pakistan. Improvement of the tourism industry is important because it improves the balance of payments through export entry.

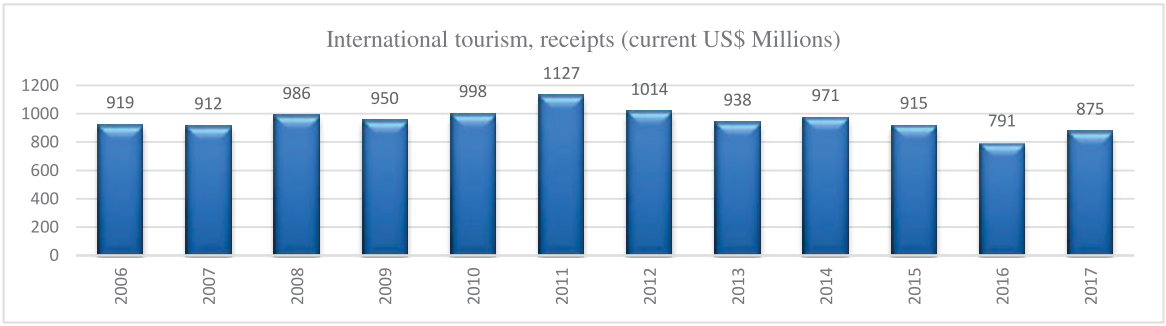

Poverty Headcount Ratio at National Poverty Lines (% of Population)
60
40
20
0
50.4
44.1
36.8
36.3
29.5
24.3
2005
2007
2010
2011
2013
2015

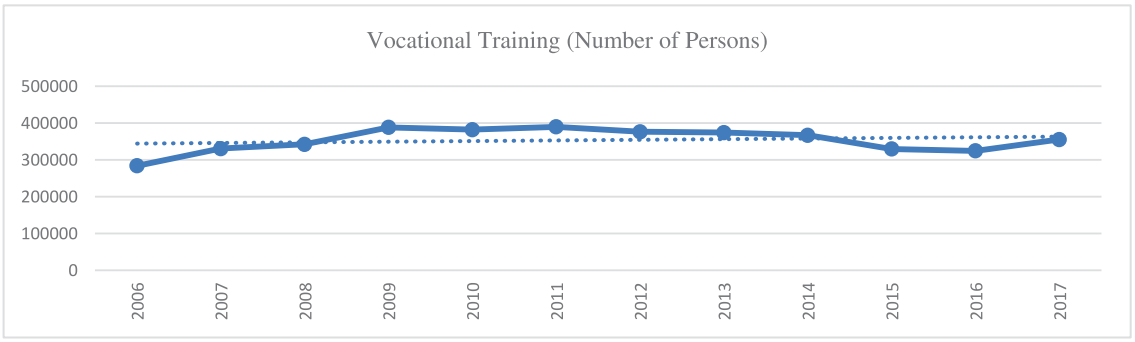

Life expectancy at birth, total (years)
Average Life Years
67
66
65
64
63
62
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016

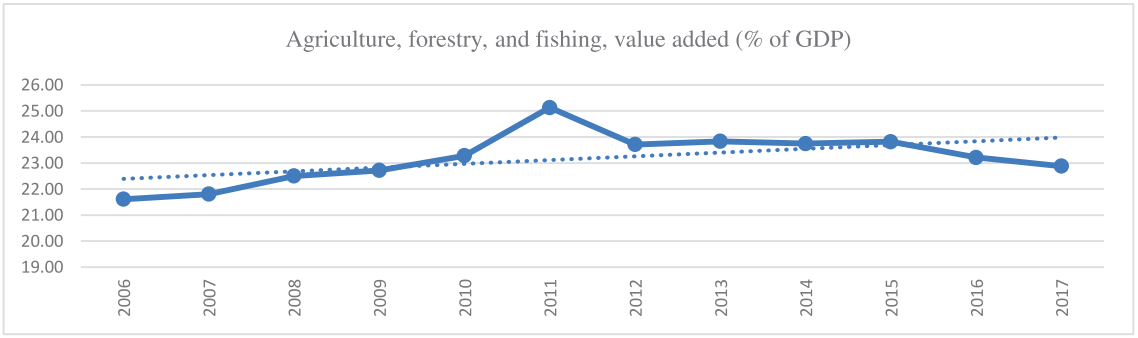

People using safely managed drinking water services (% of population)
38
37
36
35
34
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015


People using at least basic drinking water services (% of population)
88.9
88.8
88.7
88.6
88.5
88.4
88.3
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015









Source: World Development Indicators, The World Bank.

Discussion

This section offers the possible modes of impact investments for socioeconomic development in Pakistan. CPEC is a flagship project of the Belt & Road Initiative and China is expecting a huge success in this very first project of BRI. The project has immense significance for Pakistan in terms of the socio-economic development of the country. Various projects under CPEC including energy, infrastructure, and special economic zones will not only generate employment but also the ownership of these projects. These projects will offer improved healthcare facilities,

better education advanced technology, clean water supply and vocational training in remote areas of Pakistan. Pakistan has a great opportunity to reap the benefits of CPEC and align the modes of Impact investment. In 2013, China embarked on Belt and Road Initiative to help the economic integration of Asia, Africa, and Europe through numerous projects, particularly power and infrastructure development.

Poverty Alleviation

The CPEC initiative will help to curb the unemployment rate in Pakistan through numerous infrastructure projects, energy projects, Special economic zones and various projects at Gwadar City, especially the deep seaport. CPEC would generate around 1.2 million jobs and this number is expected to grow with the inclusion of more projects in its long-term plan (Fatima et al., 2019). Corporate social responsibility will improve the skills development of the local workforce. For example, Sindh Engro Coal Mining Company (SECMC) is developing the skills of the villagers of Thar Block II under the CSR framework of empowering the residents of Thar to get a better livelihood and improve the socioeconomic conditions of the region. CPEC provides an opportunity for Pakistan to learn from China's experience and pull millions of people out of poverty. The agricultural sector can play a pivotal role in this endeavor through the development of the agriculture sector into modern agriculture in the regions along the CPEC to develop the local agricultural economy and assist the masses get rid of poverty. Moreover, job creation and vocational training are also key factors to curb poverty. Social endeavors have created various innovative arrangements including Agri-tech to increase land productivity, education technologies, rural communities with access to power and affordable e-health programs. The impact investing landscape has created these endeavors to accomplish and enhance their social effects. The attractive innovations of these endeavors appeal to the speculators seeking social and financial returns (Akhtar, Hahm & Mikic, 2017). Some existing examples of existing impact investment well implemented in other parts of the world are given below, the same may be replicated in the case of Pakistan:

Sector	Financing Mode	Country/ Institution
Poverty Alleviation	Community Development Venture Capital (CDVC)	United States
	Global Environment Fund (GEF)	
	Calvert Investment Foundation's Community Investment Notes	
	Community Development Financial Institution (CDFI)	
	Diaspora Bond	India, Sri Lanka, Lebanon and Israel
	The Debt Conversion Development Bonds	Gambia and Kyrgyzstan
	Crowdfunding	China

	Financial Transaction levies	United States, Brazil, Zambia,

Community Development Venture Capital (CDVC)

Community Development Venture Capital invests in businesses in the Northeastern area of the United States. It is a non-profit community improvement organization that works for employment creation by offering capital to innovative enterprises and alleviating poverty in the region. A social monitoring index is used to measure the substantial contribution towards poverty alleviation.

Global Environment Fund (GEF)

The Global Environment Fund (GEF) is an international investment management organization that provides support in financing and management to firms making positive contributions to human health, better management of natural resources and environmental improvement. It provides seed capital and effectively manages investments under a triple-bottom-line mechanism. It contributes towards poverty reduction through environment protection, education, employment creation, and health sector development for local stakeholders of their companies.

Calvert Investment Foundation's Community Investment Notes

It is an investment product designed to allow investors to seek social impact, to finance underdeveloped communities through intermediate organizations. These notes are designed to finance up to 10% of the microenterprises, small business improvement, community development and affordable housing in the US. These products reduce poverty and manage stable financial returns by extending small funds to existing organizations. The Calvert Foundation measures the social impact in terms of the amount, region, term, and functional focus of the investment to communicate contributions of social investment.

Diaspora Bonds

A Diaspora bond aims at the expatriates and is a bond which derives income from the remittance's inflows. India and Israel are at the forefront of collecting funds from their diaspora. These countries raise finances from the diaspora by issuing bonds which is a debt instrument (International Expert Report, 2012).

The Debt Conversion Development Bonds

It is a debt swap that works as a source of additional funds for development projects in emerging nations and reduces the indebtedness of these nations. One or more creditors forgive the amount of debt against the specific cause as per the agreement with the debtor government. Debtors are bound to deposit a special amount in the central bank periodically. These amounts are then extended for the agreed cause.

Crowdfunding

It refers to a way of financing ventures by many small investors mostly through online platforms. “Habitat for Humanity Global Village” raised around 34 billion dollars in crowdfunding for their Global Village program in 2015.

Education

Currently, the Higher Education Commission is working on a plan to make around 50 technical/faculties centers in different universities to address the requirements for human resource development for China Pakistan Economic Corridor. Moreover, China and Pakistan have created a consortium of leading business schools of both countries for high-quality resource development through academic associations in the finance and trade field. To develop advanced knowledge of human resource development in the country, HEC is arranging educational exchanges of 50 Pakistani universities with Chinese counterparts.

A primary school is established to improve the socioeconomic situation in Gwadar under CPEC. Many firms are expected to join the Special Economic Zones that may be sensitized to focus on Corporate Social Responsibility (CSR) and work for educational institutions. The National Vocational and Technical Education Commission of Pakistan is working to develop human source skills to fulfil the requirements of local and international markets. Pakistan needs to further enhance the higher education resources to conduct research and development activities and strengthen cooperation and exchanges among research and educational institutions of both countries. Below are some already adopted modes of raising impact funds in other parts of the world, that can contribute positively to the education sector of Pakistan.

Venture Fund for Education

A fund that generates additional sources of revenue for funding innovative projects in the education sector including private equity, bond issues, voluntary levies, leveraged instruments etc. The basic objective is to provide funds to innovative and high-impact projects that require financing in the education sector.

A Loan with a Catch

A loan with a catch is an innovative idea to finance schools with financial constraints in India. The Indian School Finance Company (ISFC) with $2 million capital provides finance to small schools against a catch that if the students score above a certain percentage, a rebate of 10%. This strategy does not fulfil the financing needs but also ensures the quality of schools.

Education Impact Bonds

It is the first impact bond of education in India to offer an innovative option to offer financial and social returns. The objective was to facilitate 18,000 kids in the government schools of Rajasthan and to facilitate female education in India.

Public Private Partnership

It is one of the most significant tools to finance education in developing countries e.g., United Nations Educational, Scientific and Cultural Organization (UNESCO) formulated IIEP by partnering with Intel Microsoft and IBM in 2012. Another example is the International Financing Facility Insurance and Education introduced by the World Bank. The mandate is to provide insurance and education to government and non-governmental institutions.

Sector	Financing Mode Used	Country/ Institution
Education	A Loan with a Catch	India
	Education Venture Fund	
	Debt Conversion Development Bonds	
	Diaspora Bonds	US, China, UK
	Education Development Impact Bonds	Philippines, China, India
	Public Private Partnership	US, Uk
	Private Fundraising Scheme	Philippines, Peru, Thailand, Chile, Turkey, Indonesia, Argentina, Hungary

Health

Collective Health designed a strategy, Health Impact Investing, for the development of distressed communities through, disease prevention, health promotion and sustainable cost reduction. This strategy redirects the funds where they can yield the most. Investors fund community-based initiatives in exchange for health care future cost savings. A specific amount from savings is reinvested in extra community development and making a continuous system of better health and cost savings.

The health condition in Baluchistan and Gwadar is alarming. Gwadar Development Authority Hospital is proposed to be upgraded from its existing capacity and to be named China Pakistan Friendship Hospital. Experts from China and Pakistan can craft policies to improve the health sector through a health and knowledge corridor. Below are some suggestions to raise funds for the health sector through impact financing. These modes are successfully generating funds for the health sectors of the concerned countries.

Sin Tax

The socially harmful or undesirable products and services that may cause welfare loss in a society are subject to taxes e.g., alcohol and tobacco. Taxes on these products are considered sin taxes. These taxes offer a win-win position as they reduce the health expenditure in fiscal expenditures, increase government revenues and also reduce health risks.

Tax on Unhealthy Food

The basic purpose of these taxes is to enhance the prices of unhealthy foods and discourage consumers from unhealthy foods such as carbonated beverages, other products containing high levels of salt, etc., Canada, Norway, Australia, Finland and the United States have imposed these taxes.

Tobacco Excise Tax

According to World Health Report (2010), a 50 per cent increase in the excise taxes on cigarettes can generate revenues near or more than double the foreign aid to health care in countries like Pakistan.

Luxury Taxes

Different countries across the world impose luxury taxes in different ways: Bulgaria plans to impose luxury taxes on homes and high-end cars; China takes luxury tax on imported watches, big cylinder cars and yachts; Indonesia has had a luxury tax on certain consumption products for quite some time now. These taxes are imposed through the existing tax mechanism like property taxes and vehicle taxes.

Sector	Financing Mode	Country/ Institution
Health	Sin tax	Norway, Romania, United States
	Tax on unhealthy food	Canada, Australia, Finland, Romania, US
	Tobacco excise taxes	Madagascar, Congo, Vietnam
	Diaspora Bond	India, Sri Lanka, Lebanon and Israel
	Luxury Taxes	China, Bulgaria, Indonesia
	Small Unitary Levies on mobile phone use	Philippines, Gabon
	Franchising Products	Product Red
	Financial Transaction levies	United States, Brazil, Zambia,

Tourism

Tourism is one of the main sources of exports for a few economies. It not only offers indistinguishable benefits but also helps to increase foreign reserves. For example, a tourism consumption tax is imposed on purchases by foreigners. It can be in the form of tariffs, sales taxes and taxes on consumed services and goods. Chinese spent around 120 billion dollars on their tourism in 2015. CPEC will improve the infrastructure and offer convenience to tourist places. The government of Pakistan has taken various important steps to improve the tourism sector including arrival visas to the citizens of 55 countries. Pakistan may benefit from the

potential of tourism in the region along CPEC through the development of coastal tourism within its coverage. The quality of tourism services, mainly public service information, security protection, better transportation, and other public services, should be improved to effectively uphold socioeconomic development. Below are a few examples to improve the tourism sector of Pakistan by adopting the following modes.

Sector	Financing Mode	Country/ Institution
Tourism Development	Tourism Consumption Tax	Gambia and Kyrgyzstan
	Travelers Savings Fund for Development	US, UK
	Diaspora Bond	India, Sri Lanka, Lebanon and Israel
	Impact Bond	Philippines, China

Agriculture

Agriculture development has immense importance in alleviating poverty in the country. CPEC is envisaged to help the crumbling economy of Pakistan. The agriculture sector has a significant impact on the economy of Pakistan, so its development will help economic growth through higher exports of agricultural products. It is important to mention that China is the world's largest importer of agricultural products that imports food products for more than 100 billion dollars. However, Pakistan contributes only one percent of Chinese imports of food. CPEC provides a huge opportunity for Pakistan to enhance agricultural exports to China and boost bilateral trade.

One of the examples in the agricultural value chain is microfinancing which aims to provide credit to small farmers who lack access to finance. The financial innovation in agriculture will help the farmers to improve the productivity and quality of crops leading them to earn higher incomes and afford better living standards. Secondly, funds like Forest Foundation Fund aims to combat the issues like deforestation and carbon emissions.

The agriculture sector in Pakistan requires advanced research in agriculture products to increase per acre yield and produce high value-added products and linkage of farmers with Chinese counterparts to learn from their experience. Further, fruit and vegetable production along with value-added services may help to develop the Pakistani economy. For the said cause, Pakistan may adopt the below-mentioned ways of impact financing and increase the growth rates.

Sector	Financing Mode	Country/ Institution
Agriculture Advancement	Agriculture Value Chain Financing	Nigeria
	Forest Foundation Fund	US, Africa, Malaysia
	Diaspora Bond	India, Sri Lanka, Lebanon and Israel
	Impact Bond	Philippines, China
	Fishing and Farms	US

Water Resources

A project under the umbrella of CPEC is aimed at freshwater treatment, distribution systems, supply, sewerage systems, and desalination plants. Apart from water resources development, utilization, protection, conservation and disaster relief, there is a need to improve the drip irrigation system to save water since underground water is depleting swiftly.

Green Bonds

Green bonds are issued to raise finance for climate change solutions. The proceeds go to green assets. They can be issued by central and local governments, banks, or corporations. The green bond label can be applied to any debt format, including private placement, securitization, covered bond, and sukuk, as well as labelled green loans which comply with the Green Bond Principles (GBP) or the Green Loan Principles (GLP).

Sukuk

A sukuk is an Islamic financial certificate, like a bond in Western finance that complies with Islamic religious law commonly known as sharia. Since the traditional Western interest-paying bond structure is not permissible, the issuer of a sukuk sells an investor group a certificate and then uses the proceeds to purchase an asset, of which the investor group has partial ownership. A blue fund is potentially a regionally or globally coordinated initiative that targets to fund projects related to Sealife.

Access to Water

Sector	Financing Mode	Country/ Institution
	Green or Climate Bonds	France, China, India, Poland, Belgium, Brazil
	Sukuk	Iran, Pakistan, Malaysia, Saudi Arabia, Singapore

Water Resources	Blue Fund	US, UK, Europe,
	Diaspora Bond	India, Sri Lanka, Lebanon and Israel
	Impact Bond	Philippines, China

Conclusion and Policy Implications

Socioeconomic development focuses on the improved lifestyle of families, individuals, communities, groups, and societies. It is a process that has a binding impact on the economy and society. Socioeconomic development is the sustained improvement in the economic standard of living of a country's individuals, groups, and society at large. China-Pakistan Economic Corridor (CPEC) includes numerous energy projects, road and rail infrastructure projects, Gwadar port and special economic zones that claims to have many socio-economic impacts on the livelihood of Pakistani residents. CPEC will make easier access to basic needs of life particularly in the underdeveloped areas of Pakistan. CPEC promise a positive impact on poverty alleviation, health, education, vocational training institutes, technical expertise, water supply and distribution by covering the energy crises and providing job opportunities in Pakistan.

The socio-economic impact of CPEC projects has already been initiated, for instance, the partnership of Sindh Engro Coal Mining Company (SECMC) with Aman Tech to conduct masonry training as CSR framework in the operational area of Thar Block II, the establishment of primary school in Gwadar where students are being imparted quality education, upgradation of the hospital at Gwadar, and vocational training by National Vocational and Technical Education Commission (NAVTEC).

The study presents different modes of impact investing for socio-economic development in Pakistan. Impact investment in Pakistan stands at around 2 billion dollars but there is much more potential like improved health care, better education, tourism development, clean water, and security situation in the country. The study recommends the most efficient and effective ways to achieve the greater goal of a prosperous Pakistan. The author strongly recommends the policymakers of CPEC focus on impact investing along with the conventional investment plans to combat the socioeconomic challenges in Pakistan. The next section of this study offers vital policy implications.

- CPEC provides an opportunity for Pakistan to learn from the Chinese experience and pull millions of people out of poverty. Impact investment can be generated through funds, conversion funds, crowdfunding, diaspora bond, community development venture capital etc.
- Additional funds for education may be mobilized through various impact investment resources such as education venture funds, education development impact bonds, a loan with a catch etc. Pakistan needs to strengthen the higher education sector in Pakistan.

- Different countries across the world are using various mechanisms to get funds for the health sector like sin tax, tax on unhealthy food, tobacco excise taxes, etc. For the health and knowledge corridor, experts from both China and Pakistan will be required to bring revolutionary changes in the health sector. To improve the medical skills of the personnel, the doctors, pharmacists and other medical staff exchange programs may be initiated with China.
- Tourism consumption tax, a traveler's savings fund for development and impact bond can be resourced for the development of the tourism sector. Pakistan may further exploit the potential of tourism in the region along CPEC through the development of coastal tourism within its coverage. The quality of tourism services, mainly public service information, security protection, better transportation, and other public services, should be improved to effectively uphold socioeconomic development.
- The agricultural sector can play a pivotal role m economic growth. CPEC can offer modernization from traditional to modern agriculture, job creation, and improved infrastructure in Pakistan. Agriculture value chain financing, Forest foundation fund, Diaspora bonds, and Impact bonds are the ways that can help to raise funds and achieve the goals in this sector. To develop the agriculture sector, China and Pakistan should cooperate for new research in the agricultural field, biological breeding, value-added production, enhanced per-acre yield, and processing and storage capacity of Pakistan.
- Green or climate bonds, sukuk, blue fund and diaspora bonds are the mechanisms of impact investment that can be mobilized to develop the water sector in Pakistan. Apart from water resources development, utilization, protection, conservation and disaster relief, there is a need to improve the drip irrigation system to save water wastage as underground water is depleting swiftly.

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Exploring the Factors Affecting Wheat Productivity in Pakistan: An Empirical Analysis

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Abstract

Food security plays a vital role in both economic progress and social harmony, especially in nations such as Pakistan, where the agricultural sector significantly drives the economy. Wheat is the major staple food in Pakistan. This paper aims to explore the effects of major inputs on wheat productivity in Pakistan. For this purpose, data for the period from 1981 to 2021 was empirically analyzed through Autoregressive Distributed Lag (ARDL) model. The results revealed that the major inputs including improved sees, area under cultivation of wheat, water availability, fertilizer, Farm machinery, specifically tractors, play a crucial role in enhancing wheat productivity in Pakistan with a notable and meaningful effect. The study recommends that providing subsidies to small-scale farmers for key agricultural inputs such as tractors, tube-wells, and fertilizers can be an effective way to improve wheat productivity in Pakistan. Moreover, Access to modern agricultural machinery and inputs can also help small-scale farmers to increase their yields and reduce the cost of production, which can improve their profitability and livelihoods.

***Keywords*:** Food security, Wheat productivity, Influencing factors, ARDL Model, Pakistan,

Introduction

The food security of Pakistan is indeed an important indicator of its overall well-being and the well-being of its citizens. Pakistan's food security situation is indeed fragile, and it faces various challenges in ensuring access to food for all its citizens. Wheat is a staple food in Pakistan, and it has historically catered to around 80 percent of the country's consumption requirements. However, in recent years, Pakistan has faced challenges in meeting its wheat production targets due to various factors such as climate change, water scarcity, and inefficient farming practices. As a result, Pakistan has to rely on imports to meet the shortfall in wheat production which caused of a huge foreign exchange cost (Jalil et al., 2023). Additionally, fluctuations in

international wheat prices can also affect Pakistan's food security situation, as it can make imported wheat more expensive and less accessible for the population. In spite of this, Pakistan has indeed made significant progress in agriculture since its independence. The country's agriculture sector accounts for a significant portion of the economy and employs a large proportion of the population (Khan et al., 2022). The Indus Basin has experienced a Green Revolution, which has helped increase agricultural production and yields. However, despite the progress made, the benefits of the Green Revolution have not reached small farmers. Most Pakistan's farmers are smallholders who lack access to the resources necessary to adopt modern agricultural technologies. As a result, they have been left behind in the process of agricultural development. In addition, the productivity of wheat has declined in recent years due to the loss of momentum of Green Revolution technologies. It has been because of no. of factors e.g., a lack of investment in research and development, poor extension services, and inadequate access to credit and other resources (Rana & Malik, 2021).

The estimated population of Pakistan in the year 2022 is around 229.22 million, and the country continues to have a significant portion of its population engaged in agricultural operations. According to the Pakistan Bureau of Statistics, in the fiscal year 2022-23, the agriculture sector contributed 22.9% to Gross Domestic product (GDP) of the country. In 2022-23, significant crops made up 18.23% of the agricultural sector's value addition and 4.18% of the GDP. Similarly, other crops also contributed14.49% in the agriculture sector as well as 3.32% to the GDP of the country. Overall, the sum of wheat production in Pakistan during the 2022-23 is covering an area of 9,043 thousand hectares, showing a 0.7 percent increase compared to the previous year's 8,977 thousand hectares. Wheat contributed 8.2% of the value added in agriculture and 1.9% in GDP. Moreover, wheat production reached 27.641million tons, indicating a growth of 5.4 percent compared to last year's 26.208 million tons. This increase in wheat production can be attributed to the government's implementation of the Kissan Package-22, which aimed to address the losses caused by the Flood-2022. The wheat production within the domestic region for the 2022-23 crop year is projected to be approximately 26.8 million tons, cultivated across 9.0 million hectares of land. It represents a growth of 1.6% as compared to the previous year's production i.e. 26.39 million tons. Additionally, the government raised the Minimum Support Price (MSP) to Rs 3900 per 40 kg from Rs 2200 per 40 kg, to get better economic returns and helped to offset higher input cost (Economic Survey of Pakistan, 2022-23). The Punjab province is the largest producer of wheat in Pakistan, followed by Sindh and Khyber Pakhtunkhwa. The government of Pakistan provides various incentives to farmers to increase wheat production, including subsidies on fertilizers, seeds, and irrigation (Shaheen et al., 2022). Additionally, the government also supports research and development in agriculture to promote the use of modern farming techniques and improve crop yields. Despite these efforts, there are still challenges that need to be addressed to improve wheat production in Pakistan. These challenges include climate change, water scarcity, outdated farming practices, procurement issues and the spread of diseases and pests (Kashif et al., 2020). In order to address such challenges, the is a need to require mutual efforts from all stakeholders including government, farmers and others to encourage sustainable farming practices and also improve overall agriculture infrastructure in the country (Zulfiqar et al., 2021).

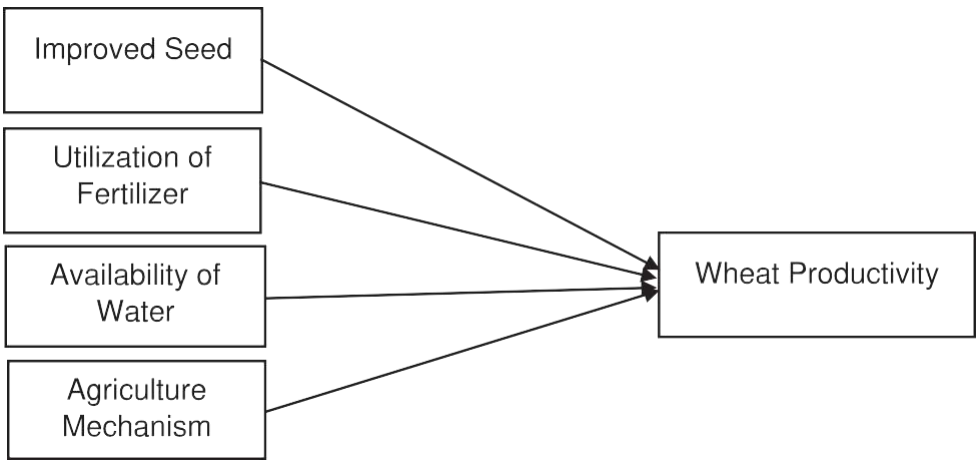
The productivity of wheat on small farms is low, and this poses a challenge for small and marginal farmers who rely on wheat production for their livelihoods. The increasing input prices and low output prices exacerbate the problem, leading to a cost price squeeze that further reduces

the profitability of wheat farming. This situation has made wheat less competitive in the international market, which in turn affects the food security of small farmers who depend on it (Gaydon et al., 2021). The government of Pakistan does engage in a complex wheat procurement, acquisition, transport, storage, and distribution operation. The government's procurement policy is aimed at ensuring food security for the country's population by maintaining adequate stocks of wheat and making it available at affordable prices. Under this system, the government procures wheat from farmers at a support price and then distributes it to registered flour mills at a subsidized rate. Thereafter, flour mills are required to produce flour and other wheat products at a fixed price that is set by the government. This system has a basic feature that the government only covers half of the cost of procuring and handling wheat from the farm. As a result, the registered flour mills, which purchase wheat from both the local market and the government, receive a subsidy on their quota by the provincial food departments. This system has faced various challenges, such as corruption, inefficiencies in the procurement process, and a lack of transparency. These challenges have led to the hoarding of wheat by middlemen and shortages in certain areas, which can lead to food insecurity and price hikes (Rana, 2020).

Factorings Affecting Wheat Productivity

Several studies have found that there are many factors such as improved seed, farming experience, farm size, access to farm machinery, water availability, fertilizer, soil quality, market proximity, extension service, credit facilities, marketing information, household saving significantly affect the productivity of wheat (Abebaw & Belar, 2001; Abubakar et al., 2016; Adedoyin et al., 2016; Al-Hassan & Jatoe, 2002; Ali et al., 2014; Asfaw et al., 2012; Chandio et al., 2018; Hossain et al., 2016; Jalil et al., 2023; Kassie et al., 2011; Kebede et al., 2017; Kumar et al., 2016; Mango et al., 2014; Maruod et al., 2013; Odoemenen & Obinne, 2010; Okello et al., 2016; Ologbon et al., 2012; Rasheed et al., 2021).

Theoretical Framework



Improved Seed

Improved or certified seed is always considered an important agriculture input to increase production of wheat crop. The agricultural productivity system heavily relies on the use of improved seed, as highlighted by Muhsin et al. (2021). Access to better seed is crucial for

ensuring farmers' prosperity and food security. According to Nazu et al. (2021) the adoption of improved seed not only enhances the production of food grain crops but also boosts the income of farming families, thereby positively impacting rural development. Developed seed, regarded as a highly innovative advancement, is widely adopted by farmers in emerging nations to improve yield efficiency and increase food production for vulnerable populations. The department of federal seed certification and registration governs the production of certified or improved food grain crops. Enhanced seeds, serving as the key input for crop cultivation, hold considerable importance in promoting sustainable agricultural methods and ensuring the country's food security. As per an economic survey conducted in 2022-23, Pakistan acquired around 143,159 Metric tons of improved seeds for a variety of crops. Furthermore, an import of 39.784 thousand metric tons of seeds took place, encompassing yields like paddy, maize, potato, sunflower, canola, and various food and vegetable crops.

H_1: There is a significant impact of improved seed on wheat productivity.

Utilization of Fertilizer

Fertilizers play a vital role in agriculture, contributing to increase per-acre land yield and rapid returns (Kurmanbayeva et al., 2021). Each kilogram of fertilizer applied results in approximately eight kilograms of rice, wheat, and maize, respectively, in terms of nutrient production. The soil in Pakistan faces significant deficiencies, with nitrogen lacking in over 90% of areas, phosphorus in 80%-90%, and potassium in 30%. However, achieving balanced fertilization, where the optimal amount of fertilizer is applied to meet the crop's nutrient requirements, is crucial for maximizing the utilization of fertilizers and other inputs. During 2022, Pakistan met around 82% of its fertilizer needs through local production, while the excess was met through imports. Fertilizer production in Pakistan increased by 5.9% between July and March of FY2022 compared to the previous year. During that time, the total availability of fertilizer increased by 0.3%, while the supply of fertilizer imported decreased by 20.1%. Hamid and Ahmad (2009) conducted a study using the Cobb-Douglas production function and analyzed time series data from 1980 to 2018 to examine changes in agriculture value added. The results of the research indicated that various factors such as level of agriculture & trade activities, no. of labor force utilized for farming, utilization of other inputs like fertilizer, high quality seed, pesticides, as well as capital stock and HRD played a vital role in the agricultural value added. Additionally, the study emphasized the significant impact of fertilizers on improving agricultural productivity in developing countries. According to Amjadian et al. (2021) fertilizers are considered essential as they played a vital role in the green revolution in Asia and also contributed almost 50% in overall agriculture productivity.

According to Blekking et al. (2021) conducting a need assessment for agricultural inputs is a crucial strategy to enhance crop production, particularly in sub-Saharan Africa. Participation in activities such as adopting modern agricultural technology, utilizing fertilizers, pesticides, and improved food grain crop varieties plays a significant role in increasing agricultural productivity. Food grain crop production is significantly influenced by factors like production capacity, educational attainment, landholding size, and the price levels of fertilizers. Farmers actively employ fertilizers for crop cultivation, while factors such as orientation, age, and family size do not have a significant influence (Amanze et al., 2010). Similarly, Emmanuel et al. (2016) examined the effects of agricultural extension services on fertilizer adoption and rice crop productivity using the PSM (Propensity Score Matching) approach in Ghana. It is found that

access to agricultural extension services significantly and positively influences fertilizer used in farming. Moreover, Amanze et al. (2010) demonstrated that farmers' livelihoods are improved and food grain crop yields are increased when fertilizers are used in moderation. Additionally, deficiencies in soil nutrients can be treated and aid in maintaining the soil's fertility. It was seen that without the utilization of composts, crop yields could not, as of now, be expanded. Whereas, Quddus et al. (2008) claimed that when commercial fertilizer was first used in Pakistan in 1952, only 1000 tons of nitrogen were consumed, while 100 tons of phosphorus were added to the initial supply in 1959–60.

H_2: There is a significant impact of utilization of fertilizer on wheat productivity.

Availability of Water

Securing adequate access to water is essential in order to fulfill the increasing food demand of country's rising population. A crucial requirement for the production of sustainable food grain crops is the effective use of water (Lutz et al., 2022). Water availability is closely linked to Pakistan's agricultural sector. According to the Economic Survey of Pakistan (GOP, 2022-23), the water availability for the Kharif season of 2022 reached 68.1 million acre-feet, marking a 9.3% increase as compared to the Kharif season of 2022 and 8.4% increase was observed as compared to the aggregate supplies of 67.3 million per acre-feet. However, for the Rabi season of 2022-23, the water availability remained at 29.4 million acre-feet, which is 12% lower than the availability during the previous Rabi season. However, efficient water use and proper harvesting of food grain crops are crucial. The yields of grain crops for food and food security will decrease as a result of a lack of water. According to Atamurodov et al. (2022) agriculture accounts for approximately 70% of all freshwater extraction worldwide and is the largest user of water. The canal network is used to irrigate more than 70% of Pakistan's land. According to Bhanger and Memon (2008) agriculture now uses nearly 93% of freshwater resources. Research findings indicate that surface water resources in Pakistan are not only limited but also display notable disparities in availability among various regions and over time. Consequently, this circumstance has prompted the establishment of an extensive groundwater system within the Indus basin. During the last five decades, a substantial proportion of farmers have embraced the use of groundwater as a reliable source of irrigation, giving rise to a transformative phenomenon known as the "quiet revolution." Moreover, Qureshi et al. (2010) indicated that the proportion of total irrigated land relying on groundwater has increased by more than 50% since 1960. However, despite the critical role of groundwater resources in crop production (Shah, 2000), these resources face significant challenges and are at risk in Pakistan.

H_3: There is a significant impact of availability of water on wheat productivity.

Agriculture Mechanism

The availability of modern farm machinery is essential to ensure in time cultivation and harvesting of food grain crops. There is a dire need to increase the productivity of food crops in order to meet the future demand of food by rising population (Rahmane et al., 2021). The production of food grain crops extensively relies on the utilization of human labor, animals, and modern machinery. However, in developing economies, farmers often rely on manual labor for various operations such as sowing, weeding, harvesting, and threshing because of some factors such as low income, poor saving, insufficient government subsidies and also lack of credit facilities for small scale farmers. Tillage is the only machine that is used for these tasks (Iqbal et

al., 2015). Tractors are currently employed for tillage on both small and large farms in Pakistan. Small farmers continue to use bullock-powered machinery, though. In comparison to other nations that employ contemporary agricultural technologies, Pakistan's average output of food grain crops is extremely low. Crop production in comparison to other countries worldwide varies significantly, ranging from 50 to 83 percent below average (Tewari et al., 2012; Khan et al., 2011). Agricultural mechanization offers numerous advantages throughout the crop production process, such as time savings (20–30%), reduced labor costs (20–30%), savings on fertilizers and seeds (15–20%), increased crop intensity (5–20%), and higher yields (10–15%) (Rakhra et al., 2022; Fountas et al., 2015; Chauhan et al., 2006; Singh & Kohli, 2005). One of the primary benefits of agricultural machinery is its ability to enhance crop yields while minimizing postharvest losses. In 2021, the total manufacturing of tractors reached 39,272, compared to 36,635 in the previous year, indicating a significant increase of 15.21 percent. This surge in demand for farm machinery can be attributed to the reduction in Goods and Services Tax (GST) from 7% to 5% on locally manufactured tractors as well as imported ones (GOP, 2022).

H_4: There is a significant impact of agriculture mechanism on wheat productivity.

Research Methodology

Source of Data

The aim of this study is to explore the factors that impact wheat productivity in Pakistan from 1981 to 2021. The specified Autoregressive Distributed Lag (ARDL) model was constructed using annual data sourced from the Economic Survey of Pakistan, Agriculture Statistics of Pakistan and Pakistan Statistical Year Books. The empirical ARDL model comprises eight variables for our estimations. Wheat productivity is measured in thousands of tons, while land area for wheat cultivation is measured in thousands of hectares. Improved seed distribution is measured in thousands of tons, fertilizer usage in thousands of nitrogen/tons, water availability in million acre-feet (MAF), agricultural machinery, including tractors, is measured in numbers, and the number of tube wells is also considered. In the model, WP represents Wheat Productivity, AREA denotes the area under wheat cultivation, IMSEED refers to improved seed distribution, WA represents water availability, FET signifies fertilizer usage, INS represents insecticide usage, TRAC indicates the number of tractors, TW represents the number of tubewells, whereas, α represents the constant intercept, and e denotes the error term.

$$\ln WPt = \alpha + \beta_1 \ln IMSD_t + \beta_2 \ln AREA_t + \beta_3 \ln WA_t + \beta_4 \ln FET + \beta_5 \ln INS_t + \beta_6 \ln TRACT_t + \beta_7 \ln TW_t + \epsilon \qquad eq-1$$

In this study, Augmented Dickey Fuller (1981) has been used that is a unit root test to check the reliability of our analysis by assessing the stationarity properties of the variables, ensuring accurate and meaningful results. Once the stationarity of the variables was confirmed, we also utilized the ARDL bounds test to study the long-term relationship between agricultural technology factors and wheat productivity. The selection of the ARDL approach was motivated by its efficacy in handling small sample sizes, as our study encompassed 40 observations, as well as its flexibility in accommodating various optimal lag lengths for the variables under investigation. Following the determination of the appropriate lag structure for the model, the ARDL framework facilitated cointegration assessment using the Ordinary Least Squares (OLS) approach, which is proposed by Pesaran et al. (2001). Therefore, in order to examine the long-

term relationship between wheat productivity along with seven independent explanatory variables, we employed the bounds test procedure for cointegration, estimating the conditional version of the ARDL approach as follows:

$$\Delta lnWP_t = \alpha + \gamma_1 lnWP_{t-1} + + \gamma_2 lnIMSD_{t-1} + \gamma_3 lnAREA_{t-1} + \gamma_4 lnWA_{t-1} + \gamma_5 lnFET_{t-1} + \gamma_6 lnINS_{t-1} + \gamma_7 lnTRACT_{t-1} + \gamma_8 lnTW_{t-1} + \sum_{i-1}^{q} \psi_{1i} \Delta lnWP_{t-i} + \sum_{j-1}^{q} \psi_{1i} \Delta lnIMSD_{t-i} + \sum_{k-1}^{q} \psi_{1i} \Delta lnAREA_{t-i} + \sum_{l-1}^{q} \psi_{1i} \Delta lnWA_{t-i} + \sum_{m-1}^{q} \psi_{1i} \Delta lnFET_{t-i} + \sum_{n-1}^{q} \psi_{1i} \Delta lnINS_{t-i} + \sum_{r-1}^{q} \psi_{1i} \Delta lnTRACT_{t-i} + \sum_{s-1}^{q} \psi_{1i} \Delta lnTW_{t-i} + \epsilon \quad \ldots\ldots\ldots\ldots eq-2$$

Where ψ denotes the discrepancy in the independent variables, capturing the short-term dynamics that will be estimated using the Error Correction Model (ECM). Meanwhile, γ_1 denotes the long-term multipliers, and α represents the constant intercept, and ϵ represents the error term or random error. The initial step in conducting the ARDL bounds test for co-integration involves testing the presence of a long-term relationship between the variables. This is done by estimating Equation (2) through the Ordinary Least Squares (OLS) method. Afterward, the F-statistic test is calculated to evaluate the joint significance of the lagged levels of the variables. It is hypothesized that

$$H_0: \gamma_1 = \gamma_2 = \gamma_3 = \gamma_4 = \gamma_5 = \gamma_6 = \gamma_7 = 0 \ (Notcointegrated)$$

$$H_1: \gamma_1 = \gamma_2 = \gamma_3 = \gamma_4 = \gamma_5 = \gamma_6 = \gamma_7 = 0$$

The ARDL bounds test was used by Pesaran and Shin (1998); Pesaran et al. (2001), and Chandio et al. (2018), is utilized to explore the long-term relationship and co-integration among variables. This test is applicable irrespective of the underlying series are integrated of order zero (I(0)) or integrated of order one (I(1)). The null hypothesis of no co-integration is rejected when the calculated F-statistic exceeds the upper bound, indicating a significant association between the variables. Similarly, if the computed F-statistic falls below the upper bound, the null hypothesis of no integration cannot be rejected, suggesting the absence of a long-term relationship. Next step is to look at the long-term connection. Following is the ARDL long-run model for wheat productivity:

$$lnGCP_t = \beta_0 + \sum_{i-1}^{p} \psi_{1i} lnWP_{t-i} + \sum_{i-0}^{q1} \psi_{1i} lnIMSD_{t-i} + \sum_{i-0}^{q2} \psi_{1i} lnAREA_{t-i} + \sum_{i-0}^{q3} \psi_{1i} lnWA_{t-i} + \sum_{i-0}^{q4} \psi_{1i} lnFET_{t-i} + \sum_{i-0}^{q5} \psi_{1i} lnINS_{t-i} + \sum_{i-0}^{q6} \psi_{1i} lnTRACT_{t-i} + \sum_{i-0}^{q7} \psi_{1i} lnTW_{t-i} + \mu_t \ldots\ldots\ldots\ldots eq - 3$$

On the basis of Akaike Information Criterion (AIC), the order of the lags has been chosen for ARLD as p_1, q_1, q_2, q_3, q_4, q_5, q_6 and q_7. Now, the final step is to calculate the short term correlation between the wheat productivity and the independent variables. Accordingly, the model is as under:

$$\Delta lnWP_t = \emptyset_i + \sum_{i-1}^{p} \alpha_{1i} \Delta lnWP_{t-i} + \sum_{j-1}^{q} \alpha_{2j} \Delta lnIMSD_{t-j} + \sum_{k-1}^{q} \alpha_{3k} \Delta lnAREA_{t-k} + \sum_{l-1}^{q} \alpha_{4l} \Delta lnWA_{t-l} + \sum_{m-1}^{q} \alpha_{5m} \Delta lnFET_{t-m} + \sum_{n-1}^{q} \alpha_{6n} \Delta lnINS_{t-n} + \sum_{r-1}^{q} \alpha_{7r} \Delta lnTRACT_{t-r} + \sum_{s-1}^{q} \alpha_{8s} \Delta lnTW_{t-s} + \rho ECM_{t-1} + v_t \ldots\ldots\ldots eq - 4$$

Equation (4) above illustrates the short-term coefficients of the model's equilibrium. The Error Correction Model (ECM) is denoted as ECM_(t-1), with ρ representing the coefficient that estimates the rate at which the short term adjustments converge towards the long-run equilibrium. Therefore, the model for calculation of ECM is as under:

$$ECM_t = lnWP_i - \beta_0 - \sum_{i-1}^{p} \psi_{1i} lnWP_{t-i} - \sum_{j-1}^{q1} \alpha_{2j} lnIMSD_{t-j} - \sum_{k-1}^{q2} \alpha_{3k} lnAREA_{t-k} - \sum_{l-1}^{q3} \alpha_{4l} lnWA_{t-l} - \sum_{m-1}^{q4} \alpha_{5m} lnFET_{t-m} - \sum_{n-1}^{q5} \alpha_{6n} lnINS_{t-n} - \sum_{r-1}^{q6} \alpha_{7r} lnTRACT_{t-r} - \sum_{s-1}^{q7} \alpha_{8s} lnTW_{t-s} \ldots\ldots\ldots eq - 5$$

Results and Discussion

The stationarity status of all variables is examined. Accordingly, prior to investigating the long run correlation between wheat productivity and the independent variables, it is essential to assess the stationarity of the variables. Hence, Table No. 1 shows the ADF unit root test results, including trend and intercept.

Table 1
ADF Unit Root Test

Variables	At level	First Difference
lnWP	-4.7012***	-3.8274***
lnIMSD	-3.4583*	-6.6518***
lnAERA	-3.5126**	-9.6221***
lnWA	-0.3345	-11.8245***
lnFET	-3.8912	-6.7486***
lnINST	-4.7714***	-11.8352***
lnTRACT	-2.9865	-5.4981***
lnTW	-2.0326	-6.9591***

*Note: ***, **, * indicate that the rejection of null hypothesis of non-stationary at 1%, 5% & 10% level of significance. Source: Author's Calculation*

Table 1 presents the stationarity analysis of the variables. It is observed that wheat productivity, the area under cultivation of wheat, improved seed, and insecticide exhibit stationarity at their current levels, suggesting they are integrated of order zero (I(0)). On the other hand, fertilizer, tractors, and tube-wells demonstrate non-stationarity and are integrated of order one (I(1)). Based on these findings, employing the ARDL bounds test specification to estimate the model is a suitable approach.

ARLD Bound Test for Long Run Relationship

After confirming the stationarity of all variables, We utilized the ARDL bounds test to examine whether a long-run relationship exists among the variables. The outcomes of the ARDL bounds test are displayed in Table 2.

Table 2

ARDL Bounds Test for Co-integration Results

F-Statistics	Level of Significance	Lower Bound	Upper Bound	Decision
5.094570	10%	2.05	3.89	Co-integrated
	5%	2.52	3.23	
	1%	2.87	4.56	

Source: Authors' Calculation

The estimated findings from ARDL bounds test validate the presence of a long term relationship between wheat productivity and the independent variables. This is because of the calculated value of F-Statistic surpasses the upper critical value at a significance level of 5%.

Results Of Long-Run Relationship

The following Table 3 describes the long run relationship between wheat productivity and the independent variables.

Table 3

Calculated long-run coefficient using the ARDL Approach

	Dependent Variable: LnWP			
Regressors	**Coefficient**	**Std. Error**	**T-Ratio**	**P-value**
lnIMSD	0.131021***	0.035871	4.982541	0.0000
lnAERA	1.020036***	0.275631	3.432111	0.0026
lnWA	-0.758141*	0.358647	-2.278012	0.0401
lnFET	0.480417***	0.120249	3.901337	0.0016
lnINST	-0.027526	0.019950	-1.204447	0.2825
lnTRACT	0.013817	0.025272	0.590719	0.5811
lnTW	-0.493181***	0.004968	-3.401521	0.0038
Constant	0.495269	3.005413	0.167133	0.8235

*Note: *Level of Significance @ 10%; *** Level of Significance @1%*
Source: Authors' Calculation

The findings from Table 3 highlight significant relationships between various factors and wheat productivity. Specifically, the variables including area under cultivation of wheat, improved seed, and fertilizer demonstrate positive correlations with wheat productivity at a significance level of 1. Whereas, in the long run, a percentage increase in the area under cultivation of wheat, adoption of improved seed, and utilization of fertilizer correspond to an approximate increase in wheat productivity in Pakistan by 1.020036%, 0.131021% and 0.480417% respectively. These results emphasize the significance of factors such as the expansion of cultivated area, the adoption of certified/improved seed, and the appropriate use of balanced fertilizer in enhancing grain crop production and improving farmer welfare (Aryal et al., 2021; Chandio et al., 2018; Nordin & Hojgard, 2017; Khonje et al., 2015; Emmanuel et al., 2016).

Similarly, the coefficients of both water availability and insecticide display negative and statistically significant relationships at a 5% significance level. This means that under long run relationship, there were negative relationship found between water availability & insecticides and wheat productivity. It is pertinent to mention that in Pakistan, the majority of control over the irrigation system is held by landlords who own approximately 40% of the arable land, making it difficult to implement a wide range of reforms (Chandio et al., 2018; Koondhar et al., 2016; Buriro et al., 2015;). Moreover, because of Inadequate skills and knowledge, Pakistani small farmers are unaware of the proper application of insecticides during spraying on wheat crops. As a result, small farmers require training and workshops to learn the uses of insecticide on their crops. Furthermore, the use of cutting-edge agricultural technology is critical for timely crop sowing and harvesting. The tractors have a positive relationship with wheat productivity. This indicates that tractors are correlated to wheat productivity in the long run. Whereas, the coefficient of tractor is found 0.022814 which is statistically insignificant. These findings show

that a 1% increase in the use of tractor increases wheat production by nearly 0.013817%. On the other side, the coefficient of the tube-well is found negative and significant, indicating a long-term negative relationship between the production of wheat and the tube-well. This is because of the farmers in rural Areas generally use tube wells because of a lack of electricity. They use tube wells as source of water at high cost of diesel which and small-scale farmers cannot afford but they have to operate their tube wells.

Results of Short Run Error Correction

The dynamics of the variables were examined using the short run error correction method. The empirical results are shown in Table 4.

Table 4

Calculated ARDL Short Run Error Correction

Dependent Variable: LnWP				
Regressors	**Coefficient**	**Std. Error**	**T-Ratio**	**P-value**
Δ *ln*IMSD	0.5603	0.0447	1.1524	0.2550
Δ *ln*IMSD-1	-0.0267	0.0401	-0.8124	0.5606
Δ *ln*AREA	1.4867***	0.3046	4.2185	0.0005
Δ *ln*AREA-1	0.2790	0.3122	0.8454	0.4270
Δ *ln*WA	0.0200	0.3972	0.0482	0.9220
Δ *ln*WA-1	0.5743*	0.2956	1.8739	0.0720
Δ *ln*FET	0.3506***	0.1214	2.9958	0.0086
Δ *ln*FET-1	-0.2946**	0.1462	-2.1606	0.0432
Δ *ln*INST	-0.0652*	0.0327	-2.0119	0.0604
Δ *ln*INST-1	-0.0153	0.0279	-0.5895	0.6075
Δ *ln*TRACT	-0.0198	0.0394	-0.0465	0.6761
Δ *ln*TRACT-1	-0.0508	0.0400	-1.4177	0.1824
Δ *ln*TW	-0.0056	0.0062	-0.8495	0.3941
Δ *ln*TW-1	0.0027	0.0070	0.3657	0.7596
ECM (-1)	-1.3919***	0.2484	-5.9137	0.0000
R- Squared: 0.853912			Durbin-Watson Stat: 2.271897	
Adjusted R-Squared: 0.685439			F-Statistics: 4.188327 (0.002976)	

*Note: *Level of Significance @ 10%; ** Level of Significance @ 5%; *** Level of Significance @1%*
Source: Authors' Calculations

The analysis reveals that improved seed is positively correlated with wheat productivity in both short and long run. However, in the short run, this relationship is statistically insignificant, suggesting that the use of improved seed has no immediate impact on wheat productivity. This observation can be attributed to the prevalent adoption of traditional farming methods among the majority of small farmers in Pakistan. The high cost associated with certified / improved seed for wheat, rice, and maize varieties further discourages farmers from embracing this technology, resulting in low per-acre yields of wheat (Rana & Malik, 2021). On the other hand, the area under wheat cultivation exhibits a significant and positive association with wheat productivity

both in short and long run. The coefficient of 1.486742 indicates that a 1% increase in the area under wheat cultivation corresponds to a 1.48% increase in wheat productivity. These findings align with previous researches done by Jalil et al. (2023); Chandio et al. (2018); Ahmad (2011). However, in the short term, the relationship is statistically insignificant, suggesting that immediate changes in the area under cultivation do not have a significant impact on wheat productivity. The reliance on traditional farming techniques and the economic constraints faced by farmers regarding the adoption of improved/certified crop varieties contribute to these observations, leading to lower grain crop yields per acre in Pakistan (Rana & Malik, 2021).

Similarly, Fertilizer plays a crucial role in enhancing per-acre wheat production and ensuring favorable returns. A well-balanced and adequate use of fertilizer can result in approximately eight kilograms of wheat for every kilogram of fertilizer applied. The correlation between fertilizers and wheat productivity remains positive in both short and long run. Notably, in short run, fertilizers exhibit a significant positive coefficient of 0.350674 at a 1% level of significance. This finding implies that 1% increase in fertilizer usage leads to an approximate 0.35% increase in wheat productivity in the short term. However, it is important to note that a sustainable and sufficient supply of water for irrigation is a critical requirement for achieving consistent per acre yield productivity.

In short run, availability of water has positive impact on wheat productivity. This is because water is a key input in the agricultural production process and a lack of it can limit crop yields. When water is readily available, farmers can irrigate their crops, which can lead to increased yields (Brunel et al., 2013). Water availability has a positive coefficient of 0.574359 which is statistically significant at 10% level of significance. It implies that 1% increase in availability of water will enhance 57% in wheat productivity. Therefore, farmers need availability of water during sowing time of food grain crops. Without sufficient water, seeds may not germinate, or seedlings may wither and die, leading to reduced crop yields. However, as mentioned earlier, the relationship between water availability and crop production is more complex in the long run, and other factors must also be taken into account to ensure sustainable and resilient agricultural practices (Mishra, 2023).

Similarly, in both short and long run, insecticides, tractors and tube wells were discovered to have a negligible negative impact on wheat productivity. These outcomes align with the findings of previous researches conducted by Jalil et al. (2023); Chandio et al. (2018) and Badar et al., (2007). Finally, at a 1% level of confidence, the projected ECM is found negative i.e. -1.391942 and significant at 1% level of confidence. The ECM coefficient was found to be -1.391942, showing that adjustment tends towards the long-term equilibrium at a rate of 1.39 percent annually. The value of R-squared is found above 85% which indicates that the model is best-fitted.

Conclusion & Policy Implications

Increasing wheat productivity can indeed be an important determinant of economic growth and poverty reduction, particularly in developing countries where agriculture is a key sector of the economy. The study applied Autoregressive Distributed Lag (ARDL) model to explore the impact of major factors on wheat productivity for the period from 1981 to 2021. The results showed that there is correlation between wheat productivity (dependent variables) and other independent variables i.e., improved seed, area under cultivation of wheat, fertilizer, insecticides,

water availability, tractors and tube wells. The overall empirical analysis showed that the coefficient of improved seed, area under cultivation of wheat, fertilizer and tractor are found 0.1310, 1.0200, 0.4804 and 0.0138 respectively which have positive impact on wheat productivity in Pakistan both in short and long run. On the other side, water availability, insecticides and tube well have negative impact of wheat productivity.

The study recommends that there is need to provide subsidies to farmers for key agricultural inputs such as tractors, tube-wells, and fertilizers that can be an effective way to improve wheat productivity in Pakistan. Access to modern agricultural machinery and inputs can help farmers to increase their crop production and reduce the cost of production, which can improve their profitability and livelihoods. In addition, the knowledge and awareness of farmers about the appropriate use of fertilizers and pesticides can also have a positive impact on crop productivity. Agricultural extension officers can play a key role in providing technical assistance and training to farmers on best practices for crop management, including the optimal use of inputs such as fertilizers and pesticides. Moreover, small size group meetings and training workshops at the village level can be an effective way to reach out to farmers and provide them with practical knowledge and skills to improve their crop yields. By investing in agricultural education and extension services, policymakers and other stakeholders can help to promote sustainable agricultural practices and improve the livelihoods of farmers in Pakistan.

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