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Role of Media in Depression to The Viewers Watching Covid 19 Related News

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ARTICLE DETAILS

ABSTRACT

Purpose: The prevalence of depression among the general population is closely associated with exposure to COVID-19-related news but being a recent phenomenon, little work has been done on this issue. The focus of the present study is to hypothesize the relationship between media exposure to COVID-19-related news and the prevalence of depression across populations in Khyber Pakhtunkhwa, Pakistan, and comparatively, measure the source of news watching on a gender basis during Covid-19 among the different age groups.

Methods: Primary data were collected from 1150 respondents in Khyber Pakhtunkhwa, Pakistan through a structured questionnaire. Chi-square tests were applied to measure the relationship between media exposure to covid-19 news and depression at bi-variate and multivariate analyses.

Findings: Results disclosed that media exposure to covid-19 relates news causes depression among people. In addition, Media exposure was significantly associated with the respondent’s mental health problems at a 0.01 level of significance.

Implications: Findings of the study confirm most of the previous scholarly work on this issue, which concludes that watching Covid-19-related news is closely associated with a consequent increase in depression. The study recommended that health intervention campaigns should be initiated by the government on media to decrease the level of fear among people. The study also recommended that content spreading false information regarding COVID-19 may also be removed by the government from the media. Moreover, medical specialists and psychologists may be called to different media programs to share useful information about the pandemic. Official pages, containing the correct and useful information on the said pandemic, may also be created on various social sites by the government authorities for the benefit of the general population.

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Introduction

Some uncommon pneumonia cases were identified in Wuhan, China in December 2019, which was named corona disease (COVID-19) by the World Health Organization, on February 11, 2020 (Anand et al., 2020; Madabhavi et al., 2020; Zhou et al., 2020). Since then, many specifics about the virus, such as its origins and its potential to unfold and spread among people, remain unclear, a growing number of cases have been testified to be resulting of human-to-human transmission (Huang et al., 2020; Li et al., 2020; Özdin & Bayrak Özdin, 2020; Zhou et al., 2020). An empirical study on COVID-19 revealed that this novel virus attacks the human respiratory system (Madabhavi et al., 2020; TunÇ et al., 2020; Waris et al., 2020). It is mostly spread through the lungs and close physical interaction, resulting in gathering infections in families and hospitals (Wang et al., 2021). Fever, fatigue, and dry cough are some of the preliminary syndromes of COVID-19 (Huang et al., 2020). But, some medical experts in COVID-19-affected regions have discovered that a few patients identified with COVID-19 have no longer proven ordinary respiratory signs, such as coughing and temperature. Alternatively, certain COVID-19 sufferers have exhibited the simplest preliminary neurological signs, consisting of the subsequent: (1) cephalgia, dullness, walking unsteady and depression, which can be due to non-particular indicators triggered by COVID-19; (2) apoplexy; and (3) different “neurological diseases” (Huang et al., 2020; Wang et al., 2020). Furthermore, 79% of genetic resemblance was found in coronaviruses and SARS-CoV in 2003 (Anand et al., 2020; Xiong et al., 2020). COVID-19 rapidly spread across the world and contributed to the epidemic (Bao et al., 2020; Özdin & Bayrak Özdin, 2020). The WHO called the disease a worldwide pandemic on March 11, 2020 (Anand et al., 2020).

COVID-19 & Mental Health Problems

COVID-19 epidemic significantly affected the social, economic, and psychological life of people across the world (Di Renzo et al., 2020; Nicola et al., 2020). Besides, due to the outbreak of COVID-19, lockdowns on local and national levels upsurge panic and psychological problems among people, primarily associated with depressive behavior. Several empirical studies concluded that epidemics not only increased the risk of mortality but also led to unbearable mental health problems among the people (Duan & Zhu, 2020; Hao et al., 2020; Tan et al., 2020; Wang et al., 2021; Xiao, 2020). For instance, McIntyre and Lee (2020) reported that the ratio of suicide increased from 418 to 2114 in Canada closely co-existed with unemployment. Similar reports were also reported in Pakistan, the USA, India, France, Italy, and Germany (Mamun & Ullah, 2020; Thakur & Jain, 2020). Moreover, recent findings from the United Kingdom, Australia, South Africa, Spain, Korea, India, and Bangladesh indicate that the prevalence of mental health issues specifically depression and anxiety dramatically increase during the epidemic (Das et al., 2021; Jung et al., 2020; Pierce et al., 2020; Rossell et al., 2021; Varma et al., 2021). Notwithstanding, findings regarding COVID-19 and depression within the context of Pakistani society show that coronavirus in Pakistani surges depression among University level students (Salman et al., 2020).

Use of Media during the COVID-19 Pandemic & Mental Health Problems

Psychological distress among the population is the outcome of mass lockdown, closing of business activities, and self-isolation (Anand et al., 2020; Bao et al., 2020; Bendau, Petzold, Pyrkosch, Mascarell Maricic, et al., 2021). The situation got further aggravated in China by the misrepresentation of information by news channels which further increased fear and uncertainty among people (Bao et al., 2020). The work of Garfin et al. (2020) concluded that frequent media exposure to any public health issue, especially communicable diseases, can lead to mental distress. Likewise, the empirical work of Gao et al. (2020) also confirms that falsification of information on social media increased mental health problems. Similarly, the work of Bendau, Petzold, Pyrkosch, Mascarell Maricic, et al. (2021) disclosed
that undoubtedly media plays a significant role in disseminating information regarding COVID-19, and other governance arrangements. Broadcasting negative and unfiltered content negatively affects the psychological well-being of the people. Findings from the work of Gao et al. (2020) reconfirm that depression during the COVID-19 is closely associated with exposure to social media or constantly viewing COVID-19-related news. Likewise, Veer et al. (2020) and other research studies also suggested that frequent media coverage significantly contributed to various mental health problems among the viewers (Gao et al., 2020; Sasaki et al., 2020; Tayal & Bharathi, S, 2021). Similarly, an empirical study revealed that during the COVID-19 pandemic, moderately high paces of manifestations of psychological issues were reported in the general population in Spain, China, Italy, the United States, Turkey, and the Netherlands. Risk factors associated with the prevalence of psychological issues in the abovementioned countries was frequent exposure to media/news regarding COVID-19 (Xiong et al., 2020). In addition, an empirical study conducted in Iran during the COVID-19 outbreak explored that about half of the study respondents experience depression, factors that triggered depression are economic loss, fear of infection, and access to COVID-19 news (Khademian et al., 2021). Furthermore, a recent study explored that during the COVID-19 pandemic lockdown in Nepal, the prevalence of depression is more common among those people who frequently access COVID-19 news (Sigdel et al., 2020).

Current Focus
In Pakistan (the research context), the Ministry of Health, Government of Pakistan, report the first case of COVID-19 on February 26, 2020, in Karachi, Sindh migrated from Iran. Likewise, another case was reported by Pakistan’s Federal Ministry of Health in Islamabad on the same day (Waris et al., 2020). In Pakistan media's role in COVID-19 has been unsatisfactory. The news of COVID-19 is being covered by Pakistan's media. However, the news or transmissions are frequently arranged without medical specialists. Senior journalists or opposing politicians are called as experts for a debate about the COVID-19 epidemic on talk shows or programs, where they just dispute with other participants or journalists to raise ratings. Besides television broadcasts frequently employ frightening phrases and terminology. As it appears that there are endless deaths, with more and more deaths approaching soon, the news disseminates more discussions about death and disappointments than about life and hope. Instead of encouraging people, which certainly promotes depression and anxiety (Latif et al., 2020). Moreover, several empirical studies have been conducted on the negative impact of COVID-19 on the mental health of people across the world. However, minimal empirical work has been conducted in Pakistan from this purview. Excessive exposure to COVID-19-related information via media amplifies stressful behavior and such a situation is proportional to mental agony. This dilemma ultimately results in the development of divergent forms of mental health issues in the target group. The prime focus of the present study is to identify media coverage of COVID-19 as stimulants behind the depression of the target group. Thus, this study was carried out with the following hypothesis:

The Hypothesis of the Study

H1: Media exposure to COVID-19-related news is positively associated with the Prevalence of Depression

Media exposure to COVID-19-related news will increase Depression among viewers

Methods
Ethical approval for this study was granted by the Department of Sociology and Psychology, University of Swabi-Pakistan.

Study Design, Sampling, Sample Size, Setting & Duration
The present study was carried out under the philosophy of cross-sectional design in Khyber Pakhtunkhwa, Pakistan. Primary data was collected from 1150 respondents including males and females through an online survey method while using convenience sampling during the third wave of COVID-19 from 3 March to 5 April 2021.
Conceptual Framework of the Study
To obtain answers to study questions i.e. how does media exposure to COVID-19-related news contribute to depression? For this purpose, the current study made up a conceptual framework of the following variables: media exposure to COVID-19-related news (independent variable) and the prevalence of depression (dependent variable), and one background variable (gender). Moreover, gender is the demographic variable in this research that is a type of qualitative variable in statistics. The research variables are the media exposure to COVID-19-related news and the prevalence of depression. Where the information regarding the above-mentioned variables is taken by different attributes in the analysis.

<table>
<thead>
<tr>
<th>Table 1: Conceptual Framework of the Study</th>
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</thead>
<tbody>
<tr>
<td><strong>Background Variable</strong></td>
</tr>
<tr>
<td>Gender</td>
</tr>
</tbody>
</table>

Factors Related to the Research Variables
The important attributes regarding media exposure and COVID-19 are taken from the empirical work of Ullah and Muhammad (2020). The questions related to the research variables are shared with participants included in the survey. The responses were taken in form of yes or no and afterward, it was converted into coding for analysis. The details regarding the questions asked by the respondents through the questionnaire are mentioned in Table 2.

<table>
<thead>
<tr>
<th>Table 2: Variables Operationalization</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Variables</strong></td>
</tr>
</tbody>
</table>
| Media exposure to COVID-19-related news | 1. Media keep you busy for multiple hours  
2. You mostly Watching COVID19 related news  
3. Media now a day’s frame COVID-19 related news  
4. Social media exposes you to COVID-19 information  
5. See pictures of covid-19 patients on social media  
6. Use Facebook page or other social networks for COVID-19 information  
7. Sharing covid-19-related news on your social media pages  
8. Downloading clips from media regarding COVID-19 information  
9. COVID-19 content you are watching has a great influence on your mental health |
| Prevalence of Depression | 1. You always get depressed  
2. Smashing things reduce your depression  
3. Problems in appetite  
4. Suicidal thoughts  
5. Difficulty in sleeping  
6. Lack of interest  
7. Hopelessness  
8. Feeling worried  
9. Low in energy, |
| Gender | 1. Male  
2. Female |
| Age in year | 1. 20-30  
2. 31-40  
3. 41-50 |
| COVID-19-related news information sources | 1. Internet media (e.g., We chat groups, WhatsApp groups, Facebook pages, Instagram, Twitter, blogs, and internet news)  
2. Traditional media (e.g., newspapers, television, and radio broadcasting) |

Tools for Data Collection
Primary data regarding study variables (i.e. media exposure and depression) was collected through a structured questionnaire via a google survey. The link of the survey was shared among the respondents through different platforms of social media (Facebook, WhatsApp, We Chat).
All attitudinal statements of the independent and dependent variables were indexed by merging all the items into a single variable for measurement and cross-tabulated. However, the process of indexation was done based on the factors related to COVID-19 and media respectively. The average of all the responses related to COVID-19 and media is then used as the research variables in the analysis.

**Data Analysis**

Frequency and percentage are provided in descriptive analysis with all samples. Moreover, the association between *Media exposure to COVID-19-related news* and the prevalence of depression among people was measured through a Bi-variate analysis. In Bivariate analysis, only the relation between the independent and dependent variables was examined. The Chi-square test was applied to analyze the correlation between the study variables.

The strength and direction of association between variables were measured using Kendall's Tau-b (Frankfort-Nachmias et al., 1992). It has a value that varies from -1 to +1. The dependent variable can be correctly calculated using the independent variable if the coefficient is 1. A positive coefficient value indicates that the variables have a direct relationship.

**Multivariate Analysis through Contingency Tables**

The multivariate analysis helped to assess further variations in independent and dependent variables due to background variables. in the present study Multivariate analysis was used to assess whether or not the difference in the prevalence of depression due to *Media exposure to COVID-19-related news* was influenced by control variables i.e. gender. To determine the relationship of the study variables, Chi-square tests were applied. All the aforementioned analysis was carried out through (SPSS) version 25.

**Eligibility Criteria**

Only those participants were included in the present study who are currently living in the province of Khyber Pakhtunkhwa. While respondents from other provinces of Pakistan were excluded during data screening. Moreover, incomplete responses were also excluded from the analysis.

**Results**

Data presented in table 3 show that for the male gender, about two-thirds 68.7% of the participant used internet media (e.g., We chat groups, WhatsApp groups, Facebook, Instagram, Twitter, blogs, and internet news) in the age group 20-30 years, compared to other age groups shown in the table. Likewise, about half of the respondents (49.1%) used traditional media in the age group of 41 and 50 years than other age groups. However, for the female gender more than half (64.2%) of the participants used internet media (e.g., We chat groups, WhatsApp groups, Facebook, Instagram, Twitter, blogs, and internet news) in the age group 20-30 years, compared to other age groups. Likewise, about half of the respondents (45.8 %) used traditional media in the female age group of 41 and 50 years than other age groups.

**Table 3**  
Information Regarding Use of Information Among Different Age Groups

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age Group in Years</th>
<th>Information Source</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Internet Media</td>
<td>Traditional Media</td>
</tr>
<tr>
<td>Male</td>
<td>20-30</td>
<td>380(68.7%)</td>
<td>8(5%)</td>
</tr>
<tr>
<td></td>
<td>31-40</td>
<td>78(14.1%)</td>
<td>38(23.6%)</td>
</tr>
<tr>
<td></td>
<td>41 -50</td>
<td>87(15.7%)</td>
<td>79(49.1%)</td>
</tr>
<tr>
<td></td>
<td>51 and above</td>
<td>8(1.4%)</td>
<td>36(22.4%)</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>553(100%)</td>
<td>161(100%)</td>
</tr>
<tr>
<td>Female</td>
<td>20-30</td>
<td>204(64.2%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td></td>
<td>31-40</td>
<td>76(23.9%)</td>
<td>34(28.8%)</td>
</tr>
<tr>
<td></td>
<td>41 -50</td>
<td>34(10.7%)</td>
<td>54(45.8%)</td>
</tr>
<tr>
<td></td>
<td>51 and above</td>
<td>4(1.3%)</td>
<td>30(25.4%)</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>318(100%)</td>
<td>118(100%)</td>
</tr>
</tbody>
</table>
Relationship of Media Exposure to COVID-19 Related News with Prevalence of Depression (Controlling Gender of the Participant)
The results revealed that watching COVID-19-related content on media triggered various mental health problems among the general population. In the present study, data were collected through an online survey regarding media exposure to COVID-19-related news and the prevalence of depression. To determine the association between people's media exposure to COVID-19-related news and the prevalence of depression, the Chi-square test was carried out. Findings of the Chi-square show that COVID-19-related media exposure was discovered highly significant with people's depression, as the value of Chi-square shows 12.787 highly significant at a 1% level of significance and positive (Tb=0.105). Thus, the above-mentioned findings clearly show that media exposure to COVID-19-related news contributed to depressive behavior among people in the study context. Furthermore, the prevalence of depression caused by media exposure among males and females was further explained through multivariate analysis. The findings of the study show that the association between the role of media exposure to COVID-19-related news and the prevalence of depression among people was found strongly significant (p = 0.000) and positive (Tb = 0.128) in the male participant. However, in the female participants the association in above-mentioned variables was found positive (Tb = 0.067) but non-significant (p =0.139).

Table 4: Relationship of Media Exposure to COVID-19 Related News with Prevalence of Depression (Controlling Gender of the Participant)

<table>
<thead>
<tr>
<th>Background Variable</th>
<th>Independent Variable</th>
<th>Prevalence of Depression</th>
<th>Statistics</th>
<th>Level of significance for the entire table</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>Media exposure to COVID-19 News</td>
<td>181(78%)</td>
<td>74(71.8%)</td>
<td>$x^2 = .495$</td>
</tr>
<tr>
<td></td>
<td>No media exposure to COVID-19 News</td>
<td>51(22%)</td>
<td>29(28.2%)</td>
<td>$T^b = 0.067$</td>
</tr>
<tr>
<td>Male</td>
<td>Media exposure to COVID-19 News</td>
<td>501(89.5%)</td>
<td>204(80%)</td>
<td>$x^2 = 13.422$</td>
</tr>
<tr>
<td></td>
<td>No media exposure to COVID-19 News</td>
<td>59(10.5%)</td>
<td>51(20%)</td>
<td>$T^b = 0.128$</td>
</tr>
</tbody>
</table>

Discussion
The present study ascertains the relationship between media exposure to COVID-19-related news and the prevalence of depression among people living in Khyber Pakhtunkhwa. Media have been used extensively as a major source for getting health information, especially during health-related pandemics (Ngien & Jiang, 2021). Moreover, the results of the study indicated that media exposure to COVID-19-related news was found strongly significant and positive with depression. These findings could be attributed to the fact that excessive media coverage of COVID-19 could contain videos and news of overpopulated hospitals or dresses that medical teams wear to protect themselves from this novel virus when treating the patient. Viewing such frightening content could contribute to distressing behavior. Likewise, a reporter from Geneva indicates that the overflow of information may also cause mental health problems (Zarocostas, 2020). Furthermore, they also revealed that an overspill of information during an outbreak also spearred false information and conspiracy theories (Zarocostas, 2020). In addition, the findings of the present study are closely in line with the work of Veer et al. (2021) who conducted an online survey and collected data from “Belgium, Hong Kong, Hungary, Italy, the Netherlands, Poland, Serbia” and some other countries concluded that media coverage to COVID19 significantly co-exists with psychological distress. A recent study conducted in Germany and china explored that a positive association exists between exposure to COVID19-related information and symptoms of depression (Bendau, Petzold, Pyrkosch, Maricic, et al., 2021). However, another research study from Singapore reveals that openness to COVID-19 news is a modifiable danger factor, but one potential approach to alleviating hazards might be through spreading official warnings using social...
media (Liu & Tong, 2020). Thus, during Covid-19, people in the research site (Pakistan) also got restricted to their house and all their outdoor activities were closed due to mass lockdown. Furthermore, economic crises and other family burdens when accompanied by media exposure significantly upsurge the prevalence of depression (Bueno-Notivol et al., 2021; Kazmi et al., 2020; Mazza et al., 2020). These findings are closely in line with some previous studies. For instance, during the COVID-19 epidemic, contradictory and misleading information, misinformation, and rumors regarding the COVID-19 on social media enhanced fear and psychological problems among people (Bueno-Notivol et al., 2021; De Girolamo et al., 2020; Gao et al., 2020). Likewise, a study conducted in China explored that excessive consumption of social media contributed to anxiety (Gao et al., 2020). Besides, several previous studies have proven the significance of media coverage during earlier pandemics, demonstrating that the type and frequency of news reporting have a substantial impact on people's health attitudes and behavior (Codish et al., 2014; Keramarou et al., 2011; Yan et al., 2016). Furthermore, social media, in particular, may have the capacity to (partially) overcome the issues created by the limitations of face-to-face communication. Many people use platforms like Twitter, Instagram, Facebook, or specific internet forums to share their personal experiences, opinions, worries, moments of happiness, or fears in these times, as evidenced by a dramatic increase in COVID-19-related terms on these channels, reaching many million mentions by March 2020. As a result, this kind of communication may have an essential role in psychological well-being, and using social media to remain in touch with key people is strongly advised by the Germany official sites (Bendau, Petzold, Pyrkosch, Mascarell Maricic, et al., 2021; Wiederhold, 2020).

Conclusion And Recommendation
It has been affirmed from the study’s findings that during COVID-19, media coverage of the said pandemic is significantly associated with depression among people. Watching traumatic contents co-exist with poor mental health. The findings of this study were also closely in line with other empirical studies conducted in different parts of the world. Given these findings, the study recommends that health intervention campaigns on media should be started by the government to decrease the level of fear among people. The study also recommends that content containing misinformation regarding COVID-19 may be removed by the government from the media. Moreover, medical specialists and psychologists may be invited to different media programs for sharing useful information as to that effect. Official pages, containing the correct and useful information on the said pandemic,

Limitation and Study Forward
The present study had some limitations. The ratio of the female participant is very low compared to male participation due to cultural and other social restrictions. Moreover, some other factors including economic crises and self-isolation may be contributed to depression. Exposure to media in COVID-19 news alone could not grip the total reality. However, scholars can work on other factors that negatively influence mental health.

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Impact of Green Intellectual Capital on Sustainable Green Banking: Moderating Role of Competitive Pressure

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ARTICLE DETAILS
History
Revised format: May 2022
Available Online: Jun 2022

Keywords
Green Intellectual Capital (GIC), Green Human Capital (GHC), Green Structural Capital (GSC), Green Relational Capital (GRC), Sustainable Green Banking (SGB)

JEL Classification
C12, G28, Q01, O34

ABSTRACT
Purpose: Adoption of an environmentalist perspective in banking operational base through social, economic, and environmentally sustainable activities becomes debatable for firm performance. The study aims to examine the impact of green intellectual capital on sustainable green banking and the moderating role of competitive pressure between them.

Design/Methodology/Approach: The study surveyed by using self-administrative questionnaires from the bank employees of Rawalpindi and Islamabad. The data was collected from a sample size of 351 by using a random sampling technique. The measures of Green Intellectual Capital (GIC) are encompassed three elements as Green human capital (GHC), Green Structural Capital (GSC), and Green Relational Capital (GRC) comprising 18 items (Yusof, Omar, Zaman, & Samad, 2019) and moderator competitive pressure comprising of 7 items was adopted (Sophonthummapharn, 2009).

Findings: The result of the study shows that green intellectual capital positively contributes toward achieving sustainable green banking. Competitive pressure moderates the said relationship in the context of the Pakistani banking sector. The finding of the study implies that banks in Pakistan implement green activities because of the competitive force of the external environment and achieve both sustainability in terms of environmental protection and less amount of carbon print. Therefore, banks have more focus on the use of green intellectual capital containing green human capital, green structural capital, and green relational capital than the banks achieve sustainable green banking.

Implications/Originality/Value: The study provides a practical implementation for banks to move towards sustainable green banking.

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**Introduction**

Green banking is gaining tremendous importance across the world and banks are taking initiatives toward the protection of environmental degradation through green policies and sustainable activities (Bukhari, Hashim, & Amran, 2019). Green banking is also prospering in developing nations such as Pakistan. In this context, the State Bank of Pakistan has given guiding principles for Green Banking in 2017 as per the recommendation of PEPA (Act-1997). The purpose behind this is the formation of Green Banking administrations to achieve sustainability (Siddiqui, Aisha, & Rasheed, 2019). Moreover, the banks achieve this sustainability by showing concern for environmental protection. The green management system enables the banks to provide their customers with green products i.e. the products that fulfill their needs as well as satisfy their concerns toward environmental protection to accomplish success in both ecological and financial ways (Chang & Chen, 2012).

Green intellectual capital may prove as a great element to help firms in boosting their market share by viably using human, basic, and social capital. Literature supports that the accomplishment of sustainability is largely dependent on intangible assets than tangible assets i.e. human assets, knowledge dissemination, and effective utilization of structural resources (Allameh, 2018). Therefore, organizations need to give more attention to human resource management as banks can achieve sustainability when employees show concern for environmental protection (Yong et al., 2019a).

Numerous researchers have examined the relationship of green intellectual capital with business sustainability, knowledge sharing, social capital, and productivity in various contexts other than banks (Yusof, Omar, Zaman, & Samad, 2019; Cavicchi & Vagnoni, 2017), and supports that green basic and green social capital has an optimistic bond with the sustainability of different businesses. On the other hand, different studies show that green intellectual capital and more concern about the environment help to increase corporate image but affect the profits to some extent. Others examined that corporate sustainability performance is a multidimensional idea affected by employees' behavior, individual managerial cognition, knowledge distribution, and relation with stakeholders (Yusliza et al., 2020; López-Gamero et al., 2011). Moreover, the human capital interactions and communication within banks with an effective knowledge management process help the employees to work together to increase performance which is one of the intangible assets and a most important determinant of the knowledge economy. Hence, green intellectual capital with classification as; green human capital, green structural capital, and green relational capital has an incredible relationship with organization performance and can decrease or increase the performance of organizations.

Various researchers have investigated the relationship between green intellectual capital, organizational performance, and sustainability in manufacturing firms, or hotel industry, etc. however, limited studies have investigated the influence of green intellectual capital on green banking or sustainable practices in the banking sector (Yusliza et al., 2020; Chen, 2008; Allameh, 2018; Elberdin, 2017). Furthermore, very few studies have considered the moderating role of variables between intellectual capital and sustainability. Therefore, this paper is designed to add to the existing gap of knowledge by investigating the impact of green intellectual capital on sustainable green banking and by considering the moderating effects of competitive pressure.
The objectives of this study are: to examine the impact of green intellectual capital comprised of green human capital, green structural capital, and green relational capital on sustainable green banking. Furthermore, to determine whether the competitive pressure increases the relationship between green intellectual capital and sustainable green banking. The ever-increasing globalization builds pressure on banks to make policies and strategies to contribute to environmental protection. Moreover, people are also concerned about consumption and prefer environmentally friendly servers. The present study is designed to analyze the effects of various forms of Green intellectual capital on the sustainability of the conventional and Islamic banking sectors in Rawalpindi and Islamabad. Besides, this study aims to investigate whether the effects of green intellectual capital on sustainable green banking are moderated by the competitive pressure in the conventional and Islamic banking sectors in Rawalpindi and Islamabad or not.

Literature Review
The propagates of green banking adopt environmentalism as their operational base in banking activities. The adoption of green banking is not just a change in the operations of the bank, but also a cultural change in the banking sector. Green banking involves guidelines and policy-making for the restructuring of operations of the banks. Although all the operations of the banks remain the same there is an improvement in the operational activities attributed to the sustainable environment. Green banks will use less paper and concentrate on electronic transactions. Moreover, green banks are the organizations having environmental protective strategies that convert their structural capital into green structural capital with help of green human capital and made relationships with investors, customers, and suppliers based on green relational policies (Dočeškalová & Kocmanová, 2016). Social sustainability refers to behaving right to employees and attracting them towards green activities to achieve environmental sustainability. Yusliza et al. (2020) highlighted the key roles of the organization to behave socially responsible and environmentally responsible to achieve sustainable economic performance, and also encourage human capital in organizations to behave green and become competitive in this highly competitive business world.

Intellectual capital and its importance have drawn the attention of many researchers. Intellectual capital along with environmental concerns is becoming a topic of interest (Yong et al., 2019b). There are two types of studies related to intellectual capital. One is intellectual capital management and the other is intellectual capital measurement. The former includes the management of assets like knowledge of intangible assets and capabilities of the banks to create a competitive advantage. Later one consists of gathering, compiling, and analyzing the non-financial assets (Elberdin, 2017).

However, Intellectual capital is a concept that is consist of different dimensions i.e. experience, capabilities, and practical knowledge for extracting value for organizations by providing non-physical and non-monetary resources (Allameh, 2018). With an increase in environmental consciousness, more organizations are behaving responsibly towards green practices which is an effective step toward green intellectual capital development (López-Gamero et al., 2011). Green Intellectual capital is characterized as "a wide range of elusive resources containing abilities, data, and information, and so on for the insurance of nature at both individual and organization level within the company"(Chen, 2008b). Moreover, Liu, (2010) characterized Green Intellectual capital as the "aggregate of all green and natural information that helps the management of any organization to gain a competitive advantage". López-Gamero et al., (2011) argued that in most firms like manufacturing, banks, etc. sustainability depends on the future outcomes as compared to the current outcomes, and the recommended outcomes are achieved through knowledge, the main source of knowledge is intellectual capital in any organization (Yong et al., 2019b). Therefore, based on the above discussion following hypothesis has been proposed;

**H1**: Green intellectual capital significantly impacts sustainable green banking practices of commercial banks in Pakistan.
The literature presents three dimensions under green intellectual capital among them Green human capital is important for any organization to achieve competitive advantages, as environmental degradation is increasing day by day and need a quick response from banks and other organizations to develop protective measures for the environment (Fernando et al., 2019). Resource-Based View Theory depicts that banks as an organization consist of physical and non-physical resources i.e. humans as a resource for good performance (Malik et al., 2020), so by better utilization of human capital resources, the organization gets a competitive position among competitors (Barney, 2001).

However, in any organization, green human resources embraced green practices such as working on a paperless approach, carbon footprint reduction, making surrounding green by foresting awareness, initiating friendly environment activities, and waste management (Yong & Fawehinmi, 2019). Chen (2008) describes green human capital as the employee’s abilities, aptitudes, experience, duty, inventiveness, and endeavors for the protection of the environment. Human capital is linked with the procedures such as enhancing their capabilities through training and educating the employees that enhance the abilities, expertise, and knowledge of the employees ultimately leading to satisfaction of employees and the improvement in the operations of the bank (Scarpellini et al., 2017). Banks that efficiently utilize their intellectual capital can perform effectively (Wang et al., 2011). According to the Resource-Based View, theory resources must be rare, valuable, and non-substitutable to achieve competitive advantage and to exploit different opportunities (Barney, 2001). Based on the above discussion following hypothesis has been proposed.

**H2**: Green human capital significantly impacts sustainable green banking practices of commercial banks in Pakistan.

Previous research pointed out structural capital as the knowledge that is institutionalized in the entire organization’s routines, structure, and culture in the form of databases, technology, etc. (Carlos & Martos, 2012). These intangible assets are valuable for the banks. It is also known as organizational capital that is rooted in the organization and this capital cannot be taken away if the employees leave the bank (Cavicchi & Vagnoni, 2017). Chen (2008) characterized structural capital as “the set of commitments, capabilities, information, databases, technologies, management philosophies and institutions, processes to operate, culture, and image which comes under intangible assets”. If this capital dimension comes and works for environmental protection in banks, it becomes the green structural capital.

Moreover, green structural capital and environmental protection are associated with each other (Jardon & Dasilva, 2017). One of the elements of structural capital that are IT molds into green hardware, software, networks, and IT system based on environmental protection, making the structural capital the green IT capital (Chuang & Huang, 2018). Based on the above discussion following hypothesis has been proposed.

**H3**: Green structural capital significantly impacts sustainable green banking practices of commercial banks in Pakistan.

Literature supports relational capital as “banks or organizations made a relationship with their suppliers, customers, partners, and network members to achieve competitive advantages” (Chen, 2008a). Barr (1988) gave the new "stakeholder view" for the organizations as different managers and management scholars found distinct interdependencies and interconnectedness between employees, investors, customers, and infirm communities because of network efforts and relationships that lead toward wealth maximization. According to the stakeholder theory, the connection among an association's workers with speculators, clients, and suppliers leads to competitive advantages (Donaldson & Preston, 1995).
Moreover, stakeholder associations are significant for financial benefits and are crucial for distinct issues at distinct times (Kianto et al., 2013). Green relation capital as associated with the suppliers in supply chain management asserts that environmental perspectives of the supply chain play a significant role in sustainability (Jabbour et al., 2019). Therefore, as the social responsibilities of different organization are increasing with time because of the issue of globalization in the world, relationship capital that is intangible asset help to achieve sustainability (Eweje, 2014). Association with customers and investors is also taking concern in fields of different organization and banks, customers behavior about environment protection now matters a lot as compared to the concern towards price, product, and service that is crucial for sustainable green banking achievement in the banks and sustainability achievement in the different organization (Luthra et al., 2016). Based on the above discussion following hypothesis has been proposed.

**H4:** Green relational capital significantly impacts sustainable green banking practices of Pakistani commercial banks.

Due to intense competition in the banking industry, banks are focusing on building a competitive image by creating customers' awareness about the efforts of banks in environmental protection, by participating in activities related to showing themselves more responsible towards the environment, customers, investors, and other stakeholders. Based on the above discussion following hypothesis has been proposed.

**H5:** Competitive pressure positively moderates the relationship of Green intellectual capital with sustainable green banking.

### Theoretical Framework

![Theoretical Framework Diagram](attachment:image.png)

### Methodology

The study population encompasses 3600 employees of all banks in the area of Rawalpindi and Islamabad. The sample of the study is comprised of 350 bankers. Data from primary sources for this research is gathered by utilizing a 5-point scale that's a Likert scale survey. The measures of GIC encompassed three elements as GHC, GSC, and GRC were adopted. (Yusof, Omar, Zaman, & Samad, 2019). Comprising the 18 items and moderator that is competitive pressure comprising 7 items was also adopted (Sophonthummapharn, 2009). The measurement constructs are attached at the end of the annexure. The data is analyzed using SPSS (V.23.0).
Results and Analysis

### Table 4.1: Reliability Analysis

<table>
<thead>
<tr>
<th>Study Variable</th>
<th>No. of items</th>
<th>Cronbach Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>GHC</td>
<td>5</td>
<td>0.772</td>
</tr>
<tr>
<td>GSC</td>
<td>8</td>
<td>0.804</td>
</tr>
<tr>
<td>GRC</td>
<td>5</td>
<td>0.713</td>
</tr>
<tr>
<td>SGB</td>
<td>21</td>
<td>0.870</td>
</tr>
<tr>
<td>CP</td>
<td>7</td>
<td>0.784</td>
</tr>
</tbody>
</table>

### Table 4.2: Demographics of Respondents

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Demographics</th>
<th>Characteristics</th>
<th>Frequencies</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gender</td>
<td>Male</td>
<td>230</td>
<td>65.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td>120</td>
<td>34.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total</strong></td>
<td><strong>350</strong></td>
<td><strong>100.0</strong></td>
</tr>
<tr>
<td>2</td>
<td>Age</td>
<td>Below 20</td>
<td>2</td>
<td>6.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20-29</td>
<td>39</td>
<td>11.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30-39</td>
<td>63</td>
<td>18.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40-49</td>
<td>179</td>
<td>51.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50-59</td>
<td>58</td>
<td>16.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60 and above</td>
<td>9</td>
<td>2.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total</strong></td>
<td><strong>350</strong></td>
<td><strong>100.0</strong></td>
</tr>
<tr>
<td>3</td>
<td>Qualification</td>
<td>Bachelors</td>
<td>27</td>
<td>7.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Masters</td>
<td>177</td>
<td>50.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M. Phil</td>
<td>122</td>
<td>34.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PhD</td>
<td>24</td>
<td>6.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total</strong></td>
<td><strong>350</strong></td>
<td><strong>100.0</strong></td>
</tr>
<tr>
<td>4</td>
<td>Tenure</td>
<td>Less than 1 yr</td>
<td>6</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-5 yrs</td>
<td>54</td>
<td>15.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6-10 yrs</td>
<td>142</td>
<td>40.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11-15 yrs</td>
<td>140</td>
<td>40.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Above 15 yrs</td>
<td>8</td>
<td>2.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total</strong></td>
<td><strong>350</strong></td>
<td><strong>100.0</strong></td>
</tr>
<tr>
<td>5</td>
<td>Banks Sector</td>
<td>Private</td>
<td>172</td>
<td>49.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public</td>
<td>67</td>
<td>19.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Islamic</td>
<td>104</td>
<td>29.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Foreign</td>
<td>7</td>
<td>2.0</td>
</tr>
</tbody>
</table>

### Table 4.3: Pearson Correlation among variables

<table>
<thead>
<tr>
<th></th>
<th>SGB</th>
<th>GHC</th>
<th>GSC</th>
<th>GRC</th>
<th>CP</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGB</td>
<td></td>
<td>.748**</td>
<td></td>
<td>.773**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>350</td>
<td>350</td>
<td>350</td>
<td>350</td>
<td></td>
</tr>
<tr>
<td>GHC</td>
<td>.000</td>
<td></td>
<td>.809**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>350</td>
<td>350</td>
<td>350</td>
<td>350</td>
<td></td>
</tr>
<tr>
<td>GSC</td>
<td>.000</td>
<td>.000</td>
<td></td>
<td>.826**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>350</td>
<td>350</td>
<td>350</td>
<td>350</td>
<td></td>
</tr>
<tr>
<td>GRC</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>350</td>
<td>350</td>
<td>350</td>
<td>350</td>
<td></td>
</tr>
<tr>
<td>CP</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>350</td>
<td>350</td>
<td>350</td>
<td>350</td>
<td>350</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).
Correlation measure the quality of direct linkage among factors. The above table mentions a diagonal value of 1 shows, a perfect correlation between variables. The value of correlation among SGB and GHC is 0.748 at the significant level of 0.01, and the significance of these variables is 0.000 which means the relation between these two variables is significant as (r=.748**, p<.01). Correlation value between SGB and GSC is 0.773 and significance value is 0.000 as (r=.773**, p<.01). So, these two are significantly positively correlated. The value of the correlation between SGB and GRC is 0.783 and the significance value is again 0.000 as (r=.783**, p<.01), so they also are positively correlated. Moreover, SGB and CP are also correlated at 0.822 with a 0.000 significance value or (r=.822**, p<.01). Even though the variables are correlated with one another, the collinearity statistics mentioned below clearly indicate that there is no multicollinearity issue in data.

To test the first four hypotheses, regression analysis has been conducted.

**Table 4.4: Model Summary (Impact of GHC, GRC, and GSC on SGB)**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error in the Estimate</th>
<th>Change Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.825a</td>
<td>.681</td>
<td>.679</td>
<td>.24758</td>
<td>R Square Change</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F Change</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sig. F Change</td>
</tr>
<tr>
<td>1</td>
<td>.825a</td>
<td>.681</td>
<td>.679</td>
<td>.24758</td>
<td>.681</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>246.647</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.000</td>
</tr>
</tbody>
</table>
| a. Predictors: (Constant), GRC, GHC, GSC

In the second column the R (.825a), demonstrates an association among predictors and dependent variables while R² (.681), is the explanation of variance. So, by the illustration of this statistic, both variables IVs and DV are mutually correlated. Moreover, independent variables i.e. GRC, GHC, and GSC explains a 24.75% variation in the dependent variable which is SGB (sustainable green banking).

**Table 4.5: ANOVA (Impact of GHC, GRC, and GSC on SGB)**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>45.354</td>
<td>3</td>
<td>15.118</td>
<td>246.647</td>
<td>.000a</td>
</tr>
<tr>
<td>1</td>
<td>Residual</td>
<td>21.208</td>
<td>346</td>
<td>.061</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>66.561</td>
<td>349</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: SGB
b. Predictors: (Constant), GHC, GRC, GSC

The results are given F value (246.6), which demonstrates that independent variables with a significance value of 0.000 significantly explain good variation in the dependent variable i.e. sustainable green banking and both have a significant linear relationship between them.

**Table 4.6: Coefficients (Impact of GHC, GRC, and GSC on SGB)**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>1.014</td>
<td>.119</td>
<td></td>
<td>8.540</td>
</tr>
<tr>
<td>1</td>
<td>GHC</td>
<td>.210</td>
<td>.047</td>
<td>.243</td>
</tr>
<tr>
<td></td>
<td>SIG</td>
<td>.223</td>
<td>.051</td>
<td>.266</td>
</tr>
<tr>
<td></td>
<td>GRC</td>
<td>.319</td>
<td>.048</td>
<td>.375</td>
</tr>
</tbody>
</table>

a. Dependent Variable: SGB

From the demonstration of results given in the above table, the t-value for GHC is 4.476, for GSC is 4.344, and for GRC is 6.621 with a significance 0.000 illustrating the positive impact of GHC, GRC, and GSC on sustainable green banking. Furthermore, these variables are the strongest predictor of sustainable green banking. So, on basis of statistical results, the hypothesis is accepted.

Moreover, the last column in the above table shows multicollinearity. It checks the similarity between the independent variables and is examined by a variance inflation factor (VIF) and tolerance (Hinton, McMurray, & Brownlow, 2014). A small tolerance value indicates that the variable under consideration...
is almost the perfect linear combination of independent variables. The values of tolerance in this study results are between 0-1 showing the accepted linear combination of variables. Furthermore, VIF measures the impact of multicollinearity among the variables in the regression model and its value should lie between 1 and 10. VIF values in the results of the study are between 1 and 10 depicting that there is no multicollinearity among the variables. Hence, concluding that the regression model is good with no multicollinearity and a perfect linear combination of the independent variable.

Next, it is measured whether competitive pressure moderates among green intellectual capital & sustainable green banking, an analysis of moderation (Hayes, Model 1) is utilized, and entered variables in the model are; sustainable green banking, green intellectual capital, and competitive pressure.

Table 4.7: Model Summary (Moderating Impact of CP)

<table>
<thead>
<tr>
<th></th>
<th>R</th>
<th>R-sq</th>
<th>MSE</th>
<th>F</th>
<th>df1</th>
<th>df2</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>constant</td>
<td>.8443</td>
<td>.7128</td>
<td>.0553</td>
<td>65.0532</td>
<td>3.0000</td>
<td>346.0000</td>
<td>.0000</td>
</tr>
</tbody>
</table>

The results for multiple regression through process by Andrew F. Hayes by using model 1 are given in the above table, in which the R (.8443) value shows the correlation between variables, R² (.7128) value shows 71.27% of the variation is caused by predictor variable. Moreover, the F value is (65.0532) at a significance value of 0.000.

Table 4.8: Model (Moderating Impact of CP)

<table>
<thead>
<tr>
<th></th>
<th>coeff</th>
<th>Se</th>
<th>T</th>
<th>p</th>
<th>LLCI</th>
<th>ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>constant</td>
<td>4.2147</td>
<td>.0207</td>
<td>203.7967</td>
<td>.0000</td>
<td>4.1740</td>
<td>4.2554</td>
</tr>
<tr>
<td>GIC</td>
<td>.3618</td>
<td>.1758</td>
<td>2.0576</td>
<td>.0404</td>
<td>.0160</td>
<td>.7076</td>
</tr>
<tr>
<td>CP</td>
<td>.3647</td>
<td>.1351</td>
<td>2.6997</td>
<td>.0073</td>
<td>.0990</td>
<td>.6305</td>
</tr>
<tr>
<td>Int_1</td>
<td>.0442</td>
<td>.0901</td>
<td>2.4901</td>
<td>.0044</td>
<td>.2215</td>
<td>.1331</td>
</tr>
</tbody>
</table>

Table 4.8 show that competitive pressure moderates the said relationship in the context of the Pakistani banking sector (t=-2.4901). The finding of the study implies that banks in Pakistan implement green activities because of the competitive force of the external environment and achieve both sustainability in terms of environmental protection and less amount of carbon print.

The research investigates the influence of green intellectual capital on sustainable green banking by averaging the score of its three extents: GHC (green human capital), GSC (green structural capital), GRC (green relational capital), and found a noteworthy positive relationship of these with sustainable green banking. Consequences also indicate that GIC has a significant positive impact on sustainable green banking and demonstrates the significant variation in the outcome variable. The research results are congruent with former research (Yusof, Omar, Zaman, & Samad, 2019). Yusof et al., (2019) investigated the influence of green intellectual capital on performance and found a positive impact between them likewise in this study green intellectual capitals have an optimistic impact on sustainable green banking.

The findings of the study also demonstrates that more human capital in banks with green behavior may lead to sustainable green banking. This finding is supported by literature showing the positive impact of the independent variable on the outcome variable (Chang, 2013; Malik et al., 2020; Yusof, Omar, Zaman, & Samad, 2019). The findings also support the significant impact of (GSC) green structural capital on sustainable green banking which is in line with the work of Yusof, Omar, Zaman, & Samad, (2019) who conclude the positive impact of green structural capital as the dimension of the capital of green intellectual on performance in the manufacturing industry. The significant positive result of green relational capital as the dimension of green intellectual capital toward sustainable green banking is supported by the work of Yusof, Omar, Zaman, & Samad, (2019).

The findings of the study also support that, to achieve sustainable green banking, banks got pressurized by other banks to do green activities to become sustainable because according to the State Bank of Pakistan guidelines, green banking activities are not mandatory (Park & Kim, 2020), these are voluntary, banks follow these guidelines because of competitive pressure. This finding is in line with the work of
Agrawal & Sharma (2015) who argued that to build a competitive image in the industry, most organizations or Banks are moving towards or showing more concern about environmental protection, participating in activities related to showing themselves more responsible towards the environment, customers, investors, and other stakeholders.

**Conclusion and Recommendations**

The study revealed that green intellectual capital has a significant relationship with sustainable green banking. The green intellectual capital variable depicted the 24.75% variation in sustainable green banking and the model is significant at 0.0000 and perfectly fit.

From the findings, we can conclude that green human capital is the strongest predictor of sustainable green banking hence suggesting that more humans with a green mindset would enhance the possibility of achieving sustainable green banking. Green structural capital is the second strongest predictor of sustainable green banking as more the structure of banks is flexible to adopt technology and parallel to do green activities in banks will more helpful to achieve sustainable green banking and achieve efficiency and effectiveness with environmental protection. The results demonstrate of green relational capital stand in the relation of banks with their all stakeholders especially employees in banks enhances knowledge sharing and creates an environment to transfer ideas freely.

The research confirmed the moderating impact of competitive pressure on the relation between green intellectual capitals towards sustainable green banking through multiple regression models. In other words, banks got pressurized by other competitor banks to enhance green activities. The findings of the study suggest that banks of Rawalpindi and Islamabad should focus on building green human capital with structure modification towards green activities and built relations with all employees especially to harness more sustainable green banking activities.

Green human capital plays a positive role in green sustainability in banks. So, all policies of banks about sustainability should be clear, objective, simple, understandable, and communicated to all staff. Green structural capital is also a great predictor of sustainable green banking. So, banks should be made structure flexible to adopt or pursue more green activities by reducing a large amount of bank waste in the environment i.e. paper litter. Strategies and policies should be designed as they take into justification the following imperative factors: variations in the corporate atmosphere for green banking, fluctuations in tools (IT) for sustainability, steadiness with all objects containing facts for sustainable green banking, training needs, and solutions for human capital for building relations between them, regularity and levels of efficiency and effectiveness in the overall structure of banks, cost and benefits, time and so on.

This research study concluded a noticeable positive relation between green intellectual capital and (SGB) sustainable green banking, with a significant relation of competitive pressure as a moderator. So, for further research, there are quite abundant other factors that could play a part in this research framework. Therefore, researchers can conduct further studies in the anticipatable future by comprising additional variables such as organizational effectiveness, the environmental concern of management, management development, and technology, etc. along with other variables concerning the green intellectual capital to create more convincing results that may increase importance towards sustainable green banking. Moreover, researchers can study sustainable green banking with six C’s those are clients, culture, compliance, compensation, cost, and capital instead of green intellectual capital.

**References**


Corporate Governance Practices and Its Impact on Efficiency of Working Capital Management
(A Case Study of Pakistan)

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*Adnan Ali Choudhary, PhD Scholar, Government College University, Faisalabad, Pakistan
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ARTICLE DETAILS

ABSTRACT

Purpose: Recent Financial crunch exposed, creative reporting and fake facts such as Enron and WorldCom enlightened Act (2002) towards positive rationalism efficacy of governance and financial management for any public listed enterprise around the globe. The intention of this investigates highlight the influence of governance control on the management of operational capital.

Methodology: A sample was carefully chosen of 116 Pakistan manufacturing establishment from annual reports listed over (PSE) for a period of 11 years (from 2009-2020). Panel methods were employed to evaluate the variant in Regressand due to predictors.

Findings: The result reveals enormous negative influence of governing body on the working capital efficacy. However, investigation came up with the understanding that governance might play very substantial starring role in taming the effectiveness of liquidity.

Values: The disclosures are beneficial for financial executives, financiers, financial consultants, and other stakeholders.

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Introduction
Vigilant and Better operational capital management plays active and crucial protagonist for every of the manufacturing establishments Yun, Ahmad et al. (2021), this inquiry put emphasis on managing current assets over current commitments (debts) tackled by the governing board. Han and Qiu (2007) Working capital factors such as receivable, stock in trade, trade creditors, cash Conversion cycle, cash means and current assets volume capitalized in all-inclusive assets for everyday firm’s activity. The optimum use of operating capital encourages lessening liquidity wants as spare surplus cash or stocks, debtors will make
no good for industry. Lesser the cash conversion more the performance will enhance for the company
due to the liquidity (free level of cash flow theory) availability to invest in current and upcoming
opportunities. Debate on the reserve cash introduced by the scholars Keynes Schefold (1980), was the
first one to explain imperative intentions that drives enterprises to retain the cash reserves. Corporation
faces a trade-off tendency when it comes to the decision of maintains a healthy level of functioning
capital for undisrupted day to day operation so risk of running short of liquidity is minimized Rahmatika
and Kholid (2021). Though it discus by the scholars that return might have decreased in result by
possessing and costly which creates good chances for firm to risky and bankrupt. By extension, this
emanates from the inherent trade-off between liquidity and profitability against the risk of facing
establishment’s finance their investments in three forms at first with retain earnings or reserve, then with
protective debt and finally shares issuance. Van horn elucidated by categorizing managing working
capital in two first as aggressive and conservative approach Ibrahim, Usaini et al. (2021) and Goetz,
Levandowski et al. (2021). Business strategy of holding reduced sum of current assets structured in total
assets or the proportion of current obligation are extraordinary to total liabilities is fall into the criteria of
aggressive course of action in financial year. Conversely, conservative philosophies are to involve in
exercising long term sources which have all-in investment in the current assets and debts utilizations is
just in emergency situation. Dynamic governance core duty is to operate in way that business aftermaths
provide positive return to all stakeholders with aiming as watch dog on executives of firms all funds and
assets. Ineffective decisions and less attention by governing board have detrimental effect over
investors’ wealth. Executives and CEO are truly answerable for setting guidelines, approach to deal with
and planning in all that matters is how the CEO and board decisions have led the company today and in
future Hansen, Mowen et al. (2021), Datta, Doan et al. (2021) and Gormley, Gupta et al. (2021)

This research aims to seek out the essential role of governance on various proxies of working capital
efficiency empirically of 116 sampled manufacturing public listed in Pakistan for eleven fiscal years
from (2009 to 2020).

This empirical investigation has dual implication such as decision-making and academic. Further, the
research will direct governing members on which factors they must concentrate more, while they
formulate policies regarding operational liquidity. This inquiry will also back to the literature
emphasized previously on this topic as predominantly, all the manufacture sector companies are
included such as weaving, ginging, oil gas exploration, assembler, pharmaceuticals, ceramics, cement
sugar and foods in the selected sample.

Theoretical History
Theoretical Review
Framework of this research is carefully grounded on theories previously well recognised regarding to
this topic. This empirical inquiry is centered on five prestigious philosophies such as Agency Theory.
Stewardship Theory, Resource dependence, Interlock directorate and free cash flow.

Agency Theory
This concept propagates the mechanism of conflict between various stakeholders in the company with
reference to the improper governance and strategies by the executives. Information disclosure, board
impartiality, outside audit expertise, rules and code of practice for applying all this company had to bear
bonding cost, residual cost and monitoring cost to control the agency problem Poursoleyman, Joudi et al.
(2021), Marashdeh, Saidat et al. (2021), Park and Yon (2009) and Papaioannou, Strock et al. (1992)
reasoned and debated that executives act to retain excessive cash is been preferred to gain more secretive
personal benefits liquidity. The theory also explored in recent times that executive by intentioned try to
invest lesser in projects that have progressive NPV Nance, Smith Jr et al. (1993) and managers support
investment in negative NPV ventures.
Stewardship Theory
Donaldson and Davis (1994) and Donaldson and Davis (1991) both of the Stewardship theorists explained about the social and psychological factors involved, that top officials will provide benefit to stakeholders to protect repute in society and does not want to face embarrassment in view of interested party, this is the matter of pride and prestige. As Stewards of public the board composition must have striking total of internal directors to make sure efficacy and prosperous results in time Davis and Donaldson (1991). Bello, Yusuf et al. (2019) revealed that this theory is an amicable collection of relation among leaders of business and stakeholders which strongly claims the existence of the director’s in a company core purpose is to get the most out wealth to shareholders.

Resource Dependence and Interlock Directorate
Scholars have focused numerous times about interlocking as the outside resource of potential experts in board and their implementation for enterprises Sukumara Panicker and Upadhyayula (2021), Bello, Yusuf et al. (2019) and Pettigrew (1992). These thematic reasoning grounded resource dependence theory which elucidates that bigger board will brings more new experiences and resources from outside, this theory provides the reality of links and relation (social behaviors and connectivity) of a person with outside world, External links that benefits business intellectually, keeps executive decision makers in vibrant connection between the company Pfeffer and Salancik (1978) and Zald (1969).

Free Cash Flow Theory
In theory, free cash flow is the excessive amount of organization in hand after paying all of its expenditures. Low cash level clench and slowdown in generating new products, meet routine costs, catching opportunities, disbarments of dividends and obligations commitment Ahmadinia, Afrasiabishani et al. (2012). The purpose and motives are proposed by Jensen (1987) and (Lang, Stulz et al. 1991) guesstimating that investors have bound the executive key members reach for liquidity to shrink agency clashes. The entire perception is to confine and control directors to internal funds, beneficial for private activities at the expense of investors.

Empirical Literature Review
Researchers, focused adherents of the societies have gauged the influence of board over management of working capital; here is some background perspective of those studies presented below:

Pangestuti, Pridarsanti et al. (2021) both scholars examine the working capital and governing influence toward profit of non-financial Indonesian sixty one manufacturing. The outcomes show that position does not affect enterprises profitability. Furthermore, this study proves that liquidity like current and quick ratio has a positive significant impact on (ROA), but cash ratio and cash conversion have a insignificant effect on (ROA). Lastly, reserach derived competent governance Index (GCGI) significantly positive impact on (ROA).

Khan, Rehan et al. (2021) global financial crisis come up with the factor about the poor governance; need more attention and transparency with effect to liquidity in Australian manufacturing. Two step GMM techniques were applied to address the endogeneity. Study explores corporation governance take positive benefit devising financial policies through liquidity which leads towards enrich firm performance.

Vu Thi (2021) Scholars inspects the impact of capital arrangement, operational liquidity, and board practices over performance in Taiwan. Panel Data sample of 2000 non-financial (SME) were collected for period of (1995 to 2018). Results explored that working capital proxy cash conversion cycle (CCC) has a negative influence with association to governance quality such as board size, cash. Findings also declare that a firm’s structure negatively impact on the (ROA) and (ROE).
Shahid, Abbas et al. (2020) classify the effectiveness of business authority, power on profitability of sugar industry. A model is designed in a way where rights and impartiality of managers were employed as explanatory indicators. Performance measure (ROA), (ROE) and sales progression are endogenous with board size, working capital and philanthropy are as mediation. The data is being collected from annual reports of 32 sugar sector companies in Pakistan listed at (PSE) during the period of (2014 to 2017). Findings exposed significant positive linkage between executives and profitability; however shares composition and equity return have negative assoication. Lastly philanthropy and WCM played the mediate role in boasting corporate governance and profitability.

Khan and Kouser (2020) emphasized explores the effects of management of working capital and corporate governance on return of 159 non-financial companies for the duration of (2008 to 2017). Results of (GMM) point out that executive remuneration has positive influences on firm. Payment period and board size have negative effect on firm performance. Combined weight of liquidity management and governance on financial health is to check the short term and long-term performance.

Research Methodology
Research Data, Methodology and Variables
Data
During the period of (2009 to 2020) (SECP) reported 654 companies trading, 394 are linked to manufacturing area firms on (PSE), so therefore sample of 116 enterprises are carefully chosen in this study. Yearly, financial reports issued by the companies are used to collect data and testability. After empirical review, approaches, theories, models and theoretical framework, this investigation comprises into three classification, IVs, DVs and control variables.

Methodology
For empirical evidence panel data descriptive statistics, correlation, unit root, Redundant fixed effects & hasuman test, granger, normality test and actual fitted graphs are employed on 116 corporations for homogeneity and association.

<p>| Table 1 | Calculation of variables |</p>
<table>
<thead>
<tr>
<th>Dependent variables</th>
<th>Proxy</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash holdings</td>
<td>CH</td>
<td>Current cash + previous year divided by 2 and taking log.</td>
</tr>
<tr>
<td>Cash Conversion Cycle</td>
<td>CCC</td>
<td>Accounts receivable days + Inventory days - Payable days</td>
</tr>
<tr>
<td>Current ratio</td>
<td>CR</td>
<td>Current assets divided by current liabilities</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Independent variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board Leadership Structure</td>
</tr>
<tr>
<td>Board size</td>
</tr>
<tr>
<td>Audit Committee Members</td>
</tr>
<tr>
<td>Chief executive tenure</td>
</tr>
</tbody>
</table>

**Control variable**

| Firm performance | FP | Organization profitability net return/sales |

Hypothesis

**H₁:** There is a substantial influence of Governing leadership on Cash holdings.

**H₂:** A significant effect of board on the Cash Cycle.
H₃: There is significant influence of firm governance on Current Ratio.
H₄: Significant firm performance impacting over operational liquidity efficiency.

Models

WCMEᵢｔ = α + ∑ᵢ βᵢ CGᵢｔ + ε

Model 1
CH = α+ β₁(BLSᵢᵗ)+β₂(BSᵢᵗ)+β₃(A_COMᵢᵗ)+β₄(CEO_TENᵢᵗ)+β₅(FPᵢᵗ) + µᵢᵗ

Model 2
CCC = α+ β₁(BLSᵢᵗ)+β₂(BSᵢᵗ)+β₃(A_COMᵢᵗ)+β₄(CEO_TENᵢᵗ)+β₅(FPᵢᵣ)+µᵢᵗ

Model 3
CR = α+ β₁(BLSᵢᵗ)+β₂(BSᵢᵗ)+β₃(A_COMᵢᵗ)+β₄(CEO_TENᵢᵗ)+β₅(FPᵢᵣ)+µᵢᵗ

DATA ANALYSIS

4.1 Data analysis

Table 4.1
Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observations</th>
<th>Mean</th>
<th>Mini</th>
<th>Max</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH</td>
<td>1029</td>
<td>7.913</td>
<td>5.352</td>
<td>10.33</td>
<td>0.915</td>
</tr>
<tr>
<td>CCC</td>
<td>1029</td>
<td>71.48</td>
<td>-733.0</td>
<td>431.9</td>
<td>69.94</td>
</tr>
<tr>
<td>CR</td>
<td>1029</td>
<td>2.570</td>
<td>0.068</td>
<td>1148</td>
<td>35.77</td>
</tr>
<tr>
<td>A_COM</td>
<td>1029</td>
<td>3.504</td>
<td>2.000</td>
<td>7.000</td>
<td>0.746</td>
</tr>
<tr>
<td>BLS</td>
<td>1029</td>
<td>0.155</td>
<td>0.000</td>
<td>1.000</td>
<td>0.363</td>
</tr>
<tr>
<td>BS</td>
<td>1029</td>
<td>8.077</td>
<td>1.000</td>
<td>14.00</td>
<td>1.560</td>
</tr>
<tr>
<td>CEO_TEN</td>
<td>1029</td>
<td>3.878</td>
<td>1.000</td>
<td>9.000</td>
<td>2.473</td>
</tr>
<tr>
<td>FP</td>
<td>1029</td>
<td>0.048</td>
<td>-2.136</td>
<td>0.952</td>
<td>0.139</td>
</tr>
</tbody>
</table>

Statistics above shows cash holdings (CH) Minimum value is 5.352 and the extreme level is 10.33 although the normal cash holding value is 7.913 with the deviance of 0.915%. (CCC) of the sampled non-financial are in between -733.0 and 431.9, lowest level days of cash conversion are -733 and highest days of cycle 432 with mean 71.48 and deviation of 69.94% from the average. Current ratio (CR) minimum 0.068 and the maximum value of 1148 and the mean are 2.570 with deviation of 35.77%. This defines average companies of non-financial having Rs.2.570 as assets to cover its liabilities of Rs.1. Audit (A_COM) have least as 2 maximum level members of 7 with average 3.504 with the deviation of 0.746. Minimum leadership level is 0 as the maximum level of 1 due to dichotomous however avg of 0.155 with deviancy of 0.363. Board size (BS) of sampled manufacturing falls in between 1 and 14. Board directors are 1 and maximum of 14 members while average is 8.077 with deviancy of 1.560. Same statistics have shown with all other variables in the above tables, (CEO_TEN). Firm performance (FP) control variable above tables that the establishments outcome is between -2.136 and 0.952, mean value 4.8% with the variation of 13.9% from average value.

Correlation analysis

Table 4.2
Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>CH</th>
<th>CCC</th>
<th>CR</th>
<th>A-COM</th>
<th>BLS</th>
<th>BS</th>
<th>CEO_TEN</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCC</td>
<td>-0.141</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CR</td>
<td>0.014</td>
<td>0.002</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-COM</td>
<td>0.336</td>
<td>-0.024</td>
<td>-0.016</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The correlation of A_COM, BLS, BS, CEO_TEN and FP with CH is 0.336, -0.044, 0.331, -0.011 and 0.279, which shows that A_COM BS, FP are positively associated with Cash and other two independent are negatively correlated. Correlation of A_COM, BLS, BS, CEO_TEN and FP with CCC is -0.024, -0.023, -0.017, -0.048 and 0.106. The relationship of BS with CCC is -0.017 showing BS has negative association with CCC. Secondly make evident that negative variation in CCC with value 1 is caused by BS with -0.017. Current ratio (CR), cash holdings (CH) of the selected corporations with board size are 0.003 and 0.331. The correlation of CEO_TEN with conversion is -0.048 which is negatively connected with CCC and CH, while positive with current ratio. The correlation table (4.2) displays ominously progressive effect on (CCC) by enterprise profitability (FP), current ratio (CR), and (CH). It further specifies that establishments having positive relationship with profitability enhance the liquidity efficacy.

**Granger Causality Test**

Through the testability Granger causality test in eviews for empirical fact establishment we tried to enquiry which variable is taking part in the formation of other variable, If probability value is less than 5% it means that one variable is taking part in the composition of other variable. We can develop following H0: CR does not Granger cause CCC. H1: CR Granger causes CCC and similar hypothesis devovoped for all other variables. The results of granger causality test suggested that probabilistic value between CR and CCC is greater than 5% and other variables in the study showing that both variables and other explanatory and DVs are not involve in the construction of each other. So we accept all null hypotheses and reject alternative hypothesis for all variables. CR does not granger cause CCC Freeman (1983).

**Panel Unit Root Ratio**

**Unit Root Test**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Cross sect</th>
<th>Levin LC</th>
<th>Statistic</th>
<th>Im Pesaran</th>
<th>ADF</th>
<th>PP</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH</td>
<td>1276</td>
<td>0.000</td>
<td>-50.17</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>CCC</td>
<td>1276</td>
<td>0.000</td>
<td>-50.11</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>CR</td>
<td>1276</td>
<td>0.000</td>
<td>-42.55</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>A_COM</td>
<td>1276</td>
<td>0.000</td>
<td>-18.23</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>BLS</td>
<td>1276</td>
<td>0.000</td>
<td>-9.909</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>BS</td>
<td>1276</td>
<td>0.000</td>
<td>-16.833</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>CEO_T</td>
<td>1276</td>
<td>0.000</td>
<td>-9.512</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>FP</td>
<td>1276</td>
<td>0.000</td>
<td>-32.75</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
</tbody>
</table>

The basic purpose of unit root ratio test is two find out that whether data is stationary or non-stationary. However, (table 4.3) represents that data used in this research paper related to all variables is stationary because the probability values of all variables are below than 5% means p-values are significant.

**Table 4.4 A**

<table>
<thead>
<tr>
<th>REffects Test</th>
<th>Stat</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section F</td>
<td>14.910421</td>
<td>0.000</td>
</tr>
<tr>
<td>Chi-square</td>
<td>1084.8</td>
<td>0.000</td>
</tr>
</tbody>
</table>
Correlated Random Effects – Hausman Test

Table 4.4 B

<table>
<thead>
<tr>
<th>Test Summary</th>
<th>ChiSq. Statistic</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>random</td>
<td>25.1</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

By applying redundant effects & Hausman in the above table P-val is substantial (0.000) which declares model fixed effect is appropriate and fit for entire regressions in this inquiry.

Table 4.5

Fixed Effects Model

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistics</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>6.875</td>
<td>0.173</td>
<td>39.86</td>
<td>0.000</td>
</tr>
<tr>
<td>A_COM</td>
<td>0.122</td>
<td>0.035</td>
<td>3.436</td>
<td>0.001</td>
</tr>
<tr>
<td>BLS</td>
<td>-0.043</td>
<td>0.065</td>
<td>-0.652</td>
<td>0.515</td>
</tr>
<tr>
<td>BS</td>
<td>0.057</td>
<td>0.018</td>
<td>3.101</td>
<td>0.002</td>
</tr>
<tr>
<td>CEO_T</td>
<td>0.031</td>
<td>0.007</td>
<td>4.172</td>
<td>0.000</td>
</tr>
<tr>
<td>FP</td>
<td>0.845</td>
<td>0.144</td>
<td>5.871</td>
<td>0.000</td>
</tr>
<tr>
<td>R-Sq</td>
<td>0.726</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adj R-Square</td>
<td>0.690</td>
<td>S.D dependent var</td>
<td>0.915</td>
<td></td>
</tr>
<tr>
<td>S.E of regression</td>
<td>0.509</td>
<td>Akaika criterion</td>
<td>1.598</td>
<td></td>
</tr>
<tr>
<td>Sum square residual</td>
<td>235.9</td>
<td>Schwarz criterion</td>
<td>2.174</td>
<td></td>
</tr>
<tr>
<td>Log likelihood</td>
<td>-702.4</td>
<td>HQC</td>
<td>1.817</td>
<td></td>
</tr>
<tr>
<td>F-Stat</td>
<td>20.20</td>
<td>Durbin W</td>
<td>1.051</td>
<td></td>
</tr>
<tr>
<td>Prob(F-Stat)</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Above (FEM) (table 4.5) show that coefficient of (A_COM), BS, and CEO_T is 0.122, -0.043, 0.05 and 0.031 which shows that A_COM and other independent are interconnected with the cash (CH). Audit team and rest of the exogenous increases and aid in improvising cash volume. The P-value concludes that fallouts are exceptionally significant, that claims about these factors have considerably stimulus on the cash of the PSE enterprises in Pakistan. Firm performance in this investigation claims the value of (FP) from coefficient is 0.845 and P-val (0.00) which shows positive control on cash holdings. R-sq and Adj R-sq are 0.72 and 0.69, presents the coefficient of all the independent showing 69% variants in the cash holdings (CH). F-stat is (20.20) with p-val of 0.000 also back significance of the model. Durbin-W value is 1.96 it present no autocorrelation. Akaike information criterion (AIC) is used to measure up the superiority of one model against other in same study and methodology. The model having lower AIC value considers best against other. In this model value of AIC is 1.598 which is less than from other; model of (CH) performs superior than the model of CCC and CR. Furthermore, the value of SC is always greater than AIC as it is observed above 2.174 greater than AIC in the table.

Actual-fitted-residual graph

Figure 4.1
In this graph the values of actual, fitted (estimated) and residual of variables are shown in graphical form. Blue lines on graph represent residuals and its values are shown on Y-axis while red line is for original and green for fitted Mukherjee, White et al. (2013). Through this graph we can straightforwardly observe the trend line, the closeness between red and green line create more homoscedasticity by reducing residuals, Secondly all the other two graphs of regression CCC and CR also have determined the same closeness showing no much penetration comparing with actual Y.

Table 4.6

<table>
<thead>
<tr>
<th>Fixed Effects</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistics</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>80.06</td>
<td>5.350</td>
<td>14.96</td>
<td>0.000</td>
</tr>
<tr>
<td>A-COM</td>
<td>-2.854</td>
<td>1.042</td>
<td>2.740</td>
<td>0.006</td>
</tr>
<tr>
<td>BLS</td>
<td>-2.689</td>
<td>2.397</td>
<td>1.122</td>
<td>0.262</td>
</tr>
<tr>
<td>BS</td>
<td>-1.991</td>
<td>0.549</td>
<td>-3.628</td>
<td>0.000</td>
</tr>
<tr>
<td>CEO-T</td>
<td>-1.139</td>
<td>0.249</td>
<td>-4.562</td>
<td>0.000</td>
</tr>
<tr>
<td>FP</td>
<td>31.65</td>
<td>8.120</td>
<td>3.898</td>
<td>0.001</td>
</tr>
<tr>
<td>R-Square</td>
<td>0.861</td>
<td>Mean dependent var</td>
<td>148.1</td>
<td></td>
</tr>
<tr>
<td>Adj R-Square</td>
<td>0.842</td>
<td>S.D dependent var</td>
<td>132.8</td>
<td></td>
</tr>
<tr>
<td>S.E of regression</td>
<td>49.07</td>
<td>Akaike criterion</td>
<td>10.74</td>
<td></td>
</tr>
<tr>
<td>Sum square residual</td>
<td>2188939</td>
<td>Schwarz criterion</td>
<td>11.31</td>
<td></td>
</tr>
<tr>
<td>Log likelihood</td>
<td>-5405</td>
<td>HQC</td>
<td>10.96</td>
<td></td>
</tr>
<tr>
<td>F-Stat</td>
<td>47.21</td>
<td>Durbin W</td>
<td>1.209</td>
<td></td>
</tr>
<tr>
<td>Prob(F-Stat)</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Above (FEM) (table 4.5) show that coefficient of (A-COM), BS, CEO_T is -2.84, -1.99, -0. And -10.139 which shows that A_COM, BS and CEO_T are negatively correlated with the cash holdings CH. Audit committee and rest of the exogenous increases with ultimately decrease in efficiency of CCC which means the CCC time span has become longer in days. The P-value expresses the outcome are exceptionally significant which claims that these factors considerably stimulus on the CCC. Controlling indicator firm performance in this enquiry, emphasized from its coefficient (31.5) and p-value (0.00) shows positive control on CCC. R-square and Adj R-square are 0.86 and 0.84, presents the coefficient of all the independent showing 84 % variation in the (CCC). F-statistics is (47.2) with p-val of 0.000 also supports the total significance of the model. Durbin-W value is 1.29 it present no autocorrelation. Akaike information criterion (AIC) is used to measure up the superiority of one model against other in same study and methodology. The model having lower AIC value considers best against other. In this model value of AIC is 10.5 which is less than from other; model of (CH) performs superior than the model of CCC and CR. Furthermore, the value of SC is always greater than AIC as it is observed above 11.17 greater than AIC in the table.

Table 4.7

<table>
<thead>
<tr>
<th>Fixed Effects</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistics</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>3.181</td>
<td>0.176</td>
<td>18.07</td>
<td>0.000</td>
</tr>
<tr>
<td>A-COM</td>
<td>-0.181</td>
<td>0.038</td>
<td>-4.796</td>
<td>0.000</td>
</tr>
<tr>
<td>BLS</td>
<td>-0.054</td>
<td>0.064</td>
<td>0.843</td>
<td>0.340</td>
</tr>
<tr>
<td>BS</td>
<td>0.048</td>
<td>0.019</td>
<td>-2.495</td>
<td>0.013</td>
</tr>
<tr>
<td>CEO-T</td>
<td>0.081</td>
<td>0.008</td>
<td>9.454</td>
<td>0.000</td>
</tr>
<tr>
<td>FP</td>
<td>1.927</td>
<td>0.174</td>
<td>11.06</td>
<td>0.000</td>
</tr>
<tr>
<td>R-Square</td>
<td>0.625</td>
<td>Mean dependent var</td>
<td>51.17</td>
<td></td>
</tr>
<tr>
<td>Adj R-Square</td>
<td>0.576</td>
<td>S.D dependent var</td>
<td>34.40</td>
<td></td>
</tr>
<tr>
<td>S.E of regression</td>
<td>21.03</td>
<td>Akaike criterion</td>
<td>2.431</td>
<td></td>
</tr>
<tr>
<td>Sum square residual</td>
<td>401891</td>
<td>Schwarz criterion</td>
<td>2.460</td>
<td></td>
</tr>
<tr>
<td>Log likelihood</td>
<td>-1245</td>
<td>HQC</td>
<td>2.442</td>
<td></td>
</tr>
<tr>
<td>F-Stat</td>
<td>12.73</td>
<td>Durbin W</td>
<td>1.151</td>
<td></td>
</tr>
<tr>
<td>Prob(F-Stat)</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Above (FEM) (table 4.5) show that coefficient of (A_COM) is (-0.181) which negatively correlated with the current ratio, while in contrary (BS) and (CEO_T) exogenous have positive impact on CR which disclose that board plays effective role in managing the current assets and formulate better policies. The P-values concluded that, findings are tremendously influential which clarifies that these factors considerably stimulus on the (CR). Firm performance as a controlling variable in this enquiry the value of (FP) from coefficient is 1.9 and p-value (0.000) which shows positive control on (CR) . R-square and Adj R-square are 0.62 and 0.57, presents the coefficient of all the independent showing 57% variation in the (CR). F-statistics is (12.7) with p-val of 0.000 also supports the total significance of the model. Durbin-W value is 1.29 it present no autocorrelation. Akaike information criterion (AIC) is used to measure up the superiority of one model against other in same study and methodology. The model having lower AIC value considers best against other. In this model value of AIC is 2.3 which is less than from other; model of (CH) performs superior than the model of CCC and CR. Furthermore, the value of SC is always greater than AIC as it is observed above 2.46 greater than AIC in the table.

Normality test

Figure 4.2

(figure 4.2) the data of cash holdings, Cash conversion cycle and current ratio is normal because the value of jarque bra is (10.2) which more than 5% and probability value should be less than 5% which is (0.00034) in this investigation. So therefore we accept the h0 Null: Data is normal, furthermore the skewness value 0.07, kurtosis 3.12 these outcomes are perfectly fine and established the normality of data Li, Witten et al. (2012).

Scatter plot and regression line

Figure 4.3

Scatter Plot and Regression Line

In the above figure the relationship between dependent and independent variable are shown in graphical form which indicated that by using scatter plot method we easily can observe the homogeneity in the variables. In this scatter plot of cash holdings (CH) is used as dependent variable on Y-axis and audit committee members (A-COM) as an independent variable on X-axis as exemplary, lastly all the scatter plots are represented worthy data points except those variables which are insignificant in this study.
Conclusion and Recommendations

Conclusion
Firstly, cash holdings have positive association rather than negative, only board leadership structure negatively influenced cash holdings. This defines having dual position cash reserves start to decrease of nonfinancial firms in Pakistan. Audit executives are responsible to verify the accounts and financial reports of the corporation as a result, chances of cash fraud minimizes and level of cash increases. CEO for multiple times chairing the position also positively affect cash and thus tenure of CEO is also favorable for establishment. By increasing size of board policies and guidelines became better which led the performance well of cash holdings so, therefore results indicate that first hypothesis related to cash holdings is authenticated. Secondly, this investigation provided the aftermath evidence to authenticate the secondary hypothesis which displays strong relation of governing board and cash conversion. Moreover, enquiry indicates enrichment of CCC by increase in the size of board, committees, leadership position and chief tenure, In summits and discussions disputes are argued and strategies are outlined, so therefore need more focused approach on liquidity, therefore board of firms should have more meeting to improve strategy on CCC. Thirdly, the result of this research gives verdict that governance is positively influential on current ratio of manufacturing enterprises and authenticates the third hypothesis of the research. Key issues and policies are framed in Board meeting, shared experience of experts, plays very significant role and provides executive extra authority to get things under control as CEO protracted experience, Management knows better to sustain the level of current obligations to fulfill. Descriptive value of current assets to current liabilities 2.57, also supported the phenomena that volume of assets is enough for fulfillment of obligation, and establishments have maintained enough liquidity, it also provide assistances in running the business smoothly. Findings are more or less similar to the findings of VU, TRUONG et al. (2020), Gill and Biger (2013) Lastly, companies profitability association with current ratio illustrated that CEO who care for liquid assets against obligations have higher increase in profits. Executive’s credit policy to increase sales is one of the factors that might enhance profits for the manufacturing organizations.

Recommendations Regarding Corporate Governance Practices
Code of governance should be applied in full spirt and stakeholder approach should be the priority of every governing body. Further, more unconventionality and power to be granted to CEO as more control and duality quick decisions are made easily.

Investigation shown large negative relationship therefore enterprises should apply and enhance code of governance to increase their efficiency.

Increased size of the board, committees, audit members and board independence provides more transparency and check over the firm’s health lesser chance of agency conflicts.

Empirical investigation such is this, tested all types of the manufacturing firms which makes this study more complex. sugar can and assembler firms have different operational factors and cycles so these firms

References


Risk Identification and Assessment in Sustainable Housing Project: A Case of Housing Sector in Pakistan

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ARTICLE DETAILS

History
Revised format: May 2022
Available Online: Jun 2022

Keywords
Risk Identification and Assessment, Relative Importance Index (RII), Housing Projects, Pakistan.

Jel Classification
Q01, Q56

ABSTRACT

Purpose: The study aims to identify the risk factors that are associated with the housing projects in Pakistan based on their relative importance. Moreover, this study intends to highlight the extreme, high and low risks that are involved in housing projects.

Design/Methodology/Approach: The study adopts the quantitative research method and conducted a survey through a five-point Likert scale questionnaire. The study has collected 168 responses from the project managers, contractors, designers and consultants of housing projects in Pakistan. In order to examine the relative importance of the risk, the study has applied the Relative Importance Index (RII) method to analyse the risks.

Findings: The results of the study depict that there are five extreme risks, ten high risks and 13 low risks which may contribute harm the sustainability of the housing projects. Moreover, all the critical risk factors have high probability of occurrence and extreme impact on the sustainability of the housing projects in Pakistan.

Implications/Originality/Value: The practitioners are recommended to develop such projects that should not damage the ecology of the region in which they are located. Also, the land should be determined on the basis of sociological and environmental consideration and not on land value alone.

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Introduction
In the housing industry risk plays a significant role hence it is known of being borne to risks. Due to risk quality problems, safety, cost overruns and schedule delays may be caused also it can exert negative
impacts on achieving project objectives. Alternately, throughout the lifecycle of a project a formal and orderly process is required which is termed as risk management (Zhang et al., 2019). It systematically identify, analyse and respond to risk. Since the uncertainty is linked to several aspects that contribute to the objective of sustainable housing construction, a sustainable risk assessment has been devised to gather more information regarding it. The main aim of sustainable housing project is to reduce environmental pollution, reducing the consumption of resources and energy (Taghizadeh-Hesary & Yoshino, 2020).

Though still conserving the planet’s most essential resources for upcoming generation, the process of achieving our everyday needs is sustainability. Achieving sustainability is one of the goals of the housing sector of Pakistan. Owing to this goal the concept of sustainable housing construction has been taken place (Siraj & Fayek, 2019). It is related to design, construction and operations of green building projects. Sustainable housing projects are the new branch of the construction industry. Thus, new technology and methodologies must be used in projects. in order to achieve these goals (Chan & Adabre, 2019).

On the society, environment, economic and social aspect the housing industry has massive impacts. Since the public's knowledge of ecological concerns has grown, sustainability has become a hot topic and waste being one of the major issue (Adabre et al., 2021). Through two-third of waste emerging from construction Pakistan have now develop into one of the main producers of unwanted and excess material as the housing industry is growing in the country (Serrano-Jiménez et al., 2021).

Recently throughout the world sustainable housing projects are being encouraged. Especially with the regulatory incentives by the government individual have started to think about sustainable housing projects. Pakistan over the past years has experienced a boom in housing industry (Saidu & Yeom, 2020). Due to environment activist on a small scale the urge to shift to sustainability housing is being encouraged. Also this transition toward conservation will eventually become a must, therefore it is being enforced by government (Heffernan & De Wilde, 2020). These risks majorly include incapacity to complete the project under economical price restrictions, as well as ineffective ecological project management. In Pakistan the housing industry faces most significant risk majorly due to inflation, sudden changes in prices and delay (Abdullah & Alshibani, 2021). Therefore, for projects success it is important to stress on the inevitability of managing risk factors as an essential criteria (Triana et al., 2021).

Also, there are certain risks which are related to Inflation is an example of both conventional and sustainable project. Another concern is a lack of green resources and the longevity of materials, both of which are solely associated with sustainable initiatives. More importantly, risk such as design changes and poor construction quality are more critical for sustainable projects (Salim & Dabous, 2022). It has become necessary now to identify hazards unique to green building projects in Pakistan as there is a significant growth in urban projects in the nation, and to enforce energy efficiency in buildings project has been introduced (Zeina, 2022).

Because this field of study has not previously been investigated or implemented in Pakistan, the risk assessment associated with these specific initiatives has become a critical research subject. Furthermore, due to anticipated growth in the field of sustainable housing construction it is imperative to study the risk related to it (Oluleye et al., 2021). As with the advancement in sustainable construction there is requirement of information however, marginal info is available concerning risks in ecological housing projects in the Pakistan. Hence the aim of this study is to identify risks in sustainable housing projects along with assessing the identified risk based on the risk severity (Aris et al., 2019). Pakistan has obvious sustainable house projects crisis. A number of policy directions for the future can be extracted from this study (Patel, 2020). However, not many studies in the past literature have studied thus the
study would be helpful for practitioners to comprehend what risks should be considered priory for management and assessment (Karji et al., 2019).

Also, certain professionals are required who can deal with the phenomena of sustainable housing and support and guide it in the future, thus research leading to an understanding of the processes will help create such professionals. It is vital that academic institutions give great importance to housing related community projects (De Wilde, 2019). But the studies related to sustainable housing projects are very limited (Francis et al., 2019). Hence both practitioners and academicians from the study’s findings would be able to comprehend what risk are associated with sustainable housing in emerging economy and how they can be prevented in effective way (Burroughs & Růžička, 2019).

**Literature review**

**Risk identification**

The success of building housing projects is influenced by a number of factors. These dangers were discovered after a thorough assessment of the literature. Some dangers are exclusive to sustainable housing initiatives, while others apply to both sustainable and regular housing. Management, technical, green team (stakeholders), green materials and technology, regulatory and economic risks are categorized into five categories (Siraj & Fayek, 2019).

**Management risks**

Management risks are the ones that might arise while supervising the construction of housing project. Restricted timetables are a danger because owners may impose schedules that are unrealistic and impossible to meet (Santos et al., 2019). This danger may be greater in sustainable housing projects, as green housing takes longer than regular building. Because dealing with sustainable aspects is more difficult, sustainable initiatives need thorough consideration of their practicality (Badi & Murtagh, 2019). When clients have financial difficulties, it puts the contractor at danger. Having a academic knowledge of green construction, their lack of implementation poses a significant danger. Finally, because sustainable house building necessitates a high performance standard and excellent construction quality, the low quality of sustainable housing construction is a concern (Mavi & Standing, 2018).

<table>
<thead>
<tr>
<th>Table 2.1: Management Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unreasonably tight schedule for sustainable construction</td>
</tr>
<tr>
<td>Improper sustainable project feasibility and planning</td>
</tr>
<tr>
<td>Shortage of clients' funding</td>
</tr>
<tr>
<td>Inaccuracy in project budgeting due to unfamiliarity in green projects</td>
</tr>
<tr>
<td>Poor project manager skills related to sustainable construction</td>
</tr>
<tr>
<td>Additional costs due to green material and equipment</td>
</tr>
<tr>
<td>Poor quality of sustainable construction work</td>
</tr>
</tbody>
</table>

**Technical Risks**

During the development of a housing project, technical hazards may arise, including design revisions, deficient or erroneous ecological plan material, delays due to numerous consultations with green specialists, and so on. Due to a lack of green materials research, there is a danger of incorrect or inadequate green standards (Opoku et al., 2019). Another danger that may result from a contractor's lack of expertise is a bad choice of housing construction procedures. The third technical risk is low labour and equipment productivity in the construction of sustainable houses (El-Sayegh et al., 2021).

<table>
<thead>
<tr>
<th>Table 2.2: Technical Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design changes</td>
</tr>
<tr>
<td>Insufficient or incorrect sustainable design information</td>
</tr>
</tbody>
</table>
Improper or incomplete green specifications
Poor scope definition of sustainable housing project
Failure to meet green code or certification
Delay caused by frequent meetings with green specialist
Poor selection of construction techniques in sustainable housing project
Poor productivity of labor and equipment in sustainable housing project

Green team (stakeholders) Risks
Stakeholders, sometimes known as the green team, are the third group. Only risks that influence sustainable house building are covered in this category; conventional housing construction projects are not affected. This category includes risks such as client reluctance to new green ideas and consultants' and contractors' lack of experience (Guan et al., 2020). One of the difficult issues project managers confront is workers' aversion to changing their old habits (Ahmad et al., 2019).

<table>
<thead>
<tr>
<th>Table 2.3: Green Team (Stakeholders) Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistance from the client to adopt new green ideas</td>
</tr>
<tr>
<td>Limited experience of the consultant about sustainable housing project</td>
</tr>
<tr>
<td>Limited experience of the contractor about sustainable housing project</td>
</tr>
<tr>
<td>Limited availability and reliability of green subcontractors</td>
</tr>
<tr>
<td>Limited availability and reliability of green suppliers</td>
</tr>
<tr>
<td>Shortage in labor skilled in sustainable housing project</td>
</tr>
</tbody>
</table>

Green Materials and Technology Risks
Green materials and technology are the fourth category. This category includes the risks associated with material shortages, handling, and quality. Advanced green materials are commonly used in green housing construction to increase sustainable performance; nevertheless, these materials have not been well explored, posing the possibility of poor performance (Li et al., 2019). Furthermore, improper handling and storage would degrade the quality of the green materials, increasing the danger. Finally, the absence of papers for novel sustainable technology poses a danger since the contractor might be unaware of the material's specs and hence might be unaware of what should be done to achieve the best outcomes (Adabre & Chan, 2020).

<table>
<thead>
<tr>
<th>Table 2.4: Green Material and Technology Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor performance of green materials</td>
</tr>
<tr>
<td>Shortage of green materials</td>
</tr>
<tr>
<td>Long lead time for green materials</td>
</tr>
<tr>
<td>Inappropriate handling and storage of green materials</td>
</tr>
<tr>
<td>Lack of documents and information for new green technologies</td>
</tr>
</tbody>
</table>

Regulatory and Economic Risks
Regulatory and economic risks are final category. These include any government-enforced laws or regulations, as well as any potential economic downturn. The project start date is delayed due to delays in government clearances for green housing construction. Furthermore, variations in ecological housing rules and guidelines are occurring at a rapid rate therefore it is impractical to expect the project to be compliant and consistent with the new norms, causing the project to be delayed (Taghizadeh-Hesary & Yoshino, 2020). Inflation is defined as an increase in the price level of goods and a decline in the buying power of currencies, both of which can result in cost overruns. Inflation is a danger in all types of
housing building projects; thus it would pose a significant risk in sustainable house development as well (Adabre et al., 2022).

<table>
<thead>
<tr>
<th>Table 2.5: Regulatory and Economic Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delay in government approvals for green housing project</td>
</tr>
<tr>
<td>Changes in sustainable construction codes and regulations</td>
</tr>
<tr>
<td>Inflation of green materials’ prices</td>
</tr>
<tr>
<td>Currency volatility worsened by the import of green materials</td>
</tr>
</tbody>
</table>

**Methodology**

**Sample and population**

Based on the criteria-based non-probability purposive sampling technique, 150 project managers, contractors, consultants and designers have been approached for data collection that have prior experience with the housing projects and are currently involved in some green housing projects in Pakistan. Email has been sent individually with an attached URL of Google Form for data collection. However, only 68 responses have been collected that are valid for analysis and therein, the response rate was 45.33 percent.

**Data Collection**

A five-point Likert scale questionnaire has been adapted from El-Sayegh et al. (2021) comprising 30 risk factors in the construction industry of UAE while these 30 statements have been revised and restructured for green housing projects in Pakistan. The questionnaire was categorized into three sections. 1st section comprised of demographic information of the respondents; 2nd section comprised of the 30 risk-related statements with the rating-scale based on probability of occurrence for each risk factor. The rating scale for 2nd section denoted 1 as very low probability of occurrence and 5 as very high probability of occurrence. The 3rd section has the same 30 risk-related statements based on their impact denoting 1 as very low impact and 5 as very high impact.

**Data analysis**

Relative Importance Index (RII) has been calculated using MS Excel 2016 as used in numerous past studies related to risk anticipations in different sectors (Amarkhil et al., 2021; Genc, 2021; Gündüz et al., 2013; Kassem et al., 2020). The estimation formula for RII is as follows.

$$RII = \frac{\Sigma W}{A*N}$$

In the above RII equation, W represents weighting given to each factor by the respondent (i.e. 1, 2, 3, 4, and 5); A represents highest weight in the scale i.e. 5; and N represents the total number of respondents i.e. 68.

**Results and Findings**

**Demographic profile of the respondents**

The following table 4.1 shows the demographic profile of 68 respondents.

<table>
<thead>
<tr>
<th>Table 4.1: Demographic Profile (n = 68)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Years of Experience</strong></td>
</tr>
<tr>
<td>Less than 10</td>
</tr>
<tr>
<td>10 to 20</td>
</tr>
<tr>
<td>More than 20</td>
</tr>
<tr>
<td>Project Manager</td>
</tr>
<tr>
<td><strong>Role</strong></td>
</tr>
<tr>
<td>Contractor</td>
</tr>
<tr>
<td>Designer</td>
</tr>
</tbody>
</table>
Overall risk significance against probability of their occurrence during housing projects in Pakistan. Among the thirty identified risks related to housing projects in Pakistan, the top five risks have been highlighted in the following table 4.1 for their probability of occurrence and probability of impact; based on their RII ranking.

<table>
<thead>
<tr>
<th>Risks</th>
<th>Probability</th>
<th>Impact</th>
<th>RII</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unreasonably tight schedule for sustainable construction</td>
<td>0.151</td>
<td>0.183</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Improper sustainable project feasibility and planning</td>
<td>0.162</td>
<td>0.177</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Shortage of clients’ funding</td>
<td>0.168</td>
<td>0.179</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Inaccuracy in project budgeting due to unfamiliarity in green</td>
<td>0.166</td>
<td>0.174</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Poor project manager skills related to sustainable construction</td>
<td>0.154</td>
<td>0.172</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Additional costs due to green material and equipment</td>
<td>0.150</td>
<td>0.171</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Poor quality of sustainable construction work</td>
<td>0.139</td>
<td>0.168</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Design changes</td>
<td>0.139</td>
<td>0.163</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Insufficient or incorrect sustainable design information</td>
<td>0.144</td>
<td>0.162</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Improper or incomplete green specifications</td>
<td>0.146</td>
<td>0.173</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Poor scope definition of sustainable housing project</td>
<td>0.146</td>
<td>0.175</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Failure to meet green code or certification</td>
<td>0.155</td>
<td>0.169</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Delay caused by frequent meetings with green specialist</td>
<td>0.149</td>
<td>0.168</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Poor selection of construction techniques in sustainable housing project</td>
<td>0.151</td>
<td>0.176</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Poor productivity of labor and equipment in sustainable housing project</td>
<td>0.135</td>
<td>0.176</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Resistance from the client to adopt new green ideas</td>
<td>0.122</td>
<td>0.179</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Limited experience of the consultant about sustainable housing project</td>
<td>0.142</td>
<td>0.179</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Limited experience of the contractor about sustainable housing project</td>
<td>0.132</td>
<td>0.163</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Limited availability and reliability of green subcontractors</td>
<td>0.119</td>
<td>0.168</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Limited availability and reliability of green suppliers</td>
<td>0.119</td>
<td>0.161</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Shortage in labor skilled in sustainable housing project</td>
<td>0.129</td>
<td>0.163</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Poor performance of green materials</td>
<td>0.101</td>
<td>0.172</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Shortage of green materials</td>
<td>0.098</td>
<td>0.162</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Long lead time for green materials</td>
<td>0.138</td>
<td>0.163</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Inappropriate handling and storage of green materials</td>
<td>0.111</td>
<td>0.166</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Lack of documents and information for new green technologies</td>
<td>0.138</td>
<td>0.164</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Delay in government approvals for green housing project</td>
<td>0.142</td>
<td>0.154</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Changes in sustainable construction codes and regulations</td>
<td>0.133</td>
<td>0.155</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>Inflation of green materials’ prices</td>
<td>0.112</td>
<td>0.161</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Currency volatility worsened by the import of green materials</td>
<td>0.119</td>
<td>0.172</td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>

In the above table; thirty prequalified and segmented risks have been assessed to estimate their probability of occurrence and impact on the housing projects of Pakistan. The results have been discussed in the following section while the above ranking has been based on the RII rating of each risk.
Risk Assessment Based on their Probability of Occurrence

Shortage of clients’ fund has been ranked most critical risk among all 30 based on its RII (16.8%). This might be due to the fact that there is usually economical as well as political turbulences in Pakistan, hence investors refrain from devoting their funds in huge amounts, because they often fear losing their money in these uncertain situations (Li, 2019). Often times there are other issues with banks, contractors, investors which can hinder the process of easy funds transfer. Communication gaps also might be the cause behind it (Ghufran et al., 2021).

Furthermore, project budgeting has been identified as 2nd critical risk in housing projects of Pakistan due to unfamiliarity with green projects (RII = 0.166). Although unexpected weather or events beyond people’s control might have an influence on budgets, most project overruns are the consequence of poor analysis or planning before construction even begins (Chan & Aghimien, 2022). In addition to improved planning, technology may assist to decrease frequent problems or aspects that lead to cost overruns, allowing to uproot efficiency and revenues (Amirtash et al., 2021).

Moreover, improper planning and feasibility skills and capacity has been identified as 3rd critical risk due to its 16.2 percent probability of occurrence (RII = 0.162). There are many reasons responsible for this critical risk in Pakistan. A feasibility study must be included in the pre-contract process that should be prepared with great care (Al Saadi & Rahman, 2019). In every expansion, a valuer or quantity surveyor must be employed by the clients to conduct a market and financial feasibility analysis. There is a critical necessity for a feasibility study so that the owner may analyse the development’s potential ROI and viability to move forward with the planned project (Al-Kilidar & Hasib, 2021).

Additionally, 4th critical risk has been identified as the failure to meet green requirement, code of conduct and certification by the housing projects based on its 15.5 percent probability of occurrence in the housing projects of Pakistan (RII = 0.155). The biggest factor contributing to this risk is the lack of awareness, green knowledge, green consciousness and simply lack of care (Khan et al., 2021). In Pakistan, government and officials do not really care about ecological harms they are doing to the planet and their carbon footprint. Contractors, project managers and clients, all the stakeholders should be held responsible and the government of Pakistan should also bring such laws to counter this critical risk factor and promote sustainable building (Azeem et al., 2020).

However, 5th critical risk in the housing projects of Pakistan has been identified as poor skills of the project manager towards sustainable/green project practices (RII = 0.154). Here, in Pakistan, due to lack of proper training and counselling of project managers, they do not have enough knowledge and skills required to make their construction projects sustainable and eco-friendly (Hussain et al., 2019). Also, it is observed that project managers do not put conscious efforts and usually don’t take the initiative to increase their knowledge in this regard (Fitriani & Ajayi, 2022). This is indeed a major drawback and therefore this critical risk stands at 5th position in this study, in terms of their probability of occurrence.

Risk Assessment Based on their Anticipated Impact

The unreasonably tight schedule of the project processes has been identified as the most impactful risk on the housing project performance in Pakistan (RII = 0.183). Due to lack of pre-planning managers often face this risk during construction projects in Pakistan. One of the most common errors that a firm may make is attempting to complete a whole project in one go (Buniya et al., 2021). It can be easily countered through breaking down the project in manageable and easy sub-processes. Also, setting priorities and pre-scheduling and planning of the project will help dealing with this risk that can have a significant impact on the housing project performance in Pakistan (Yiu et al., 2019).

Additionally, the clients’ resistance to adopt new green ideas and practices has been anticipated as the 2nd impactful risk factor on housing projects in Pakistan (RII = 0.179). Lack of knowledge and
awareness are a major factor contributing negatively in this regard (Shankar & Kumari, 2019). In addition, clients often feel that a sustainable way of living is typically more expensive. Also the lack of enforcement by the government and concerned authorities are seemingly contributing towards the resistance to adopt new green ideas and practices (El-Sayegh et al., 2021).

Furthermore, shortage of the clients’ fund found as the 3rd impactful risk factor on housing projects in Pakistan (RII = 0.179). Shortage of financial resources often causes delays in the construction project and it may easily be the most significant source of additional costs and loss of financial return or other advantages from the project (Eyiah et al., 2019). As a result, shortage of funds may actually be costly for both the owner and the contractor, in the long run. This can be countered through early success in the construction process and having an efficient portfolio to gain ultimate trusts of your investors (Peters et al., 2019).

Likewise, contractors’ limited experience and exposure with green/sustainable housing projects found as the 4th impactful risk factor with a RII of 0.179. Since Pakistan is a developing nation, there are not many options available for the contractors to improve their experience and exposure with green/sustainable housing projects (Bodaghi, 2020). Few of the construction companies who are currently employing sustainable methods in construction, are often high profile and maximum security. Therefore, there are very less chances for common contractors to increase their exposure and experience sustainable building methods first hand (Young, 2020).

Lastly, project feasibility and planning has been identified as the 5th most impactful risk factor in housing projects of Pakistan (RII = 0.177). A feasibility study must be conducted at the start to assess the practicality of the project to determine whether or not you can proceed with the project. Similarly, pre-planning is a must, which is often neglected due to lack of knowledge, awareness, and experience of the project managers and contractors (Hatmoko et al., 2019).

Conclusion and Recommendations
Through the data analysis of the current study, it can be concluded that the shortage of clients’ fund is the most critical risk, according to the respondents. Shortage of the funds and timely availability of the finances, not only hinder the process of construction but also proves to be costly in the long run. The delays in payments and non-availability of materials are the main results of this critical risk. Project budgeting was found to be the 2nd critical risk in housing projects of Pakistan due to unfamiliarity with green projects. Third most critical risk was improper planning and feasibility skills and capacity. Next most critical risk according to the respondents of the study is the failure to meet green requirement, code of conduct and certification by the housing projects in Pakistan. Furthermore, the next five critical risks are based on their anticipated impact in the construction sector of Pakistan. The shortage of the clients’ fund was found to be the third most impactful risk. The second last risk was concluded to be contractors’ limited experience and exposure with green/sustainable housing projects. Lastly, the fifth and final critical risk based on its anticipated impact in the housing industry of Pakistan is identified as project feasibility and planning.

Recommendations
The practitioners should recognise and evaluate the possible risks in green housing projects as Risk identification and evaluation are critical components of risk management in construction. Because of this component, effective risk response, development, and switch is also imperative. The academicians are implicated to identify more risk by analysing previous empirical studies. Since Pakistan has contrasting risk factors as compared to other nations, the academicians should conduct studies so that differences of risk can be highlighted as risk are exclusive in other economies. The academicians and researchers are further implicated to properly implement the project management methods with a specific emphasis on green construction programs so that major management risk can be addressed.
While dealing with specific clients the contractors should take extra care as they may have funding problems.

Other important risks are technical. This category contains risk that are solely because of shortage of design experience in sustainable building projects. Thus, individuals who have experience in sustainable housing projects should select appropriate designers. Also during the project execution, they should be able to create a sound design with little alterations. The practitioners are recommended to develop such projects that should not damage the ecology of the region in which they are located. Also the land should be determined on the basis of sociological and environmental consideration and not on land value alone. In order to assess and prevent risk it is necessary that all future developments a minimum density of person per hectar should be enacted. Against the corruption of land the civil society groups should support indigenous movement against the occupation of their land by developers so that the courts of law could pursue this issue seriously.

The risks are also associated with designs and these are technical risks. In order to assess them and to reduce cost and improve design it is implicated to practitioners to create a design department which produces standardized design for homes and apartments which can guide developers and individual families. The study has certain limitations. However, the study has only investigated the two factors that are related to risk such as identification and assessment. Therefore, the future researchers are implicated to consider other factors of risk such as management, prevention, tolerance and after effects of risk as this would help the future practitioners and academicians to understand the housing projects risk efficiently. While the futures studies should consider other risk related to housing projects such as environmental risk so that the housing projects can flourish well in the future. Also the future researchers are implicated to look into management strategies so that risk related to housing projects can be prevented and maintained efficiently.

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Asset Commonality and Credit Expansion by Banks in Pakistan

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**ABSTRACT**

**Purpose:** Diversification by the majority of the banks in a system contribute to the progression of systemic risk on one hand and affects the lending behaviors of the banks on the other. Since lending behaviors of the banks directly affect the availability of credit to the non-financial sector, the situation may worsen, as a consequence of systemic risk. In this study, we examine the relationship between asset commonality and credit expansion by commercial banks in Pakistan.

**Design/Methodology/Approach:** We use post-global financial crisis data ranging from 2011-2020. A dynamic model is employed with a two-step system GMM technique to control for the problems of autocorrelation and endogeneity, as indicated by the pre-diagnostic tests.

**Findings:** Our results show that asset commonality significantly affects credit expansion by banks in Pakistan. Moreover, the direction of the relationship is negative implying that the asset commonality of the banks in Pakistan, induces banks on the individual level to contract credit to the non-financial sector.

**Implications/Originality/Value:** The findings are helpful for policymakers to devise and implement a prudent regulatory framework for the monetary sector, by not only targeting risk indicators of the financial sector but also keeping in view its repercussions to the real sector of the economy.

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**Introduction**

Existing literature on the contagion process to explain the failure of financial institutions during the global financial crisis (Gai et al., 2011) reveals that the interrelatedness of the financial institutions is a precondition for systemic risk to existing. The significance of systemic risk is magnified since the
repercussions of the financial turmoil are not confined to the financial sector alone but rather intrude into the real sector of the economy as well (UNDP, 2009). Subsequent to the global financial crisis, therefore, a flood of studies emerges on the subject of systemic risk (Vallascas & Keasey 2012; Weib et al., 2014; Strobl, 2016; Teply & Kvapilíkova 2017), exploring the factors causing such risk and how these factors are associated to decisions in the financial as well as non-financial sectors. A strand of studies provides evidence that systemic risk stems from the funding maturity and asset commonality of financial firms. Hence, an important question facing policymakers, specifically after the financial crisis of 2008-09, is whether asset commonality (a measure of systemic risk) in the banks is related to credit expansion by these banks and what is the direction of this relationship if it really exists?

A weird fact about banks is that these are high leveraged entities and least constrained by any restrictions to further enhance their debt in the form of deposits. Furthermore, the banks are interconnected to each other owing to various types of bilateral and multilateral transactions. This interconnectedness of financial firms significantly contributes to the systemic risk of the financial sector (Paltalidis et al., 2015). Moreover, when the systemic costs are high, the banks should prefer diversification to mitigate the risk (Beale et al., 2011). The diversification in various classes of assets, may not be confined to any individual entity but rather spread to many if not all. This diversification escalates the likelihood of overlapped portfolios in the banking sector as a whole. The commonalities in the assets held by banks further intensify the fragility of the system (Ibragimor et al., 2011; Blei & Ergasher 2014).

Since banks are a dealer in finance and earn their profits either by lending (advance loans to the non-financial sector) or investing in other non-loan avenues. However, neither the risk and return nor liquidity associated with lending and investing options are identical. Investment in certain marketable securities is more liquid as compared to lending to the real sector. In fact, loans advanced to the non-financial sector of the economy are mostly illiquid in nature (Diamond & Rajan 2001). Thus, following the commonality of assets, the banks may reduce advances to the real sector, to keep liquidity intact, resulting in a general contraction of the credit in the market. Conversely, the banks may engage in aggressive behaviors and advance loans to maximize their profits, thereby directly contributing to credit expansion in the market.

Since this area is getting attention everywhere, a similar effort is due, to study the relationship in a developing country like Pakistan. This paper is, therefore, specifically intended to explore the relationship between asset commonality and credit expansion by commercial banks in Pakistan and whether this relationship is positive or negative.

The study is organized as follows. In the next section, hypotheses are developed after a brief review of the related literature. Section 3 comprises data sources and the methodology used to obtain empirical results. Results discussions are given in section 4, along with descriptive statistics, correlations, pre, and post-diagnostic tests. Section 5 concludes the findings. References are given at the end of the document.

**Literature Review and Hypothesis Development**

We find mixed results while going through literature on expansion or contraction of credit by the banks, under conditions of uncertainty and high risk. Campello et al., (2011) document that an increase in the mark-ups during a crisis does not affect the average size of the available credit lines. However, smaller, private, and speculative firms utilize a larger part of their credit lines before and during crises. Another study by Ewert et al., (2000) reports that the banks charge high-interest premiums, from firms prone to higher default risk, as a tool to limit lending to such firms. In a study by Ippolito et al., (2016) Italian banks, subsequent to crises, are found to reduce their credit lines, in order to cope with their enhanced liquidity risks. Adachi-Sato and Vithessonthi (2017) develop a theoretical model to elaborate on the bank’s behavior under systemic risk attributed to funding maturity and asset commonality. They suggest
that given the probability of financial crises greater than zero, the banks may or may not internalize the cost of the crisis. When the banks do have an expectation to be bailed out, they do not bother to internalize the cost of a financial crisis and engage in extensive lending thereby expanding the credit for the non-financial sector. On the contrary, if the banks do not expect to be bailed out, they internalize the cost of the financial crisis. The funds become expensive and thus a contraction of credit in the economy is observed. Based on the discussion in this section we can postulate the following hypotheses.

H1: Asset commonality significantly affects credit expansion by the banks in Pakistan.
H1(A): Asset commonality positively affects credit expansion by the banks in Pakistan.
H1(B): Asset commonality negatively affects credit expansion by the banks in Pakistan.

Data and Methodology

Data and Sample
This study takes into consideration a period of ten years starting from the year 2011. A post-global financial crisis window is specifically selected to control for any potential biases owing to the crisis. We initially include all commercial banks listed on Pakistan Stock Exchange. The exclusion from the sample is made only on the ground of matching criteria or non-availability of data for one or more years over the data period. The foreign banks and Islamic banks, therefore, could not be included in the sample for want of matching characteristics. This leaves us with 18 commercial banks and a total of 180 observations in the final sample.

For our analysis, we need data at two levels. The bank-level data in respect of advances and deposits are taken from the audited balance sheets of the banks which are extracted from their annual reports and directly downloaded from the websites of respective banks, State Bank of Pakistan and Pakistan Stock Exchange. The data with regard to macroeconomic variables like GDP growth rate and interest rate is taken from World Development Indicators.

Variables of the Study
The dependent variable of this study is credit expansion by the banks which is measured in terms of the ratio of gross advances to total assets. This construct is consistent with earlier studies (Malede, M. 2014).

Asset commonality is the explanatory variable of prime interest. Several measurements are available in the literature regarding this variable. However, in line with Allen et al., (2012), this study takes clustered asset structure of the banks as a measure of asset commonality which equals the inverse of the cross-sectional standard deviation of the share of total loans to total assets. This proxy is also used by Adachi-Sato & Vithessonthi (2017).

Deposits are the main source of funds for the banks and thus are heavily relied upon by them. An expansion in deposits is followed by an expansion in advances and vice versa. Deposits are, therefore, included in the model as a control variable and means and include total deposits and account whether current, saving, or fixed in nature. Deposits are measured as a fraction of total assets. The construct is also used by Olusanya et al., (2012); Malede, M. (2014).

GDP growth rate is employed in the equation as explanatory to control cyclical effects. Although various versions of GDP are available to calculate GDP growth rate the one used in this study is GDP at constant prices in local units. The growth rate is calculated by taking the difference between current year and the previous year’s GDP and then dividing it by the previous year’s value. This measure is also used by Dell’Ariccia & Marquez (2006).

Interest rate, another control variable, directly affects the revenues of the banks. A higher interest rate,
on one hand induces banks to lend more, it enhances cost of funds for the borrowers at the same time. Thus, the variable may have a positive or negative impact on banks’ advances depending upon the fact which mechanism predominates. For our analysis, risk premium on lending rates is used a proxy of this variable as also used by Ewert et al., (2000).

**Model and Estimation Technique**

In order to examine the relationship between asset commonality and credit expansion by the bank’s, following equation is estimated.

\[
C_{\text{red}\_\text{Exp}}_{it} = \beta_0 + \beta_1 C_{\text{red}\_\text{Exp}}_{i,t-1} + \beta_2 AC_t + \beta_3 \text{Deposits}_{i,t} + \beta_3 \text{GDP\_GR}_t + \beta_3 \text{Interest}_t + \epsilon_{it} \quad (1)
\]

In equation (1), \(C_{\text{red}\_\text{Exp}}\) means credit expansion by the bank ‘i’ at time ‘t’; \(AC_t\) is the asset commonality of banks at time ‘t’; \(\text{Deposits}_{i,t}\) are the total deposit of bank ‘i’ at time ‘t’; \(\text{GDP\_GR}_t\) is the real GDP growth rate at time ‘t’ and \(\text{Interest}_t\) is the risk premium on lending rates at time ‘t’. Credit expansion and deposits are normalized by total assets.

Although panel datasets are superior to time series and cross-sectional datasets, at the same time these datasets are prone to the issues of serial correlation, heteroscedasticity and endogeneity which limits the option range for estimations techniques for longitudinal datasets. In the presence of these econometric problems Ordinary Least Squares, fixed effect/random effect models, instrumental variable approach and even difference GMM are not appropriate. This leads to the use of System GMM which can handle these econometric problems and produce efficient estimates (Gaud et al., 2005). The existing literature on our study indicates the prevalence of these issues, therefore pre-diagnostic testing of the data is necessary to proceed with further estimation of the model. Stata (software package) is used for analysis.

**Empirical Results**

As discussed above, the formal estimation of the model is to be preceded by certain tools for screening the data. Hence, descriptive statistics, correlations matrix, and pre-diagnostics are presented before switching to regression results.

**Descriptive Statistics**

Table 1 below, gives the values of mean, and standard deviation in addition to the minimum and maximum values of the variables.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean Value</th>
<th>Standard Deviation</th>
<th>Minimum Value</th>
<th>Maximum Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit Expansion</td>
<td>0.4277</td>
<td>0.0991</td>
<td>0.1521</td>
<td>0.7223</td>
</tr>
<tr>
<td>Asset Commonality (SRISK)</td>
<td>10.7068</td>
<td>1.4357</td>
<td>8.5945</td>
<td>13.0285</td>
</tr>
<tr>
<td>Deposits</td>
<td>0.7347</td>
<td>0.0883</td>
<td>0.3410</td>
<td>0.9464</td>
</tr>
<tr>
<td>GDP Growth</td>
<td>3.7184</td>
<td>2.0744</td>
<td>-0.9354</td>
<td>5.8364</td>
</tr>
<tr>
<td>Interest Rate</td>
<td>1.7970</td>
<td>1.1826</td>
<td>-1.0577</td>
<td>3.0376</td>
</tr>
</tbody>
</table>

It can be observed that, on average, 42% of the total assets held by the banks are in the form of loans and advances. A mean value of 10 in respect of asset commonality, suggests that banks’ assets in a particular year tend to vary by about 10 percent, on average. Recalling that this variable is an inverse of the cross-sectional standard deviation, a higher value means a higher degree of asset commonality and vice versa. The Real GDP growth rate stays around 3.7% on average, except for the year 2020, when the growth
rate was negative as expressed by its minimum value. The mean value of the interest rate indicates that the risk premium on the lending rate stands at around 1.8% in the economy, during the sample period.

**Correlations**
Table 2 signifies correlations among variables constituting Equation (1). The table shows a moderate degree of correlations among variables thereby eliminating the threat of multicollinearity.

<table>
<thead>
<tr>
<th>Variables</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Credit Expansion</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) Asset Commonality (SRISK)</td>
<td>-0.245</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Deposits</td>
<td>0.255</td>
<td>-0.151</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4) GDP Growth</td>
<td>0.028</td>
<td>0.014</td>
<td>-0.035</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>(5) Interest Rate</td>
<td>-0.198</td>
<td>0.181</td>
<td>0.019</td>
<td>0.329</td>
<td>1</td>
</tr>
</tbody>
</table>

**Pre-Diagnostics for GMM**
Durbin test and Wu Hausman test are employed to examine the presence of endogeneity. The null of the tests states that variables are exogenous, and the model is not subject to the issue of endogeneity. Rejection of the null at 1% (indicated by the corresponding p-values), however, indicates the presence of endogeneity.

The last row of Table 3, the Wooldridge test, provide statistical evidence for the presence of first-order autocorrelation.

<table>
<thead>
<tr>
<th>Test Name</th>
<th>Null of the Test</th>
<th>Test-stat</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durbin</td>
<td>Variables are exogenous</td>
<td>14.063</td>
<td>0.000</td>
</tr>
<tr>
<td>Wu-Hausman</td>
<td>Variables are exogenous</td>
<td>14.734</td>
<td>0.000</td>
</tr>
<tr>
<td>Wooldridge</td>
<td>No first-order autocorrelation</td>
<td>38.817</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Based on the discussion in the previous sections and the results of pre-diagnostic analysis, this study employs System GMM to arrive at the results.

**Regression Results**
Table 4 summarizes the regression results, estimated using a two-step system GMM as discussed in the previous discussions. Results are obtained by estimating Equation (1) given above.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient (t-stat)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit Expansion (t-1)</td>
<td>0.854*** (6.77)</td>
</tr>
<tr>
<td>Asset Commonality (SRISK)</td>
<td>-0.013*** (-3.87)</td>
</tr>
<tr>
<td>Deposits</td>
<td>0.100* (2.08)</td>
</tr>
<tr>
<td>GDP Growth</td>
<td>0.016*** (3.97)</td>
</tr>
<tr>
<td>Interest Rate</td>
<td>-0.012***</td>
</tr>
</tbody>
</table>
A statistically significant coefficient of the lagged dependant variable demonstrates the dynamic nature of the model which indicates that credit expansion by the banks is significantly affected by their previous behaviours. Moreover, the positive sign indicates the momentous expansion of credit by banks. These findings are consistent with the earlier studies (Pramono et al., (2015) that have used dynamic models.

Asset commonality, the main variable of the study, is also found statistically significant finding in respect of this variable is that the sign of the variable is negative which suggests that banks managers are not indulged in lending behaviours that are characterized by the problem of aggressive moral hazard. In other words, the bank managers do not finance the projects by deteriorating the standards of extending loans. This reluctance may either be quantitative, by means of fixing lending quotas, or qualitative, in the form of the strictness of the lending terms and conditions. The results reinforce the findings of previous studies (Paligorova & Santos 2016; Ippolito et al., 2016).

The coefficients of GDP are also significant and reinforce earlier findings (Dell’Ariccia & Marquez 2006; Podpiera, A.P. 2007; Vazakidis & Adamopoulos 2009; Mukhanyi, M. 2016). This ensures that economic growth stimulates credit expansion necessary for the initiation of investment activities. The coefficient of interest rate is found significantly negative indicating the predominance of the reluctance of borrowers to borrow high-cost funds. The results support the evidence found in the literature (Podpiera, A.P. 2007; Abd Karim et al., 2007; Abdul Karim et al., 2011).

**Post Diagnostics**

The lower panel of Table 4 bears statistics implying the appropriateness of the model. The significant value of AR (1) indicates evidence for the rejection of the null hypothesis of no autocorrelation among error terms in the first difference, whereas the insignificant value of AR (2) indicates that error terms are not correlated in the level regressions. The value of Sargen-stat is insignificant thereby accepting the null of valid instruments. The validity of the instruments is also endorsed by the insignificant value of Hansen-stat. Literature suggests that if the instruments are greater than the number of cross sections then the model may be overfitted. However, in our case, the instruments are below the number of cross
sections (as expressed by the table) thus eliminating the possibility of having an over-fitted model. A significant value of the F-stat indicates the appropriateness of the model.

**Conclusion**

In this paper, we examined the effect of asset commonality on credit expansion by the commercial banks in Pakistan. Using data from 18 banks over the period 2011-2020, the study finds a significant relationship between banks’ asset commonality and credit expansion. Moreover, the direction of the relationship is negative, that is, as the bank tends to hold common assets, the banks on the individual level tend to contract credit to the non-financial sector. This behavior of the banks has significant implications. When the banks curtail their advances and depend more on earning money from other investment opportunities, this leads to a shortage of investable funds for non-financial business firms leading to a potential economic recession. This requires caveats on the part of the government and the regulatory authorities to smoothen the economic environment by introducing prudent policy measures by not only targeting risk indicators of the financial sector but also keeping in view its repercussions to the real sector of the economy.

**References**


Volatility between Conventional and Islamic Stock Market

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Sehrish Kayani, Visiting Faculty of Management sciences at National University of Modern Languages Islamabad
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ABSTRACT

Purpose: This study investigates the degree and extent of volatility interdependence between the Islamic and conventional stock markets represented by using the Dow Jones indices for the period spanning from Dec 1, 2008, to Dec 31, 2016.

Over the last two decades, the stock market has developed rapidly as a new investment instrument and these investments haven't solely extended within the money market and conventional market but also in the developing Islamic markets.

Design/Methodology/Approach: GARCH(1,1) conditional volatility series are generated and then further used the Quantile regression approach on volatility series to check the financial markets’ interdependence.

Findings: The results show that stock markets are interdependent on all three quantile levels. Accordingly, the structure of interdependence is asymmetric for both Islamic and conventional stock markets.

Implications/Originality/Value: Investors, government regulators, and academics can all learn from the findings of this study. The potential for spillover of volatility from conventional stock markets to Islamic stock markets can be effectively countered by investors who develop and implement their unique strategies.

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planet and become a lot of challenges to the traditional financial set-up. Countries that were affected by crises provide new funding streams to improve their economies and provoke the awareness of a wide range of investors. Indeed, once the oil crises of the 70s, Muslim monetary merchandise was created to soak up the huge provide of capital returning from a loaded investor which the holders of petrodollars were.

It's a three-way race between Dubai, London, and Kuala Lumpur to become the most important Islamic financial hub. As one of the fastest-growing emerging markets, Turkey's deputy prime minister for financial and economic affairs emphasized the significance of Sukuk financing the country's current account deficit.

The conventional market and the Islamic market are distinct in many respects. Value and small-cap equities are more popular in the traditional market, while growth and mid-cap companies are more popular in the Islamic stock market. The Islamic financial system, which is by Sharia law, is another distinction between the Islamic market and the conventional market. Stocks in companies that engage in Haram (prohibited) activities like lending, gambling, tobacco or alcohol manufacture, traditional financial services, entertainment, or weaponry should be permissible investments according to Islamic sharia. Companies with significant interest-bearing loans, trading debt for more than their face value, or receiving interest or other impure revenue are also prohibited investments under sharia law (Rehman, 2010).

According to sharia law, it is forbidden to put money into any derivative financial product that does not have an underlying tranche, such as a forward option, futures, interest rates, or government debt. Because of this, there can be no financial protection measures within the Islamic financial system that serves to mitigate risk. The Islamic financial system can act as a buffer against the risk and instability in the financial markets, according to the findings of another study. The Islamic stock market is distinct from the traditional market both in normal times and after the global financial crisis of 2008. (Nazlioglu, 2015).

Global index providers show and model these new indices differently, taking into account the expectations of regulators in the Islamic and conventional markets, demonstrating that Islamic investors are very selective in their investments in Islamic indices. Sharia-compliant investment strategies and indexes have received a lot of attention because of the equitable distribution of profits they ensure. The international financial sector reports that Islamic investments are expanding rapidly because they provide lucrative returns while also adhering to ethical principles that are highly valued by investors in Islamic countries.

**Literature Review**

In recent years, financial markets have become a clear vulnerability for widespread business sector crises that have triggered economic slump. Thus, the related financial project indicated the development of the Islamic backbone industry, which is essentially the view of Shari'a's standards, as another elective speculation capable of weathering the financial crisis more efficiently than the traditional partners and providing a response to global financial specialists attempting to secure their businesses against financial notions.

Finances in the Muslim community are not as incomprehensible as those used to maintain socially reliable indices. Due to the absence of sugar coatings, Muslims will be able to accept precious archives that they view as harmful in addition to their regular companions (Albaity and Ahmad, 2008). Moreover, media companies who accompany these registrations by adopting financial channel standards and linking additional cash could be additional productive partners to normalcy (Atta 2000).
The scope of Muslim finance has broadened to include not only banking but also the money market, fund management, and portfolio management as well. The major Muslim index, "Muslim index with a social conscience," was introduced in 1998. Since then, the range of Muslim indexes has broadened, prompting Islamic index investors to offer a suite of jurisprudence indices in recent years.

Despite massive growth in Muslim financial institutions due to several circumstances, most notably the influx of petrodollars and, hence, the surpluses in the Gulf countries. To determine whether Muslims or other indices were less profitable than the usual rates, a sizable body of financial research was interested in examining the Muslims' performance.

Standard deviations in risk and risk characteristics stem mostly from Muslims' political and religious activity (Hayat and Kraussl, 2011, Abdullah et al. 2007).

Hassan et al. (2005) assess the Associate's moral portfolio in Nursing Muslims relative to a benchmark portfolio. According to the data, the nurse's investment has not been negatively affected by the use of Muslim moral filters.

Money returns and investing strategies for 265 widely used Muslim stock funds across 20 countries were examined by Hoepner et al. (2011). The writers are aware that growth companies do provide some backing for Muslim fashion investment funds, but that funds from most Muslim economies have a distinct bias toward modest capitalizations.

Muslim indices are focused on growth and capitalization, while conventional indices are compared with added value and concentrated capital, as discovered by Girard and Kabir (2008), who conducted an interactive study of Muslim and non-Islamic indices.

Forte and Beste (2007) consider whether faith-based investments (i.e. FTSE Muslims) and other types of Islamic investment funds will be included in the category of socially responsible investment funds, or whether they would be better off organized in a very separate family investment. When compared to conventional indices and SRIs, the data demonstrate that Muslim investment features portfolios with a different political economy character. Islamic banking has been given some attention in the literature, especially in light of the recent global financial crisis.

In light of the recent global monetary crisis, Dridi and Hasan (2010) analyze and compare the effects of the crisis on the earnings, credit, external growth, and ratings of conventional and Islamic banks. These authors are aware that the crisis is having differing effects on the two business types. As a result of the prohibition on Riba's observation, Dewi and Ferdian (2010) say, Muslim finance will emerge as a solution to the current economic crisis.

The global financial crisis, according to Ahmed (2009), has exposed flaws in risk management across organizational, structural, and product dimensions. The author argues that the current financial crisis could have been avoided if businesses, nonprofits, and consumer goods had instead adhered to the tenets of Muslim finance.

In 2013, Arouri et al. embarked on a novel strategy. Examining the dispersed portfolios in which it trades Islamic values complements the conventional markets while considering the influence of the monetary and standard Islamic currency markets in three global areas and the quest for fewer detrimental effects in the first and second. They prove that increasing one's portfolio over time reduces overall risk and creates additional advantages of diversity.

When Hussein Omran (2005) compares the performance of Dow Jones Muslims to that of their normal peers over the period 1996-2003, he finds that the indices show Muslims, statistically and
economically, an abnormal positive vitality arrived at the total and for which the sub-period from January 1996 to March 2000 shows statistically insignificant negative results from Gregorian calendar month 2000 to July 2003. Hussein (2004) uses CAPM to determine that, during the period 1996–2003, the FTSE World Muslim Index outperforms the FTSE World Standard Index. The FTSE World Muslim Index, on the other hand, shows statistically aberrant returns within the securities industry sample (July 1996 to March 2000) and lags behind the FTSE World Standard Index within the sample size.

Neither the Wilshire 5000 nor the 3-month Treasury bill correlate with the Islamic index. Together, they demonstrate that shifts in the Moslem index cannot be attributed to movements in the Wilshire 5000 or the 3-month Treasury bill. According to the findings of Hakim and Rashidian, the Moslem index is affected by variables independent of the general economy and interest rates.

From 1990 to 1995, Annuar et al. (1997) analyze the performance of 31 Malaysian common funds that are primarily Moslem, finding empirical evidence that these Malaysian assets outperform the KLCI benchmark.

Both co-integration tests are used by Hakim and Rashidian (2004) to investigate the correlations between the Islamic value list and the Wilshire 5000 record and the three-month Treasury bill in the United States. Their findings show that the Islamic record is uncorrelated with and unaccountable for by the Wilshire 5000 or the three-month Treasury bill yield in the United States.

Using the autoregressive distributed lag (ARDL) method, this article examines the long-term relationship between the Islamic markets in Malaysia and key macroeconomic characteristics (i.e., cash supply, exchange rates, financing costs, the mechanical generation record, and the Federal assets rate). Their findings show that the KLSI is largely affected by changes in exchange rates, cash availability, lending costs, and the Federal assets rate, making these variables plausible targets for government attention as it seeks to normalize the Islamic securities exchange and encourage greater capital inflows. Together, Abdul Majid and Yusof The DCC-MGARCH demonstration modifies the consistent conditional connection (CCC) MGARCH demonstration by allowing the contingent covariance framework of the needed factors to adopt a dynamic representation and the contingent intention to adopt a vector autoregressive (VAR) representation. By eliminating the assumption of constant contingent connection, the model can capture the widely observed phenomenon of instability grouping. This phenomenon states that periods of large swings will arbitrarily follow periods of small swings and vice versa. As a result, the model enables the calculation of instability relationships that evolve. Since the VAR model fits a multivariate time-arrangement relapse of every needed variable on slacks of itself and slacks of the numerous ward components, it also allows for an estimation of mean overflows.

Following are the hypothesis of this study:

H1: The financial interdependence exists among Conventional and Islamic stock markets.
H2: The financial interdependence exists between the Islamic and Conventional stock markets.

**Data and Methodology**

The DJIM Index, as well as its conventional counterpart, the Emerging Markets Index, the Kuwait Index, the Gulf Cooperation Council (GCC), the United States Index, the United Kingdom Index, the DJ Europe Index, the Turkey Indices, and the Pakistan KSE are all included in the analysis of global Islamic indices. The GARCH model is used to compare the daily volatility of all Islamic stock markets to that of all conventional stock markets from December 1, 2011, through December 31, 2021.
This method has been used in a few studies during the past few decades to disentangle some econometric levels. Some examples of uses in the business world are salary structure studies (Buchinsky & Leslie, 2010), profit flexibility studies (Eide & Showalter, 1999; Buchinsky & Hunt, 2001), and evaluations of educational outcomes (Buchinsky & Leslie, 2010). Financial analysts employ this strategy for a variety of purposes, including resolving issues with Value at Risk and alternative evaluation (Engle and Manganelli, 2004; Morillo, 2000), demonstrating the importance of financial factors, and reflecting on their foundation and degree of reliance, among other things.

The following equation is used for quantile regression:

\[
Q_y(\tau | x) = \inf \{ b | F_y(b | x) \geq \tau \} = \sum k \omega_k (\tau) x_k = x_\omega(\tau)
\]

The conditional distribution function of y given x is denoted as \( f_y(b | x) \), where y is a dependent variable presumed to be linearly dependent on the x vector. All conditional volatility series generated by the AR(1)-GARCH (1,1) model make up the x vector. The coefficient in the QR equation \( \tau \) characterizes the strength of the association between the vector and the conditional quantile of y. Total dependence on y is established by the value of \( \omega(\tau) \).

### Results & Discussion

The study then applies a variety of statistical methods to the collected data in the next chapter. There are two parts to it. Descriptive statistics, GARCH, and Quantile regression analysis are presented in the first section. This subject is included in the second section.

Tables 1(A), 1(B) show the GARCH model's variance equation: At the 10%, 5%, and 1% (*, **, ***), levels of significance, the coefficients are significant. The 1% confidence level indicates that the market coefficient is significant across all markets. Additionally, the \( (g + \lambda) \) varies from 0.9 to 1 in terms of the risk premium. Long-term volatility is persistent, and the results indicate a sizable volatility spillover.

<table>
<thead>
<tr>
<th>Table 1(A) GARCH (1,1) of conventional stock markets</th>
</tr>
</thead>
<tbody>
<tr>
<td>REU</td>
</tr>
<tr>
<td>Ω</td>
</tr>
<tr>
<td>(0.000)***</td>
</tr>
<tr>
<td>G</td>
</tr>
<tr>
<td>(0.000)***</td>
</tr>
<tr>
<td>Λ</td>
</tr>
<tr>
<td>(0.000)***</td>
</tr>
<tr>
<td>(g + \lambda)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 2 (B) GARCH (1,1) of conventional stock markets</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTUR</td>
</tr>
<tr>
<td>Ω</td>
</tr>
<tr>
<td>(0.000)***</td>
</tr>
<tr>
<td>G</td>
</tr>
<tr>
<td>(0.000)***</td>
</tr>
<tr>
<td>Λ</td>
</tr>
<tr>
<td>(0.000)***</td>
</tr>
<tr>
<td>(g + \lambda)</td>
</tr>
</tbody>
</table>

Table 3 displays the results of using GARCH (1,1) to analyze the interdependence of stock markets. Given the existence of the ARCH consequence in the returns series, the GARCH(1,1) model is the
most appropriate for volatility forecasting. Significant coefficients are seen at the 10%, 5%, and 1% (*, **, ****) levels, respectively. Positive and statistically significant (at the 1% level) conditional variance equation parameters are observed, and a risk premium of \((g + \lambda)\) between 0.90 and 1 is obtained. Long-term volatility is persistent, and the results indicate a sizable volatility spillover.

Table 3 GARCH (1,1) of Islamic stock markets

<table>
<thead>
<tr>
<th></th>
<th>REUISL</th>
<th>RGCCISL</th>
<th>RKSEISL</th>
<th>RKUISL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ω</td>
<td>6.33E-07</td>
<td>2.60E-07</td>
<td>1.62E-06</td>
<td>8.93E-07</td>
</tr>
<tr>
<td></td>
<td>(0.00)***</td>
<td>(0.00)***</td>
<td>(0.00)***</td>
<td>(0.00)***</td>
</tr>
<tr>
<td>G</td>
<td>0.039273</td>
<td>0.065436</td>
<td>0.174501</td>
<td>0.090899</td>
</tr>
<tr>
<td></td>
<td>(0.00)***</td>
<td>(0.00)***</td>
<td>(0.00)***</td>
<td>(0.00)***</td>
</tr>
<tr>
<td>Λ</td>
<td>0.954806</td>
<td>0.938298</td>
<td>0.862224</td>
<td>0.903087</td>
</tr>
<tr>
<td></td>
<td>(0.00)***</td>
<td>(0.00)***</td>
<td>(0.00)***</td>
<td>(0.00)***</td>
</tr>
<tr>
<td>((g + \lambda))</td>
<td>0.99408</td>
<td>1.00373</td>
<td>1.03673</td>
<td>0.99399</td>
</tr>
<tr>
<td>RTURISL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REUISL</td>
<td>3.97E-06</td>
<td>5.85E-07</td>
<td>1.28E-06</td>
<td>6.42E-07</td>
</tr>
<tr>
<td></td>
<td>(0.00)***</td>
<td>(0.00)***</td>
<td>(0.00)***</td>
<td>(0.00)***</td>
</tr>
<tr>
<td>G</td>
<td>0.065386</td>
<td>0.038389</td>
<td>0.085561</td>
<td>0.048415</td>
</tr>
<tr>
<td></td>
<td>(0.00)***</td>
<td>(0.00)***</td>
<td>(0.00)***</td>
<td>(0.00)***</td>
</tr>
<tr>
<td>Λ</td>
<td>0.895353</td>
<td>9.57E-01</td>
<td>0.895993</td>
<td>0.943547</td>
</tr>
<tr>
<td></td>
<td>(0.00)***</td>
<td>(0.00)***</td>
<td>(0.00)***</td>
<td>(0.00)***</td>
</tr>
<tr>
<td>((g + \lambda))</td>
<td>0.96074</td>
<td>0.99522</td>
<td>0.98155</td>
<td>0.99196</td>
</tr>
</tbody>
</table>

Quantile Regression Analysis from Conventional To Islamic Stock Markets

Table 4 presents quantile regression estimation for conventional and Islamic markets according to the model, where the dependent variable is A1 and the independent variables are all Islamic countries.

Table 4 Dependent Variable A1

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-9.32E-07</td>
<td>0.7901</td>
<td>-5.27E-06</td>
<td>0.0000</td>
<td>-1.02E-05</td>
<td>0.0001</td>
</tr>
<tr>
<td>B1</td>
<td>0.8926***</td>
<td>0.0000</td>
<td>0.9585***</td>
<td>0.0000</td>
<td>0.8069***</td>
<td>0.0000</td>
</tr>
<tr>
<td>B2</td>
<td>0.0151***</td>
<td>0.0000</td>
<td>0.0187***</td>
<td>0.0003</td>
<td>-0.0028</td>
<td>0.5542</td>
</tr>
<tr>
<td>B3</td>
<td>-0.0045</td>
<td>0.7739</td>
<td>0.0016***</td>
<td>0.0000</td>
<td>0.0001</td>
<td>0.7420</td>
</tr>
<tr>
<td>B4</td>
<td>-0.0511***</td>
<td>0.0000</td>
<td>-0.0083</td>
<td>0.3474</td>
<td>-0.0463***</td>
<td>0.0000</td>
</tr>
<tr>
<td>B5</td>
<td>0.0118***</td>
<td>0.0949</td>
<td>0.0275***</td>
<td>0.0001</td>
<td>0.0887***</td>
<td>0.0024</td>
</tr>
<tr>
<td>B6</td>
<td>0.0993</td>
<td>0.1432</td>
<td>0.1661***</td>
<td>0.0000</td>
<td>0.5561***</td>
<td>0.0000</td>
</tr>
<tr>
<td>B7</td>
<td>0.0250</td>
<td>0.4060</td>
<td>0.0014</td>
<td>0.8163</td>
<td>0.0714</td>
<td>0.3736</td>
</tr>
<tr>
<td>B8</td>
<td>-0.0904***</td>
<td>0.0748</td>
<td>-0.0224***</td>
<td>0.0022</td>
<td>-0.0633***</td>
<td>0.0000</td>
</tr>
<tr>
<td>R²</td>
<td>0.7264</td>
<td>0.0000</td>
<td>0.8352</td>
<td>0.0000</td>
<td>0.8907</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Quantile regression studies for both the Islamic and conventional stock markets are shown in the table below. The quantile regression model's estimation outcome is displayed. It's safe to presume the model can accurately identify and assess the dependency of volatility series. When stock market A1 is regarded as dependent and stock markets B1, B2, B3, B4, B5, B6, B7, and B8 are considered independent. There is statistical significance for the coefficient at the 10%, 5%, and 1% levels, respectively, according to Starick's *, **, and ***. Table 1 shows that the stock market coefficients for B1, B5, and B8 are statistically significant at low (0.05), mean (0.5), and high volatility (0.95)
levels. Coefficient B2 is significant at both low (0.05) and medium (0.5) levels of volatility, whereas coefficient B3 is significant at medium (0.5) levels of volatility. At both the smallest (0.05) and largest (0.95), the B4 coefficients are statistically significant. At both the moderate (0.5) and the high (0.95) levels of volatility, the B6 coefficient becomes statistically significant.

Quantile Regression Analysis from Islamic to Conventional Stock Markets:
Quantile regression estimate methodology for determining the interdependence of the Islamic stock market and the conventional stock market is presented in Table 5 (where B1 is the dependent variable and the conventional stock market is the independent variable).

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>1.55E-06</td>
<td>0.1131</td>
<td>3.68E-06</td>
<td>0.0000</td>
<td>1.40E-06</td>
<td>0.3223</td>
</tr>
<tr>
<td>A1</td>
<td>0.5009***</td>
<td>0.0000</td>
<td>0.8208***</td>
<td>0.0000</td>
<td>0.9305***</td>
<td>0.0000</td>
</tr>
<tr>
<td>A2</td>
<td>-0.0788***</td>
<td>0.0000</td>
<td>-0.0252***</td>
<td>0.0000</td>
<td>-0.0562***</td>
<td>0.0000</td>
</tr>
<tr>
<td>A3</td>
<td>0.0035</td>
<td>0.8448</td>
<td>-0.0307***</td>
<td>0.0000</td>
<td>0.0038</td>
<td>0.5492</td>
</tr>
<tr>
<td>A4</td>
<td>0.1000***</td>
<td>0.0000</td>
<td>-0.0060</td>
<td>0.2370</td>
<td>0.0568***</td>
<td>0.0003</td>
</tr>
<tr>
<td>A5</td>
<td>0.0114***</td>
<td>0.0000</td>
<td>0.0070***</td>
<td>0.0005</td>
<td>0.0118</td>
<td>0.0679</td>
</tr>
<tr>
<td>A6</td>
<td>0.0639***</td>
<td>0.0003</td>
<td>-0.0255</td>
<td>0.0936</td>
<td>-0.1851***</td>
<td>0.0000</td>
</tr>
<tr>
<td>A7</td>
<td>0.0000</td>
<td>0.8929</td>
<td>0.0000***</td>
<td>0.0045</td>
<td>0.0000***</td>
<td>0.0005</td>
</tr>
<tr>
<td>A8</td>
<td>0.2152***</td>
<td>0.0000</td>
<td>0.1305***</td>
<td>0.0000</td>
<td>0.3160***</td>
<td>0.0000</td>
</tr>
<tr>
<td>R</td>
<td>0.6898</td>
<td>0.8327</td>
<td>0.9203</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The findings reveal a robust interdependence between Islamic stock B1 and three conventional stock markets, with the coefficients of A1, A2, and A8 stock markets being significant at low (0.05), mean (0.5), and high (0.95) volatility levels, respectively. At the threshold of mean volatility (0.5), however, the A3 coefficient becomes statistically significant. The importance of the low volatility (0.05) and high volatility (0.95) levels are depicted by the coefficients A4 and A6, respectively. At both the intermediate (0.5) and the extreme (0.95 ) levels of movement, the A5 and A7 coefficients become statistically significant. Quantile regression studies of Islamic and traditional stock markets are estimated and reported in Table 4.14.

Discussion
Estimates of stock market volatility series are made using the GARCH (1,1) model in this investigation. Many analysts believe that the GARCH model is the most accurate way to predict stock market volatility when the ARCH impact is present.

Through the use of the Quantile approach, study financial markets interdependencies regarding volatility, consequences of past studies which utilized distinctive systems keeping in mind the end goal to judge the presence of unidirectional and once in a while bi-directional unpredictability overflows between markets (Luchtenberg and Vu, 2015 and Forbes and Rigobon, 2001).

It is essential that by reference to the financial literature identified with the use of the quantile regression strategy, continued by figure seven quantile, from (0.05) to (0.95). Be that as it may, we simply announced in tables the consequences of major quantiles 0.05,0.5 and 0.95 which narrate, most of the time, the greatest of data. In reality, these quantiles permit us to consider extraordinary circumstances in financial markets, individually low volatility, mean volatility, and high volatility.

According to Buchinsky (1995), the standard error is obtained using the pairs boot stepping procedure. This allows for determining the nature of co-movement. The study confirms the previous
findings that there is financial interdependence between these markets. Aymen Ben Rejeb (2016) concluded that conventional markets and Islamic markets have strong interdependence and great impact regarding volatility spillover. This approach is used for interdependence in terms of volatility, it confirms the result of previous studies where that used distinctive methodology to check the volatility spillover between financial markets, Gilenko and Fedorova, (2014).

Conclusion

Conventional and Islamic instruments could benefit the investment in Global capital markets. Investing in various indices most efficiently and easily to improve return, findings of most the investor suggest that because investing in Islamic stock has low risk. There is uncertainty on Islamic indices to perform better than or equal to the conventional asset market because of the low potential of diversification, the smaller size of investment alternatives as compared to the conventional market, and the higher cost of Islamic yielding portfolio range which recommend that these investments underperform as compared to conventional one.

Due to the rapid growth of investment in Islamic finance the transmission of volatilities is also present in Dow Jones Index and emerging Islamic index and Islamic countries. Our study examined this transmission of volatilities among Dow Jones conventional and Islamic indexes including Europe, Gulf Corporation Council (GCC), Pakistan (KSE) , Kuwait (KU), Turkey (TUR), United Kingdom (UK), United States (USA) and World emerging markets (W) by using standard GARCH model with Quartile regression analysis to know about the significance of trends among Islamic and conventional stock market and interdependence among these markets. The data has been taken from December 2008 till December 2016.

The heteroscedasticity test is significant so the GARCH model can be applied to these data series. The results show significant interdependence among both stock markets and there is a long-run determination of volatility among stock markets.

*, **, *** indicates that the coefficients were significant at 10%, 5%, and 1% confidence levels. By using quartile regression three trends low volatility, mean volatility, and high volatility trends significance were checked.

The result shows that there is interdependence present among conventional and Islamic stock markets. European conventional stock markets have significant volatility spillover towards Islamic stock markets of Europe, Turkey, and world emerging markets because the volatility spillover is at an absolute level (all three quartiles are significant) towards these three Islamic stock markets. Secondly, the Golf corporation council’s conventional stock market has significant volatility spillover towards Islamic stock markets of gulf corporation council, Turkey, and the USA at an absolute level. Third, Pakistan’s conventional stock market has significant volatility spillover towards Islamic stock markets of Pakistan and Koyat at high volatility and mean volatility levels.

Koyat conventional stock market has significant volatility spillover towards Islamic stock markets of gulf corporation council, Pakistan, Turkey at an absolute level. Turkey’s conventional stock market has significant volatility spillover towards Islamic stock markets of Europe, gulf corporation council, Koyat, UK, and the USA at an absolute level. UK conventional stock market has significant volatility spillover towards Islamic stock markets of gulf corporation council, Koyat, Turkey, UK, USA and world emerging market at an absolute level. USA conventional stock market has significant volatility spillover towards Islamic stock markets of the USA at mean and low level and in Pakistan Islamic stock market its volatility is significant at low volatility level only. In the last World emerging conventional stock markets has significant volatility towards Islamic stock markets of Pakistan, Kuwait, and the World emerging market at an absolute level.
Results are also significant for the volatility spillover from Islamic to conventional stock markets. European Islamic stock market has significant volatility spillover towards the conventional market of Europe, Gulf corporation council, and world emerging markets at an absolute level. Second, the Gulf corporation council Islamic stock market has significant volatility spillover towards the conventional market of Gulf corporation council, Pakistan, and the USA at an absolute level. Third, the Pakistani Islamic stock market has significant volatility spillover towards the conventional market of world emerging markets at an absolute level. Fourth, the Koyat Islamic stock market has significant volatility spillover towards the conventional market of Europe, Gulf corporation council, and world emerging markets at an absolute level. Turkey’s Islamic stock market has significant volatility spillover towards the conventional market of Koyat and Turkey at mean volatility level only and at UK and USA conventional market means volatility and low volatility level. The volatility spillover from Turkey’s Islamic stock market is not much strong as in other Islamic markets. UK Islamic stock market has strong and significant volatility spillover towards the conventional market of Europe, Gulf corporation council, Koyat, and the UK at an absolute level. USA Islamic stock market has significant volatility spillover towards the conventional market of Gulf corporation council, UK and world emerging markets at an absolute level. In the last world emerging Islamic stock market has significant volatility spillover towards the conventional market of only its world emerging market at an absolute level.

**Recommendations of Study**

This study is helpful for investors, economic policymakers, and academia. Investors can formulate effective approaches against volatilities spillover of conventional and Islamic stock markets. Investors would be able to manage effective portfolios in the selected countries of our study to enhance their investment stock returns. For economic policymakers, they help to understand about the information of returns and volatility spillover of Islamic and conventional stock markets so that they make policies easily to avoid contagious spillover, So that new Policies may be formulated and implemented to manage the volatilities of stock markets. For academic purposes, this study is also helpful to the researchers to have insight into the volatility spillover in Islamic stock market indices and extend the literature in the field of this research domain.

**Limitation of Study**

This study is limited to Eight Dow Jones Conventional and Islamic stock markets (Europe, gulf cooperation council, Pakistan, Koyat, Turkey, UK, USA, and world emerging market ) only, Moreover, Other countries have not been included and the period from 2008 to 2016 (only 8 years) due to shortage of time. The different financial crisis periods are ignored. In the future large number of countries from other European and Asian regions may include and also check the crises period impact on volatility spillover among Islamic and conventional stock markets.

**References**


Economic Research Forum Annual Conference in Sharjah, UAE (pp. 26-28).


Portfolio Optimization Using Mean-Semi Variance approach with Artificial Neural Networks: Empirical Evidence from Pakistan

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**ARTICLE**

**ABSTRACT**

**Purpose:** The challenge of managing a portfolio effectively is allocating capital among numerous stock holdings to achieve maximum profit. Therefore, the purpose of this study is to guide investors in developing optimal portfolios in the stock market of Pakistan.

**Design/Methodology/Approach:** To pick and optimize a portfolio in the most effective way possible, we used the daily closing stock prices of a sample of listed firms at the Pakistan stock exchange. The study applied the mean semi-variance approach and compared the performance of portfolios with equally weighted portfolios under artificial neural networks and historical-based return estimation in Pakistan.

**Findings:** The result shows that artificial neural network-based estimation of the expected return vector has outperformed the historical return estimation under mean semi-variance portfolio optimization and constrained mean semi-variance portfolios based on the Sharp ratio in Pakistan.

**Implications/Originality/Value:** The study suggests that investors, fund managers, and portfolio analysts should focus on the more sophisticated neural network-based choice for the development of portfolios in the equity market of Pakistan.

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**Introduction**

An investor's goal should be to increase their portfolio profit while minimizing risk exposure. A portfolio can reduce risk by taking advantage of excess returns compared to investing in individual stocks. The challenge of managing a portfolio effectively is allocating capital among numerous stock holdings to achieve maximum profit. The investor's profit goal, the characteristics of the stock market, and the length of time they want to invest are some factors that influence the investment strategy they
choose. The fundamental concept behind a portfolio may be traced back to Markowitz (1952) and his simple mean-variance technique. The mean-variance framework is a parametric model that can streamline the analysis of a single time frame (Markowitz, 1952; Chan, 1999; Husnain, Hassan, & Lamarque, 2016b). When developing investment plans, it is necessary to make informed decisions regarding selecting stocks in which to invest over a predetermined amount of time. This option is influenced by several elements, including the aim of the investment, the features of market factors, and the desired amount of time spent investing. The mean-variance framework (M-V) that Markowitz developed serves as the basis for portfolio investment decisions. The primary goal of investors is to minimize risk. Thus, this framework was developed to accomplish this objective. Many people believe that the M-V model developed by Markowitz is the optimal option for investments within a single time frame.

The term "neural system" refers to a type of computing system comprised of many organised devices and has a rapid response in real time to inputs from the outside world (Caudil, 1989; Odom, 1990; Caudil, 1992). In 1943, the inspective methods of ANNs were first developed to develop rules and regulations for credible and relevant apparatuses. Therefore, the phenomenon of artificial intelligence is employed to compete with human intelligence to find solutions to investment difficulties (Zahedi, 1991). This strategy appears to have an advantage over the usual Mean-Variance framework because the latter cannot explain the influence of incorrect calculations regarding portfolio selections (Jorion, 1992). In the most recent study, the researchers used predictors from neural networks to consider the impact of errors (Ceria & Stubbs, 2016; Braun, 2017).

Numerous applications, such as the incorporation of the M-V framework into the creation of contemporary portfolio theory, have expressed their satisfaction with the proficient portfolio choice as a highly crucial option (Markowitz, 1952; Elton, 1976). The prudent investors constantly look at risks and return together rather than addressing them in isolation from one another (Abdulnasser, 2015).

The challenge of managing a portfolio effectively is allocating capital among numerous stock holdings to achieve maximum profit (Husnain, Hassan, & Lamarque, 2016a). Therefore, the purpose of this study is to guide investors in developing optimal portfolios in the stock market of Pakistan. To pick and optimize a portfolio in the most effective way possible, we used the daily closing stock prices of a sample of listed firms at the Pakistan stock exchange. The study applied the mean semi-variance approach and compared the performance of portfolios with equally weighted portfolios under artificial neural networks and historical-based return estimation in Pakistan. In addition, we applied additional restrictions for portfolio optimization of Pakistan stock exchange-listed businesses to lessen the dependence on only one metric and increase overall efficiency. This was done to improve overall efficiency. Therefore, various methods are utilized in continuous optimization (Fernández, 2007; DeMiguel, 2009; Kritzman, 2010; Coqueret, 2015; Hatemi, 2015). The result shows that artificial neural network-based estimation of the expected return vector has outperformed the historical return estimation under mean semi-variance portfolio optimization and constrained mean semi-variance portfolios based on the Sharp ratio in Pakistan. The study suggests that investors, fund managers, and portfolio analysts should focus on the more sophisticated neural network-based choice for developing portfolios in the equity market of Pakistan.

**Research Framework and Hypothesis Development**

A succinct charting is performed here in subsequent stature, revealing the main actions that will adhere to this research, beginning after the fundamental price records cultivating the entire portfolio optimisation.
For portfolio improvement, two tricks are regularly utilized; the first is the application of the different requirements (Iqbal et al., 2019), and the second is lowering the extraordinary qualities in the boundaries of information sources (Ledoit, 2004). Given supporting writing for ANNs and the mean semi variance markovian model (Fernandez, 2007; Estrada, 2008; Kolm, 2014; Hatemi, 2015; Iqbal, 2019), we in this area will propose speculation for Portfolio Optimization in Pakistan. Various investigations have additionally grasped that the expansion in the portfolio comes back with different imperatives used for portfolio enhancement (Bessler, 2017). Numerous analysts used higher and lowered adaptable weightages to upgrade the Sharpe ratios, and eventually, the group returns expanded. Thus, we will utilize various systems to get flexible loads and reasonable limitations to discover the ideal portfolio returns (DeMiguel, 2009; Kritzman, 2010; Coqueret, 2015). Right off the bat, we will apply portfolio constraints of equivalent weights called (1/n) naive portfolio. Consequently, the first hypothesis for this study comes out to be

**Hypothesis 1:** “Portfolio based on historical return estimation outperformed the ANNs predicated returns under naïve diversification strategy”

The portfolio distribution is a preference for allocation amongst riskless and critical groups of assets (Tobin, 1958). A spending imperative explicitly upgrades profits by making equilibrium amongst expenditure and portfolio prerequisites (Dickinson, 2001). A few researchers likewise indicated that spending imperatives improve returns by bringing down the variances of any stock in this manner, making important riches increment and decidedly complementing the portfolio revenues (Chen, 2018, Iqbal et al., 2019). In this manner, we will apply budget constraint limitation in our advancement of critical thinking and develops a premise on previously stated assumptions,

**Hypothesis 2:** “Portfolio based on historical return estimation outperformed the ANNs predicated returns under mean semi-variance optimization strategy”
An examination analyzed the highlights of target-risk techniques identified with a file hypothesis. They broke down in the situation of normal alternative approaches like least variation and naïve portfolios (Iqbal et al., 2019). These marketplaces come up intermittently with high-level predictable returns and immense flimsiness (Harvey, 1995; Chen, 2018). Consequently, expansion in advancing marketplace stocks in any portfolio expressively lessens its fragility and rises projected returns through huge risk, and brings ranges back (Bodie, 2013; Chen, 2018, Iqbal et al, 2019).

**Hypothesis 3:** “Portfolio based on historical return estimation outperformed the ANNs predicated returns under mean semi-variance optimization strategy by setting budget constraints”

On the way to quantifying exchange costs, various developers give various perspectives. They may upset numerous creation capacities (Coase, 1992; 1998) for limiting this cost, and many risky castigations may emerge accordingly. We represented these charges in portfolio improvement as in our sight these charges may cost disproportionately higher whenever overlooked as shown by numerous analysts (Michael, 2008; Glen, 2011; Deng, 2017; Iqbal et al., 2019). Subsequently, we developed the following hypothesis,

**Hypothesis 4:** “Portfolio based on historical return estimation outperformed the ANNs predicated returns under mean semi-variance optimization strategy by setting transaction cost constraints”

**Data and Research Methodology**

This section discusses the data used in the study and the research methodology used to develop the optimal portfolios.

**Data Description**

To pick and optimize a portfolio in the most effective way possible, we made use of the closing stock prices of fifty listed firms in Pakistan. For this study, the time-period study started in January 2017 and ended in December 2021. We utilized the KIBOR rates as our risk-free interest rate. To proceed with the study in a more thorough manner, we will utilize the KSE -100 index as a benchmark. We relied on market prices since they take into account all relevant information and are calculated in a way that eliminates the risk of investors seeing abnormally high profits. The data has been collected from the website of the Pakistan stock exchange i.e. the data portal of the Pakistan stock exchange.

**Research Methodology**

The study employed the following research methodology in the present study.

**Artificial Neural Networks-ANNs**

In the late 1940s, Hebb portrayed the primary lead of neuronal learning. Along these lines, Hebbian coordinating of presynaptic and postsynaptic activity can liberally alter the dynamic characteristics of the synoptical affiliation and, therefore, empower or control signal broadcasts (Hebb, 1949; 2005). Neural frameworks are produced using direct mechanical assemblies working in a closely resembling manner. These mechanical assemblies are driven by characteristic tactile courses of action. Normally, framework measurements are corrected by the relationship among devices. Several can figure out the neuronal framework to work away a height by fluctuating the connections (loads) calculations amongst mechanical assemblies. Mostly, neural frameworks are composed and sorted out; data triggers the objective return. The commitments to a neuronal unit join its inclination and the total of its subjective information resources (using the internal thing). The return of a neuronal unit depends upon the neuron's springs of information and its trade work. The finest composition to use hangs on such a matter to be tackled by the structure, as shown in Picture 2 by Rosenblatt (1962).
Method of Feedforward Backpropagation

ANNs use feedforward backpropagation calculations incorporating the following equation,

\[ I_i = \sum_j w_{ij} O_j + \phi_i \]
\[ O_i = \frac{1}{1+e^{I_i}} \]  

(1)

\( I_i = \) input of \( i \), \( O_i = \) output of \( i \), \( w_{ij} = \) connection of weights \( i \) and \( j \),  
\( \phi = \) biasness factor

Amongst feedforward net there lies three kinds of handling segments 1) input, 2) output, and 3) hidden. The first segment gets signals from elsewhere and lies in the substandard most layers of ANNs, concealed parts do not intrude with outside henceforth, they are covered up. Output segments impart signs out there so rest in the extremely elevated layer. Associations amongst layers are not permitted straightforwardly yet finished with interfacing vectors 'W', which choose what sources of info are to be handled and what discretionary data is to be given (Williams, 1986; Tam, 1992). Backpropagation calculation is extremely powerful as it can appoint loads to multilayers at once (Rosenblatt, 1962). If we have 's' several models with \( X_i = x_{i1}, x_{i2}, \ldots, x_{im} \) input vector, and output vector as \( D_i = d_{i1}, d_{i2}, \ldots, d_{in} \). In concurrence with forwards dissemination \( X_i \) is provided an input degree and productivity is generated as \( Y_i = y_{i1}, y_{i2}, \ldots, y_{in} \) established on weights. The significance of \( Y_i \) is contrasted by \( D_i \) all together through the squaring of error terms as \( (y_{ij} - d_{ij})^2 \) at each output element. Consequently, the error function is calculated as.

\[ E = \sum_{i=1}^{s} \sum_{j=1}^{n} \frac{(y_{ij} - d_{ij})^2}{2} \]  

(2)

Following the calculation of errors for lowering errors, the model aims at minimizing the disparities between yield delivered and actual yield vectors. By adjusting weightages (in eq no. 3), \( \varepsilon \) is characterized as the rate of convergence (Rosenblatt, 1962; Williams, 1986; Lippmann, 1987)

\[ \Delta w_{ij} = - \frac{\partial E}{\partial w_{ij}} \varepsilon \]  

(3)

The error term calculated in Eq. 2 is back transmitted in the second step from yield to response element. Weights are portrayed by proliferation at every single point, therefore, \( \frac{\partial E}{\partial w_{ij}} \) stays calculated on each level by employing the rule of the sequence revealed in Eq. 4
\[
\frac{\partial E}{\partial w_{ij}} = \frac{\partial E}{\partial o_{i}} \frac{\partial o_{i}}{\partial I_{i}} \frac{\partial I_{i}}{\partial w_{ij}} \tag{4}
\]

**Predicting Time Series Using ANNs**

The gauge of future estimations of money-related components is a basic part of monetary models yet in addition to some business decisions. In this study, another quantifiable methodology is introduced, which attempts to vanquish the issue of such nonlinear impacts (Azoff, 1994; Kaastra, 1996). Our examination keeps up a spot with the logical field of time arrangement gauging, a crucial subfield of econometrics. The purpose of time game plan examination is to focus information on a given data course of action, including recognitions after some time. This information is used to create a model of the stream, called get ready, which chooses the data course of action. Such a model can be used to gauge future estimations of the time course of action. For distinguishing proof of the method, straight models like direct autoregressive strategies (AR) and autoregressive moving midpoints are standard mechanical assemblies of econometrics at any rate (Commandeur & Koopman, 2007).

Anyway, accurate familiarity exhibits immediate simulations that are not commonly the safest way to pact with perceiving a strategy and not for the most part pass on the best estimate results. Granger, (1993) discusses concealed non-linearity, which necessitates the allotment of non-linear structures. Particularly during monetary emergencies non-linearities may be found. From the start of the 2000s, an extensive proportion of non-linear systems has risen. (Granger and Teräsvirta, 1993). In this manner, we utilized a parametric strategy for estimation as we used a couple of quantities of fixed factors.

**The Model for Autoregression**

Time series guesstimate is the sub-element of econometrics subject and stands with cracking down the fundamental drift of an array of sequentially witnessed prior period data, identified such as time series. ‘T’ time series is an agreement of any discerned value of a random parameter as \( t = 1, 2, \ldots, n \). On the off chance that simply the time course of action is given, we have to recognize the method which chooses the time game plan using only the information given by the game plan. Thusly, the strategy is separated into an area that we can choose or envision and an unpredictable part. To make a supportive model of a methodology, be that as it may, much as could be required should be explained by the underlying fragment. On the off chance that we have 'n' past qualities, at that point on relapsing x T esteems is named as Auto Regression.

\[ Y_t = f(Y_{t-1}) + e' \tag{5} \]

At this juncture \( Y_t \) is predictable piece and is equal to stochastic component given on RHS of the equation and \( e' \) stands as the error recognized. An examination of ANNs clarified that the ARX (moving normal autoregressive exogenous) estimating prototypical is utilized by approaches for ancient frameworks idea and rough set (RS) idea to generate an instinctual standard marketplace gauging the portfolio choice game plan and consequences depicted that the combination approach not just gives prevalent forecast exactness than GM procedure, yet in addition harvests predominant pace of profits on specific frameworks (Huang, 2009). Subsequently, we would utilize NARX framework in our exploration to anticipate costs more promptly.

**Proposed Model for Optimizing Portfolios using ANNs**

The returns from ANNs \( \hat{R} \), calculated with ANNs time series forecaster are utilized as anticipated returns in our ANNs version, whilst the risk and return for the portfolio is computed as

\[
\text{ANNs Portfolio Risk} \quad \hat{\sigma}^2 = \frac{1}{N} \sum_{t=1}^{N} (R_t - \hat{R})^2 \tag{6}
\]

\[
\text{ANNs Portfolio returns} \quad R_p = \sum_{i=1}^{M} X_i \hat{R}_i \tag{7}
\]
Semi variance = \( \frac{1}{n} \times \sum_{rt<Average} (Average - rt)^2 \) \hspace{1cm} (8)

Where, \( n \) = The total number of observations below the mean, \( rt \) = The observed value, and \( Average \) = The mean or target value of the dataset.

The extent of interactive risk \( \hat{\gamma}_{ij} \) is expounded as:

\[
Interactive \ Risk(Covariance)\hat{\gamma}_{ij} = \frac{1}{N} \sum_{t=1}^{N} (R_{it} - \hat{R}_i)(R_{jt} - \hat{R}_j) \hspace{1cm} (9)
\]

After updating all the parameters and formulas we are proposing our model as:

\[
\text{Minimize } \hat{V} = \sum_{i=10}^{M} X_i^2 \bar{v}_i + \sum_{i=10}^{M} \sum_{j=10, i \neq j}^{M} X_i X_j \hat{\gamma}_{ij} \hspace{1cm} (10)
\]

where, \( \sum_{i=10}^{M} X_i \bar{R}_i = R, \hspace{1cm} (11) \)

also \( \sum_{i=10}^{M} X_i = 1 \) and \hspace{1cm} (12)

and, \( X_{io} \geq 0, i = 1, ..., M \) \hspace{1cm} (13)

**Empirical Findings**

Table 1 reports the result of the portfolio risk and portfolio return under equally weighted portfolios i.e. naive diversification strategy in Pakistan. Furthermore, it reports the portfolio returns and portfolio risk with historical estimation and ANNs-based predictions. Also, we computed the sharp ratio to compare the performance of the portfolio based on historical return estimation with the ANNs predicated returns in Pakistan. Results show that the performance of equally weighted portfolios under historical estimation outperformed the ANNs based on expected return estimations based on a sharp ratio. The sharp ratio under historical estimation results in a value of 0.095 while the sharp ratio under ANNs estimation is 0.0731. Therefore, the study accepts our first hypothesis i.e. the portfolio based on historical return estimation outperformed the ANNs predicated returns under a naïve diversification strategy.

<table>
<thead>
<tr>
<th>Table 1. Risk and return for the naive portfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equally-weighted Portfolios</td>
</tr>
<tr>
<td>Portfolio Return</td>
</tr>
<tr>
<td>-------------------</td>
</tr>
<tr>
<td>Hist. Estimation</td>
</tr>
<tr>
<td>ANNs Estimation</td>
</tr>
</tbody>
</table>

Table 2 reports the result of the portfolio risk and portfolio return under mean semi-variance portfolios in Pakistan. Furthermore, it reports the portfolio returns and portfolio risk with historical estimation and ANNs-based predictions. Also, we computed the sharp ratio to compare the performance of the portfolio based on historical return estimation with the ANNs predicated returns in Pakistan. Results show that the performance of mean semi-variance portfolios under ANNs based on expected return estimations outperformed the historical estimation based on a sharp ratio. The sharp ratio under historical estimation results in the value of 0.3464 while the sharp ratio under ANNs estimation is 0.3985. Therefore, the study rejects our second hypothesis i.e. the portfolio based on historical return estimation outperformed the ANNs predicated returns under the mean semi-variance optimization strategy.

<table>
<thead>
<tr>
<th>Table 2. Risk and return for Mean Semi Variance Portfolios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficient Portfolios</td>
</tr>
<tr>
<td>Portfolio Return</td>
</tr>
<tr>
<td>-------------------</td>
</tr>
<tr>
<td>Hist. Estimation</td>
</tr>
<tr>
<td>ANNs Estimation</td>
</tr>
</tbody>
</table>

Table 3 reports the result of the portfolio risk and portfolio return under constraint mean semi-variance portfolios in Pakistan. Furthermore, it reports the portfolio returns and portfolio risk with historical estimation and ANNs-based predictions. Also, we computed the sharp ratio to compare the performance of the portfolio based on historical return estimation with the ANNs predicated returns in Pakistan. Results show that the performance of constraint mean semi-variance portfolios under ANNs based on expected return estimations outperformed the historical estimation based on a sharp ratio. The sharp ratio under historical estimation results in the value of 0.3464 while the sharp ratio under ANNs estimation is 0.3985. Therefore, the study rejects our second hypothesis i.e. the portfolio based on historical return estimation outperformed the ANNs predicated returns under the mean semi-variance optimization strategy.
estimation and ANNs-based predictions. Also, we computed the sharp ratio to compare the performance of the portfolio based on historical return estimation with the ANNs predicted returns in Pakistan. Results show that the performance of constraint mean semi-variance portfolios under ANNs-based expected return estimations outperformed the historical estimation based on a sharp ratio. The sharp ratio under historical estimation results in the value of 0.3585 while the sharp ratio under ANNs estimation is 0.4385. Therefore, the study rejects our third hypothesis i.e. the portfolio based on historical return estimation outperformed the ANNs predicted returns under constraint mean semi-variance optimization strategy.

Table 3. Risk and return for Constraint Mean Semi Variance Portfolios

<table>
<thead>
<tr>
<th>Efficient Portfolios (Budget Constraint)</th>
<th>Portfolio Return</th>
<th>Portfolio Risk</th>
<th>Sharp Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hist. Estimation</td>
<td>0.2338</td>
<td>0.6521</td>
<td>0.3585</td>
</tr>
<tr>
<td>ANNs Estimation</td>
<td>0.2817</td>
<td>0.6424</td>
<td>0.4385</td>
</tr>
</tbody>
</table>

Table 4 reports the result of the portfolio risk and portfolio return under constraint mean semi-variance portfolios by applying the transaction cost condition in Pakistan. Furthermore, it reports the portfolio returns and portfolio risk with historical estimation and ANNs-based predictions. Also, we computed the sharp ratio to compare the performance of the portfolio based on historical return estimation with the ANNs predicted returns in Pakistan. Results show that the performance of constraint (transaction cost) mean semi-variance portfolios under ANNs based on expected return estimations outperformed the historical estimation based on a sharp ratio. The sharp ratio under historical estimation results in the value of 0.2570 while the sharp ratio under ANNs estimation is 0.2312. Therefore, the study rejects our fourth hypothesis i.e. the portfolio based on historical return estimation outperformed the ANNs predicted returns under constraint (transaction cost) mean semi-variance optimization strategy.

Table 4. Risk and return for Constraint (transaction cost) Mean Semi Variance Portfolios

<table>
<thead>
<tr>
<th>Efficient Portfolios (Transaction Cost)</th>
<th>Portfolio Return</th>
<th>Portfolio Risk</th>
<th>Sharp Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hist. Estimation</td>
<td>0.1568</td>
<td>0.6782</td>
<td>0.2312</td>
</tr>
<tr>
<td>ANNs Estimation</td>
<td>0.1986</td>
<td>0.7728</td>
<td>0.2570</td>
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</table>

**Conclusion of Study**

The challenge of managing a portfolio effectively is allocating capital among numerous stock holdings to achieve maximum profit. The primary purpose of this study is to investigate the part that artificial neural networks (ANNs) play in the process of portfolio optimization of Pakistani companies that are listed on the Pakistan stock exchange (PSX). To pick and optimize a portfolio in the most effective way possible, we made use of the closing stock prices of 50 listed firms that are included in the KSE-100 index. The study time-period starts in January 2017 and ends in December 2021. The data has been collected from the website of the Pakistan stock exchange i.e. the data portal of the Pakistan stock exchange. The objective of this study is to compare the portfolios based on historical return estimation with the ANNs predicated returns under naïve diversification strategy, mean semi-variance optimization strategy, mean semi-variance optimization strategy by setting budget constraints and mean semi-variance optimization strategy by setting transaction cost constraints in Pakistan. We evaluate the portfolios based on their sharp ratio i.e. portfolio return per unit of portfolio risk in Pakistan.

Results show that the performance of equally weighted portfolios under historical estimation outperformed the ANNs-based expected return estimations. Furthermore, we find that the performance of mean semi-variance portfolios, mean semi-variance optimization strategy by setting budget constraints and mean semi-variance optimization strategy by setting transaction cost constraints under ANNs-based expected return estimations outperformed the historical estimation based on the sharp ratio in Pakistan. This is because neural networks suggest explanations to intricate calculations, thereby uncovering patterns from inputs that were previously unexplainable, and serving as a deciding factor within a variety of different situations. ANNs provide an alternative that is more rational to traditional
approaches that are traditionally constrained by stringent constraints. Because an ANN is capable of apprehending multiple categories of associations, it enables the manipulator to quickly and relatively easily represent the process, which would otherwise be difficult or impossible to express. The dominant role that ANNs play as the best indicators and the most practical method for portfolio optimization is illustrated by both the Sharpe ratio.

The study suggests that investors, fund managers, and portfolio analysts should focus on the more sophisticated neural network-based choice for the development of portfolios in the equity market of Pakistan. It is possible to conduct comparative research of the various stock exchanges throughout the world to eliminate the possibility of bias and to determine in which countries scenario ANNs have proven to be the most accurate forecasters of stock prices. When it comes to the selection of a portfolio and the optimization of that portfolio, one potential bright spot is the incorporation of additional criteria for analysis, such as dividends and gains (Kolm, 2014).

References


# Examining the Determinants of Foreign Direct Investment in BRICS

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*Corresponding author’s email: kunofiwa.tsaurai@gmail.com*

## ARTICLE DETAILS

<table>
<thead>
<tr>
<th>History</th>
<th>ABSTRACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revised format: May 2022</td>
<td><strong>Purpose:</strong> The paper explored the determinants of FDI in BRICS nations. The influence of the complementarity variable (infrastructural development x openness to trade) on FDI in BRICS was also examined.</td>
</tr>
<tr>
<td>Available Online: Jun 2022</td>
<td><strong>Design/Methodology/Approach:</strong> Econometric methods such as the dynamic OLS, fixed effects and FMOLS were used. The data employed spanned from 1994 to 2020.</td>
</tr>
</tbody>
</table>

## Keywords

- Foreign Direct Investment (FDI), BRICS
- Panel Data (PD)

## JEL Classification

- C33, F21, P2

## Implications/Originality/Value

Policies that strengthen growth, domestic currencies and openness to trade must be implemented by BRICS to enhance the inflow of FDI.

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### Recommended citation


## Introduction

The benefits that FDI brings have been documented by authors such as Calvo and Sanchez-Robles (2002), Nath (2005), Lucas (1988), Romer (1986), Swan (1956) and Kumar and Pradhan (2002). They generally agree that FDI inflows bring in additional physical capital that enhances liquidity in the economy. FDI flows in with it managerial skills, technology, organizational skills, market access, foreign savings and human capital development to spur economic growth.

Even empirical literature that found out evidence to support the FDI led growth hypothesis is quite abundant (Borensztein et al. 1998; Mamingi and Martin. 2018; Makhoba and Zungu. 2021; Ayenew. 2022; Chaudhury et al. 2020; Mahembe and Odhiambo. 2014; Tshepo. 2014; Moudatsou. 2003; Awolusi and Adeyeye. 2016; Kulu et al. 2021). A consensus in the literature is that growth of the host nation is enhanced by FDI. The challenge is that such results are not very helpful in crafting FDI triggered economic growth enhancing policies because they do not show the underlying factors which influences FDI inflow dynamics into the host countries. The analysis of FDI dynamics in the context of BRICS is the focus of this study.

The following ways demonstrates how this study contributed towards literature: This study is one of the
very few studies to examine FDI inflow determinants in BRICS. None of the available studies explored how the complementarity of financial sector and development of infrastructure on FDI. The current study made use of very recent data (1994-2020). The non-linearity character of the relationship of FDI and its independent variables was taken care of.

**Literature Review**

The theoretical explanations underpinning the dynamics of FDI inflows as described next.

According to Dunning (1973), the eclectic paradigm hypothesis argues that the availability of locational advantages of FDI are quite crucial to attract FDI. These locational advantages of FDI include social benefits, attitude towards strangers, infrastructural development, favourable policies of government, market size, economic growth and cost of telecommunication, among others. Denisia (2010) argued that these factors attract FDI.

The output hypothesis put forward by Jorgenson (1963) says that increased levels of output in the economy enhances FDI inflows. The market size hypothesis says economy size and population growth lures FDI (Jorgenson. 1963).

Aliber (1970) noted that under the currency areas hypothesis, weak domestic currencies tend to attract more FDI whilst strong domestic currencies trigger the outflow of FDI capital. According to Moosa (2010), the reason why firms operating in a country characterised by strong currency is attracted to invest in foreign countries is that they can still manage to make profits despite borrowing their capital at a high cost in comparison to domestic companies. Popkin (1965) noted the difference in rate of return hypothesis. It says that higher return in the host country attracts new FDI inflows because investors by their nature wants to satisfy their constituents as their main priority.

Empirical literature which focused on examining FDI dynamics were done by several authors whose produced results which are mixed and conflicting. Using panel data analysis, Tampakoudis et al (2017) explored FDI dynamics in middle income nations. Openness to trade, economic growth and increased population had a significant enhancing influence on FDI in middle-income countries. Abel et al (2021) employing autoregressive distributive lag (ARDL) explored FDI determinants in Zimbabwe. FDI into the Zimbabwe’s mining sector was observed to have been determined by wages, inflation, interest rates, trade openness and economic growth.

Tocar (2018) used literature review analysis to investigate FDI determinants and noted that liquidity, salaries and market size were the variables which were found to enhance FDI. For nations that are still at a developing stage, Kumari and Sharma (2017) examined the dynamics of FDI. The study noted that factors that attracted FDI include openness to trade, development of human capital, market size and interest rates. A study by Tsaurai (2017) using pooled OLS and fixed effects also observed that openness to trade, human capital development, stability of exchange rates, development of financial sector and growth enhanced the inflow of FDI into BRICS.

Bryna (2021) studied FDI dynamics in Indonesia. Factors which attracted FDI in Indonesia were found to be human capital development, size of the market and financial sector development and market size. Azam and Haseeb (2021) examined FDI dynamics using FMOLS in BRICS. Market size, growth and openness to trade FDI into BRICS. Using VECM (vector error correction model), Majavu (2015) explored FDI dynamics in South Africa. FDI was attracted by economic growth but negatively affected by financial crisis in the context of South Africa.

The multi-regression analysis was used by Malefane (2007) to examine FDI dynamics in Lesotho. FDI into Lesotho was found to have been positively influenced by export-oriented promotion strategy. Boga (2019) used panel data analysis to explore FDI dynamics in Sub-Saharan Africa (SSA). FDI into SSA
was attracted by openness to trade, economic growth, infrastructural development, availability of natural resources and financial development. VECM was used by Wijaya et al (2020) to investigate FDI dynamics in Indonesia. Factors such as inflation, interest rates, economic growth and infrastructural growth were noted to have attracted FDI.

Vector autoregressive (VAR) methodology was employed by Pradhan (2011) to find out the explanation for FDI inflows into SAARC nations. Exchange rate, population growth, inflation, economic growth, current account balance and trade openness enhanced FDI inflows into SAARC nations. Agiomirgianakis et al (2004) examined FDI dynamics in OECD nations. Trade openness, development of infrastructure and human capital enhanced FDI into OECD nations. Descriptive statistics were used by Coy and Cormican (2014) to find out the FDI determinants in Ireland and Japanese. FDI into Japan and Ireland was found to have been attracted by low corporate rate.

Ashurov et al (2020) used Generalized methods of moments (GMM) to examine FDI determinants in Central Asian region. Economic growth, openness to trade, prior FDI and tax revenue had a significant effect on FDI in Central Asian region.

Using time series data analysis, Mahbub and Jongwanich (2019) examined FDI determinants in Bangladesh. FDI inflow into Bangladesh was attracted by economic growth, developed regulatory framework, financial development and political stability. Using Africa as a unit of analysis, Asiedu (2002) examined variables that influence FDI. FDI into Sub-Saharan Africa were enhanced by higher rate of return and better infrastructure. In transitional economies, Cevis and Camurdan (2007) investigated FDI dynamics. Factors which attracted FDI into transitional economies include inflation, interest rates, economic growth and trade openness.

Asong et (2018) examined FDI dynamics in BRICS. Infrastructural development, trade openness, natural resources, market size and institutional quality positively attracted FDI into BRICS. Pooled ordinary least squares (OLS) was used by Hintosova et al (2018) to study the influence of FDI in Visegrad nations. FDI inflow was attracted into Visegrad group of countries by wages and human capital growth. Erdogan and Unver (2015) noted that size of the market, inflation, development of human capital, unemployment, financial sector growth and growth influenced FDI in 88 countries studied.

Silveira et al (2017) using VECM noted that Brazil’s FDI inflows was attracted by economic growth, wages and productivity. Using panel data analysis, Rashed et al (2021) did a study in Africa to investigate FDI. Whilst growth enhanced FDI, corruption’s influence on FDI in Africa was found to be negative.

Mansaray (2017) using Sierra Leone as a unit of analysis and error correction model (ECM) noted that FDI inflow was enhanced by growth and trade openness. Using panel analysis framework, Mupimpila and Okurut (2012) examined FDI determinants in Southern African Development Community (SADC). FDI was negatively affected by infrastructural development and a lag of inflation.

Economic growth, friendly business environment and trade openness were found by Mottaleb and Kalirajan (2010) to have attracted FDI inflow into developing countries. Sane (2016) examined FDI dynamics in Africa’s ECOWAS. The study observed that FDI inflow into ECOWAS was attracted by economic freedom, market size, economic growth, stable exchange rate and financial development. Using the African Union as a unit of analysis and fixed effects econometric approach, Kariuki (2015) investigated the determinants of FDI. Variables which were observed to have attracted FDI into the African Union include trade openness, commodity price index, infrastructural development and the lag of FDI.
A study done by Demirhan and Masca (2008) using cross sectional analysis noted that trade openness, communication infrastructural development and economic growth attracted FDI into developing countries. Yunus (2020) using descriptive statistics observed that FDI inflow into the manufacturing sector of Malaysia was attracted by domestic investment and human capital development. Abiola (2019) using the vector autoregressive (VAR) methodology, examined FDI dynamics in Nigeria. The study observed that inflation, economic growth, stable exchange rate and openness enhanced the inflow of FDI into Nigeria. Total factor productivity had a significant positive role in luring FDI in developed countries.

The empirical literature review show that the factors that influence FDI inflow into host countries are varied, mixed and inconclusive. The direction that the factors identified affect FDI inflow is also not yet agreeable. The agreeable list of variables that influence FDI is also not yet been identified. It is on this basis that the author contributed towards literature on FDI dynamics in the context of Central and Eastern European nations.

**Methodology**

This study used secondary data extracted from reputable, reliable, traceable and widely accessible databases. World Bank and International Financial Statistics were used databases. Data used ranges from 1994 to 2020 for BRICS.


\[
\text{FDI} = f(\text{OPEN, INFR, GROWTH, INFL, HCP, EXCH, FIN, TOURISM}) \quad [1]
\]

Equation 2 is an econometric transformation of the FDI function.

\[
\text{FDI}_{it} = \beta_0 + \beta_1 \text{OPEN}_{it} + \beta_2 \text{INFR}_{it} + \beta_3 (\text{OPEN}_{it} \text{INFR}_{it}) + \beta_4 \text{GROWTH}_{it} + \beta_5 \text{INFL}_{it} + \beta_6 \text{HCP}_{it} + \beta_7 \text{EXCH}_{it} + \beta_7 \text{FIN}_{it} + \beta_8 \text{TOURISM}_{it} + \mu + \epsilon \quad [2]
\]

The influence of the combination of the complementarity factor on FDI was introduced in the second equation, in line with an argument put forward by Boga (2019) and Kariuki (2015) and in line with Demirhan and Masca (2008). Their studies implied that a country which is characterised by both high levels of openness to trade and development of infrastructure receives more FDI. Dunning (1988) argued that both infrastructural development and trade openness are locational advantages of FDI. It is against this background that the author examined if the complementarity of these two variables enhances FDI. FMOLS, DOLS and fixed effects were the three econometric methods employed to estimate equation 2. Infrastructural development, financial development, openness to trade, savings, personal remittances, growth, domestic investment and exchange rate are the explanatory variables of the FDI function. Proxies of explanatory variables used in this study was anchored on similar empirical research work done by Piteli (2010), Asong et (2018), Abiola (2019), Kariuki (2015), Demirhan and Masca (2008), Mansaray (2017), Mupimpila and Okurut (2012), Silveira et al (2017), Rashed et al (2021), Hintosova et al (2018), Erdogan and Unver (2015) and Yunus (2020).
Denisia (2010) argued that FDI is attracted by a conducive investment climate brought by a developed infrastructure. The same author also noted that a developed infrastructural network is one FDI locational advantages. Developed infrastructural network is instrumental in supporting the new technology brought into the host country by foreign investors. The expectation is that FDI is enhanced by infrastructural development. Development of infrastructure was proxied by internet (% of population).

According to Kaur et al (2013), financial sector development is better able to smoothen domestic and foreign markets networks through easing exit and entry challenges of foreign investors. According to Ezeoha and Cattaneo (2012), foreign capital productivity is easily enhanced by developed financial markets. Financial sector development is anticipated to positively impact FDI. Expressed as fraction of GDP, domestic credit to private sector is a measure of development of financial sector used.

Higher level of trade openness is usually associated with external shocks which repel foreign investment inflows into the host country (Denisia. 2010). Openness to trade enhances FDI was supported by Denisia (2010). Trade openness can therefore influence FDI either direction. Total trade as a ratio of GDP is a measure of openness to trade used in this study.

Consistent with Aliber (1970), a weak domestic currency attracts FDI because foreigners get a higher quantity of domestic currency when they convert their funds. The same study also noted that weak domestic currencies might be an indication of a weak economy, inconsistent economic policy formulation and unstable macroeconomic environment, thus chasing away foreign investment. Rate of exchange rate is anticipated to either positively or negatively affect FDI. To measure the variable, official exchange rate (local per US$) was employed.

Jorgenson (1963) noted that among other variables, economic growth also provides a conducive environment which attracts FDI. The view was also supported by Kumar (2022). The eclectic paradigm hypothesis also listed economic growth as one of the FDI’s locational advantages (Denisia. 2010). Economic growth is anticipated to enhance FDI. GDP is the economic growth measure employed, in line with Bibi et al (2021).

According to Craigwell (2012), highly developed human capital allows local firms to quickly and easily utilize new and recent technology thereby boosting technology related FDI spill overs. Dunning (1988) also noted that the availability of educated and healthy workforce attracts FDI. This is because foreign investors incur less in terms of hiring the relevant personnel from other countries.

According to Nnadi and Soobaroyen (2015), increased inflation subdues the value of the local currency thereby reducing the purchasing power of the local currency. This chases away both existing and potential foreign investors (Sayek. 2009). International capital inflows go where the other is going (Azam and Haseeb. 2021). As a result, tourism, foreign portfolio investment and FDI in the same direction.

### Analysis of results

<table>
<thead>
<tr>
<th></th>
<th>FDI</th>
<th>FIN</th>
<th>HCD</th>
<th>GROWTH</th>
<th>INFL</th>
<th>EXCH</th>
<th>OPEN</th>
<th>INFR</th>
<th>TOURISM</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDI</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FIN</td>
<td>0.06</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HCD</td>
<td>0.19***</td>
<td>-0.11</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GROWTH</td>
<td>0.09</td>
<td>0.1</td>
<td>0.56***</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INFL</td>
<td>-0.14</td>
<td>-0.06</td>
<td>0.11</td>
<td>-0.05</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXCH</td>
<td>-0.28***</td>
<td>-0.5***</td>
<td>-0.31***</td>
<td>-0.16*</td>
<td>-0.1</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
An enhancing significant correlation between (1) FDI and human capital and (2) FDI and tourism was observed, in line with existing literature. (1) FDI and financial development and (2) FDI and economic growth were found to have been positively but insignificantly related to each other. Moreover, (3) inflation and FDI and (4) FDI and openness to trade and FDI were observed to be non-significantly positively related to one another. Exchange rate and FDI were noted to be negatively but significantly related to each other. A multi-collinearity issue was observed in this study, in support of Stead (2007)’s argument. The evidence is that infrastructural development and economic growth are positively and significantly related to one another at a co-efficient level which exceeds 70% (see Table 1).
FDI -3.90***  56.56*** -6.37***  90.52***
FIN -3.30***  37.60*** -4.38***  70.85***
HCP -9.37***  88.73*** -9.67*** 109.82***
GROWTH -2.68***  23.79*** -2.70***  36.23***
INFL -6.26***  63.21*** -7.07*** 108.12***
EXCH -4.37***  30.16*** -3.50***  47.80***
OPEN -4.38***  38.88*** -4.41***  66.42***
INFR -2.82***  32.55*** -3.39***  60.10***
TOURISM -3.038***  87.36*** -4.18*** 121.49***

Source: Author

All the data set was stationary at the 1st difference (see 3rd Table).

Panel co-integration tests: This study used the Johansen Fisher Panel approach (Table 4).

<table>
<thead>
<tr>
<th>Hypothesised number of co-integrating equations</th>
<th>Fisher’s trace test</th>
<th>Probability</th>
<th>Fisher’s max-eigen test</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>6.931</td>
<td>0.7319</td>
<td>6.931</td>
<td>0.7319</td>
</tr>
<tr>
<td>At most 1</td>
<td>4.159</td>
<td>0.9399</td>
<td>41.00</td>
<td>0.0000</td>
</tr>
<tr>
<td>At most 2</td>
<td>73.68</td>
<td>0.0000</td>
<td>92.10</td>
<td>0.0000</td>
</tr>
<tr>
<td>At most 3</td>
<td>299.2</td>
<td>0.0000</td>
<td>159.0</td>
<td>0.0000</td>
</tr>
<tr>
<td>At most 4</td>
<td>195.7</td>
<td>0.0000</td>
<td>107.4</td>
<td>0.0000</td>
</tr>
<tr>
<td>At most 5</td>
<td>115.2</td>
<td>0.0000</td>
<td>69.54</td>
<td>0.0000</td>
</tr>
<tr>
<td>At most 6</td>
<td>57.49</td>
<td>0.0000</td>
<td>32.40</td>
<td>0.0003</td>
</tr>
<tr>
<td>At most 7</td>
<td>36.70</td>
<td>0.0001</td>
<td>26.05</td>
<td>0.0037</td>
</tr>
<tr>
<td>At most 8</td>
<td>31.85</td>
<td>0.0004</td>
<td>31.85</td>
<td>0.0004</td>
</tr>
</tbody>
</table>

Source: Author

At least eight co-integration relationships were noted between the variables studied, in support of Sghaier and Abida (2013). Such a finding gave way for the next process of data analysis to be undertaken.

Main data analysis

<table>
<thead>
<tr>
<th>Fixed effects</th>
<th>FMOLS</th>
<th>Dynamic OLS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Co-efficient</td>
<td>t-statistic</td>
</tr>
<tr>
<td>OPEN</td>
<td>1.36***</td>
<td>3.5784</td>
</tr>
<tr>
<td>INFR</td>
<td>0.16</td>
<td>0.6345</td>
</tr>
<tr>
<td>OPEN,INFR</td>
<td>0.08***</td>
<td>3.0855</td>
</tr>
<tr>
<td>GROWTH</td>
<td>0.23</td>
<td>1.3942</td>
</tr>
<tr>
<td>INFL</td>
<td>-0.15*</td>
<td>-1.7073</td>
</tr>
<tr>
<td>HCP</td>
<td>-1.55*</td>
<td>-1.6968</td>
</tr>
<tr>
<td>EXCH</td>
<td>0.41***</td>
<td>2.9118</td>
</tr>
<tr>
<td>FIN</td>
<td>0.45*</td>
<td>1.6641</td>
</tr>
<tr>
<td>TOURISM</td>
<td>0.21</td>
<td>1.2725</td>
</tr>
</tbody>
</table>

Prob (F-statistic) 0.0000 Prob (F-statistic) 0.0000 Prob (F-statistic) 0.0000
F-statistic 11.09 F-statistic 69.47 F-statistic 117.32
Adjusted R-squared 0.5437 Adjusted R-squared 0.6429 Adjusted R-squared 0.71

Source: Author

In line with fixed effects, FMOLS and dynamic OLS, openness to trade enhanced significant influence on FDI in BRICS. These results are consistent with Denisia (2010) whose study noted that trade
openness is a direct outcome of good government policy, hence attracting FDI. Fixed effects, dynamic OLS and FMOLS show infrastructural development running towards towards FDI in an insignificant way, in line with Craigwell (2012) whose study observed that developed infrastructure acts as a support network for the new technology brought in by the foreign direct investors.

Complementarity factor had an enhancing influence on FDI in BRICS (FMOLS, fixed effects) which was significant. The dynamic OLS indicates an insignificant enhancing relationship running to FDI from the complementarity variable (trade openness x infrastructural development). These results support the eclectic paradigm hypothesis which implied the availability of development of infrastructure and openness to trade in the recipient nation accelerate the inflow of FDI (Denisia. 2010).

Growth’s positive effect on FDI was noted as insignificant (fixed effects) whilst and the dynamic OLS whilst FMOLS shows that economic growth’s enhancing effect on FDI was significant. The results support the eclectic paradigm view which saw growth as influencing FDI (Denisia. 2010).

Inflation’s negative influence on FDI was significant (fixed effects, dynamic OLS) whilst an insignificant deleterious relationship from inflation to FDI in BRICS was observed. These results mean that inflation reduced FDI, in support of a theoretical argument advanced by Nnadi and Soobaroyen (2015).

Development of human capital’s effect on FDI (FMOLS, fixed effects) was significantly negative whilst the dynamic OLS indicates an insignificant deleterious relationship from development of human capital to FDI. It means that development of human capital decreased FDI in BRICS countries, in contradiction with available literature (Craigwell. 2012; Dunning. 1988), which observed that highly developed human capital allows local firms to quickly and easily utilise new and recent foreign technology.

The dynamic OLS noted that exchange rate’s negative effect on FDI was insignificant, supporting an argument put forward by Aliber (1970) whose study argued that strong domestic currencies chase away FDI because the foreign investors get little for their foreign currencies. Exchange rate enhanced FDI (fixed effects, FMOLS), results that are in contradiction with available literature which noted that countries whose currencies are very strong are more attracted to invest in foreign nations (Moosa. 2010).

The dynamic OLS show that financial development enhanced FDI in an insignificant manner whilst FDI was significantly enhanced by financial sector development (fixed effects, FMOLS). These findings support Safdar et al (2021)’s results which states that development of financial sector enhanced FDI. They also agree with Ezeoha and Cattaneo (2012)’s argument that foreign capital productivity is improved by the financial sector by efficiently distributing financial resources in the economy.

Across all the three econometric methods, tourism’s positive effect on FDI was noted to be insignificant, in support of Azam and Haseeb (2021) whose research noted that international capital inflows go where the other is going.

**Conclusion**

This paper focused on exploring FDI determinants in BRICS. It also examined the relationship between FDI and the complementarity factor of the variables, openness to trade and development aspect of the infrastructure in BRICS. Dynamic OLS, fixed effects and FMOLS methods were used alongside 1994 to 2020 panel data. The study was motivated by the existence of mixed findings, inconsistent and several gaps existing in the literature. Significantly attracting FDI was openness to trade, currency rates and growth whilst factors that includes inflation, human capital, development of the financial sector dissuaded FDI in BRICS. The latter should strengthen the implementation of openness to trade,
domestic currency and growth enhancement policies to lure more FDI. Threshold regression analysis for all the FDI determinants would add value to this topic because such an investigation helps us to know the levels at which significant inflow of FDI occurs.

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Integrating the Relationship between Stakeholder’s Perspective and Corporate Sustainability: A Literature Review

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ARTICLE DETAILS

History
Revised format: May 2022
Available Online: Jun 2022

Keywords
Corporate Sustainability, Stakeholders, Value Creation, Firm Performance

JEL Classification
Q01, Q56

ABSTRACT

Purpose: This research paper's main goal is to understand conceptual development in the area of corporate sustainability while bringing stakeholders perspective in this deliberation.

Design/Methodology/Approach: The study is based on systematic literature review that covers 45 research articles published in years 1970 to 2020 in peer reviewed journals. The study tried to look into the variety of concepts developed in this field, their characterizations, their classification into causes to consequences and their significance that informed the area of corporate sustainability.

Findings: Stakeholder’s perspective deal with the broad propositions and unique way to deal with controlling the enterprises from the major "stockholder’s perspective", highlighting the firm as flowing together of co-operative and viable advantage speaking to an all-encompassing stakeholder base. This literature survey analyzes the different measurements that develop in academic research stakeholder perspective to deal with the topic of sustainable business. The stakeholder viewpoint hypothesis is offered by way of a typical hypothetical structure aimed at evolving sustainability knowledge besides exercise, particularly in its normative and instrumentalist approaches.

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Introduction

The progress in different stakeholders' perspectives is vital for creating harmony about long-lasting sustainable development consequences linking the significant changes in governance edifice and procedures, Salvioni & Gennari, (2019). The idea that businesses should be run to maximize wealth generation for all stakeholders rather than just investor money has gained prominence and recognition for the stakeholder hypothesis. The majority of stakeholder view point discussed by Freeman et al., 1984 and 2010; Donaldson and Preston, 1995; Hart & Sharma, 2004 have a tendency to generally characterize stakeholders, or people where the business is deeply rooted. The stakeholders can't denial of the investor value maximization, rather can be construed as a method for moving toward investor wealth creation (Freeman et al. 2010).

The concept of stakeholders again explained ecological sustainability to social and governance sustainability Starik, 1995; Starik and Rands, 1995; Stead and Stead, 2000 & Collins et al., 2005. These most recent measurements are relevant for global sustainability as well.

A sustainable process is one that may not be maintained indefinitely without dynamic value characteristics, cf. Holdren and Ehrlich, 1995. Another concept that is frequently used is the ability to handle current problems without compromising future generations' ability (Brundtland, 1987). Corporate sustainability, broadly speaking, can be seen as an approach that combines the logical intersection of financial, ecological, and social viewpoints (Perrini and Tencati, 2006).

A sustainable business is defined as one that "conveys at the same time financial, social, and ecological advantages to add to sustainable development" (Hart and Milstein, 2003). According to the stakeholder perspective on the firm (Donaldson and Preston, 1995; Hart and Milstein, 2003), the sustainability and robustness of the affairs of the firm's stakeholders are directly related. When an organization’s organizational practice is centered on sustainability, in this opinion, it adds value (Wheeler et al. 2003).

**Stakeholder Theory – A Brief Review**

Researchers and professionals have been interested in stakeholder approach board governance since the 1980s, Stakeholder Theory is a theory of capitalism that emphasizes the connections between a company's stakeholders, including its clients, vendors, employees, investors, and communities. According to the notion, a company ought to provide value for all parties involved, not just shareholders.. Stakeholders are “anyone having a stake or a passion for a firm, including any individual who might be touched by or affect the firm,” according to one definition (Collins et al., 2005). Despite this lengthy description, it appears that there is no consensus on the individuals who may be consistently classified as stakeholders (Donaldson and Preston, 1995).

**Research Questions**

Research gap informed that existing literature seeks opportunities for future research. Literature indicated that much research has explored the only effect of corporate sustainability on firm performance. But few researchers have probed the association concerning corporate sustainability initiatives and the share price of the company. Eccles et al. (2011) indicated that more research is required for environmental and governance interests because in this area research data is simpler to analyze rather than a social context. All environmental, social, and governance initiatives might be different outcomes from a cash flow viewpoint; this may explain that environmental initiatives cause cash outflow at the start and generate cash inflow afterward, while social initiatives generate benefits at the cost of other enterprises (Peloza, 2009). For that reason, the first question we ask, What are the antecedents of corporate sustainability?

2) What additional variables can mediate the relationship between corporate sustainability and other variables?

3) What are the variables that modify the relationship between corporate sustainability and other variables?

What theories are applied in the literature on corporate sustainability?
Rationale
The greater part of the current literature on corporate sustainability initiatives and shareholder’s value creation depends on organizations that work in advanced nations and little is thought about the influence of corporate sustainability initiatives on the price of shares listed on developing stock markets. It is consequently important to fill this research gap in the corporate social responsibility literature (Miralles Quirós et al, 2018).

1) To enhance the constrained collection of literature in a South Asian setting, need to check whether the market responds confidently to corporate sustainability Initiatives.

2) Regardless of whether its response fluctuates by various types of initiatives. There is need to investigate the effect of non-financial initiatives on firm value among listed corporations in Pakistan.

3) To grow progressively a sustainable economy by tying financial performance to environmental, social, and governance outcomes in an Asian setting, concentrating for the most part on emerging economies (Kar Yee Lo and Calvin Lee Kwan, 2017). There is a prerequisite to check whether value creation as a central state for corporate sustainability, proposing that non–financial is distinguishable that prompts financial sustainability. There is prerequisite to decide the connection between environmental, social and governance initiatives and corporation share price. There is an expanding prerequisite to looking at how organizations influence the development of stakeholder’s dispositions stakeholders restricted recognized pragmatic study (Bindu Arya and Gaiyan Zhang, 2009). There must be an examination about endeavors to add to the temperature of how the blend of the ESG traits in the organizational frameworks impacts on the firm performance by finding the synergistic impact of the three ESG scopes (Ferrero-Ferrero et al, 2016)

Methodology
45 research articles make up this systematic review. Similarly, improvements in research journals over the past five years show that scholars and professionals alike are becoming more interested in the field of business ethics (BE). The systematic literature review has been published in a sizable number of publications. Journal of Business Ethics, Academy of Management Journal, Academy of Management Review, International Journal of Sustainable Development, Strategic Management Journal, Journal of General Management, Emerging Issues in Management, Ecological Economics, Business Strategy and the Environment, Sustainability: Science, Practice, & Policy, Academy of Management Executive, Business Ethics Quarterly, Journal of Applied Ethics were the sources for this research.

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**Search by Key Words**
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Publication Journals, Databases


**Discussion and Deduction**

The stakeholder hypothesis aims to align an entity's financial aspirations with its stakeholders' objectives and ground corporate motivation in more extended needs. Stakeholder hypothesis standards are heavily used in the context of corporate sustainability.

The procedure relating to stakeholder way to deal with sustainability alignment has incited researchers to recognize and contemplate a few fascinating elements of corporate, executive stakeholders conduct just recommended components, so to speak the instrumentalist plan, for estimating and assessing proficiency and viability of sustainability conduct and stakeholder awareness. In addition, different firm types and corporate structures have different inherent capacities for pursuing a stakeholder approach to dealing with the board level. One such framework that matches the stance of more important stakeholders is cooperative economics. However, this study falls short in its attempts to delve deeper hooked on this characteristic of sustainability and stakeholder conduct, and it falls short in its hopes that further studies will be able to prepare similar considerations.
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Approaches to Stakeholder Theory
Donaldson (1995) triple consortium consist of contributory, expressive, and normative - endures serve towards as a valuable system aimed at thoughtful the various methods towards considerate stakeholders' hypotheses, despite the fact that some stakeholder's hypotheses have been advanced and mocked in the script (Collins et al., 2005)

According to the contributory methodology, the provision for acceptance of a stakeholder-based method towards industry oversight is unavoidable because organizations receiving such a methodology help themselves gain a economical improvement, achieve comparative long-standing goals, and meet business routine objectives (Donaldson and Preston, 1995). The greater cogency that they infer through interacting with stakeholders also contributes to this being in some way acceptable. The instrumentalist conversation has likewise pursued towards broaden the definition of the term "stakeholder" elsewhere the quick and "remarkable" stakeholder of the company to those at its periphery now imperative towards gain a economical improvement. This has been done by utilizing new and innovative judgments and issue flags that can emerge by involving such periphery actors (Hart & Milstein, 2003; Hart & Sharma, 2004). Right now, there is a lot of discussion about whether environmental concerns themselves can be seen as a primary stakeholder in a corporation (et al., 2005).

The conflict between investors' privileges besides those of various stakeholders has a tendency to control the theoretical debate. According to Wheeler et al. (2003), while important management experts emphasize an agency theory of the company grounded on fiscal criteria, stakeholder philosophers provide together normative and practical justifications for why a stakeholder-centric strategy generates value. Donaldson and Preston (1995) argue against the managerial nature of the stakeholder hypothesis by going beyond the descriptive perspective in addition joining approaches, configurations, also accomplishes to form a way of thinking about interacting with a corporation. However, maybe given the anticipated influence of organizations’ advantageous purposes or privileges (Friedman, 1970), instrumentalist techniques have often taken the principle of arranging inside stakeholder's hypothesis (Collins et al., 2005; Jones and Wicks, 1999).

Using Stakeholder Lens in Corporate Sustainability Schema
Additionally, the subject of sustainability is relevant at a variety of levels, including corporate, national asset, geopolitical, environmental. Whereas improvements be able to make between these stages, a more general justification of how the social nature fits into culture can also be connected to coordinate the impression of sustainability (Reitan, 2005). This will give the impression that one is in the right place, in possession of something, and will serve as motivation for action regarding sustainability motivation. A certain degree of sustainability can be telescoped combine into the next at that moment, with planet Loam becoming the major stakeholder whose interface needs to be sustained (Stead & Stead, 2000). Stakeholder theory's guiding principles are frequently the foundation of corporate environmental initiatives, and this is mostly reflected in the rhetoric, Starik, 1995; Sharma and Henriques, 2005; Collins et al., 2005; Herremans et al., 2009. Stakeholders are seen as being crucial in increasing firms' sensitivity to environmental concerns or serving as moral guardians. They are also seen as helping to give legitimacy to firms based on their receptiveness towards environmental problems and the general good. Whereas numerous reasons placed up for corporate sustainability perspective, they can be broadly categorized. Stakeholders are seen as being crucial in increasing the affectability of businesses to ecological concerns or acting as good stewards, as well as in granting legitimacy to businesses based on the latter's responsiveness to environmental issues and public intrigue.

Environmental Sustainability Calls for Joint Efforts
Regardless of whether instrumentalist, clear or normative, contentions that appear to consider firms absolutely liable for social and ecological sustainability show up additionally to disregard the association in the middle of frameworks besides commonness of comprehensive quality and subjectivism
Rather associations and every one of their stakeholders can be considered as mutually answerable for sustainability. Found right now, turns into the joint motivation for researchers, shoppers, and arrangement creators.

A dual plan to sustainability furthermore sets area for executives to give consideration regarding the way toward making an incentive for every single corporate constituent, and in addition likewise approach sustainability from a self-inspired viewpoint instead of from an administrative point of view (Dentchev & Heene, 2004)

**Sustainability as a Tool for Creating Business Value**

Social targets should be mixed into an undertaking methodological system as a reasonable arrangement, according to research on reconciling social and financial goals in business, Stead & Stead (2000). The stakeholder direction to sustainability, which remains grasped by way of adding in relation viable benefit, can also be applied the corporate value generation from an instrumentalist point of view of Hart & Milstein, 2003.

**Applying the Stakeholder Approach to Sustainability: Dynamics and Processes**

Keskitalo (2004) contends that the staggered procedure of stakeholder discussion socializing summits and member perception encourages a more noteworthy interface among researchers and helps with focusing on stakeholders' perceptions of how their practices, rehearses, and environment are communicated. Gao and Zhang (2006) present that both corporate sustainability and social evaluation are adjusted up until the point where both target improving the social, environmental, and financial accomplishment of a corporation. Many academic studies focus on the significance of stakeholder pressures on "green" activities and other similar ecologically conscious activities by businesses (Henriques and Sadorsky, 1999; Stead and Stead, 2000; Sharma and Henriques, 2005; Onkila, 2008; Herremans et al., 2009; Nawaz et al. 2021; Imran & Shafique 2022). The force used by stakeholders are frequently seen as operating components in provoking corporate ecological activity. On the other hand, many academic studies focus on the significance of stakeholder pressures on "green" activities and other such ecologically conscious activities by businesses (Henriques and Sadorsky, 1999; Stead and Stead, 2000; Sharma and Henriques, 2005; Onkila, 2008 and Herremans et al., 2009).

Many academic studies focus on "green" activities by businesses (Henriques and Sadorsky, 1999; Stead and Stead, 2000; Sharma and Henriques, 2005; Onkila, 2008; Herremans et al., 2009). These studies are related to management views of stakeholders that emphasize the force and impact used by stakeholders in provoking corporate ecological activity. Additionally, proponents of sustainability science see stakeholder collaboration as a strategy for coordinating nations, intrigue organisations, business, and preservationist groups into the information age and it is useful application. The truthfulness of the stakeholders' approach is also often used discussed as a result of corporate environmental strategy, potential means of completing more realistic demands (Madsen and Ulhoi, 2001). Sharma and Henriques (2005) also examined how managerial perceptions of the effects of various stakeholders affected the sustainability practices of Canadian forestry service companies. (Onkila, 2008) recommend a relationship between stakeholder power relations and three expository structures - corporate impact, subjection, joint activity, and uniformity - when thinking about the expository structures found in corporate argumentation with regard to satisfactory ecological activities. The latter is said to be associated with virtues like self-control, empathy, and general virtue.

Stead and Stead (2000) & Citing et al., (2006) highlight the significance of foundation estimation to quantify and control sustainability conduct, as well as to determine the suitability of response to stakeholders' concerns. Using the justification that the sustainability of stakeholder relationships must influence corporate dynamic and venture procedure Stead and Stead, 2000 & Perrini and Tencati, 2006, emphasise the significance of foundation estimation to quantify and exercise self-control sustainability
conduct, as well as to determine whether their responses to stakeholders' concerns and the viability of related correspondence, are adequate.

**Issues in Applying Stakeholder Theory to Sustainability**

Friedman considered the fundamental argument that a stakeholder’s devotion will lead to greater outcomes for all participants need to be discussed in theoretical settings (Collins et al., 2005). Although Freeman and others, 2010 argue that stakeholders and investor relationships are not to be viewed as negatively restricting rather than as positively correlated and synergistic. According to Freeman et al., (2010) opposed that the potential benefits of stakeholder’s way to deal with the directors have not been discussed.

The stakeholder theory critique view serves as the framework for sustainability policies. There have been many critiques from many angles. Weiss (1995) criticizes the stakeholder theory's descriptive and instrumental approach. He further explained that its normative application is inadequate too. Weiss (1995) exposing instrumental methodology of stakeholders’ hypothesis and recommends that not using standardized sustainability be powerless. Thomas, 1999; Banerjee, 2003 and Collins et al., 2005, argued that corporate goals can conflict with "weak sustainability". According to Kerr and Caimano (2004), "objective" directors familiar to building up their various rational images, such as stakeholder commitment, which may increase the corporate performance. Such practices, as Kerr points out, are inconsistent with how the majority of businesses are planned and control. In a study, Hillman and Keim (2001) discovered that while bolstering relationships with vital stakeholders like employees, clients, suppliers, and setups were mistakenly connected with an increase in investor wealth, a commitment to social issues distinct to dynamic investors would typically associated with investor value.

Collins et al., (2005) essay on the risks of relying on a stakeholder's commitment to achieving sustainability is incredibly comprehensive. Their main argument is that while stakeholder commitment offers assurance, excessive "selling" may result in cheap methodologies at a time when normative discussion is crucial. One example is that different stakeholders are perceived as constructing sustainability in an unexpected way, which results from the underlying fact several perspectives on a subject depending on their various rational demonstrations (Johnson and Laird 1980). In lieu of example, two different stakeholder arrangements may not view natural sustainability in the same way. Organizations and even those who develop strategies frequently complain that "ecologists" will generally take over the company and put an end to "growth." Currently, "truth be told, extraordinarily weak sustainability" is mentioned in the business case for practicable expansion, Collins et al., (2005).

**Different Stakeholders' Conflicting Logics and Personal Self-Interests**

It is improbable that Jensen and Mackling's (1994) formation of mortal nature and the Resourceful, Evaluative, Maximizing Model, which center on the conservation of personal circumstance, might be utilized to advocate for stakeholder approach to sustainability, to the extent that sane Arguments can be made to back either position. Expanding on the personal circumstance point of view, Collins et al. (2005) assert that it would be quite challenging to reach any typical outstanding, sustainability-supporting aims if every stakeholder sought a self-intrigued approach to refereeing. The element of personal circumstance is closely related owing to the contradictory justifications, Bacharach et al., 1996; Townley 2002; Herremans et al. (2009); Purdy & Gray, 2009 philosophically discussed the Canadian oil industry, wherever certain general public were seen to be against transformation then to be overlooking stakeholder’s concerns even though the "pioneers" made an effort to gain sustainability.

**Variation in Stakeholders' Resources and Capabilities**

The element of particular circumstance is closely related owing to the contradictory justifications Bacharach et al., 1996; Townley, 2002; Purdy & Gray, 2009; Herremans et al. 2009; Ali et al. 2020
discussed philosophically about Canadian oil industry, wherever certain individuals were seen to be against change and to be ignoring stakeholder concerns even though the "pioneers" made an effort to gain sustainability. In any case, when there is data access, delayed commitment might result in tiredness and a lack of determination. Data access and data asymmetry are related measurements to asset access. Collins et al. (2005) use the example of an older “Maori” man, was frequently asked to discuss a Maori’s point of view on substances relating trade, networks and inherent management. Over time, the commitment transformed so demanding and extensive that it led to fatigue and disappointment with the practice.

References


Analysis of Procedural Justice and Its Association with University Teachers’ Level of Job Satisfaction

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ARTICLE DETAILS

**History**  
Revised format: May 2022  
Available Online: Jun 2022

**Keywords**  
Procedural Justice, University Teachers, Job Satisfaction.

**JEL Classification**  
H2, H27

ABSTRACT

**Purpose:** The present study aimed at investigating the effects of Procedural Justice on Teaching Faculty’s Job Satisfaction at University level. The research was carried out at three universities in Khyber Pakhtunkhwa, Pakistan: Bacha Khan University, University of Malakand, and University of Swat.

**Methodology:** The research was quantitative in nature, and a questionnaire was adopted as a data gathering technique to collect data from a sample size of 217 targeted respondents using the proportional allocation method.

**Findings:** The study found a significant (P < 0.05) relationship between teacher satisfaction and statements such as teachers' disparate treatment from university management, teaching staff are strictly dealt with the rule in case of any violation of the law, the management is deceitful and insincere in terms of fair and equal treatment, no justification regarding decision-making processes, and the absence of communicating organizational information to teachers.

**Implications:** In illumination of the study's findings, the Administration and government may take proactive measures to establish a good environment for teachers in order to accrue their trust. These steps should include increasing collaboration with teachers, looking into the matter of teachers' benefits, establishing relationships between employees, and encouraging effective discussion that could enhance and incentivize exchanges of views between faculty and administration.

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Introduction

Procedural justice refers to the fairness of procedures regulating resource allocation within a social system. Employees’ perceptions about the fairness of rules and procedures regulate a process. It exists when certain normative principles are embedded in these procedures. Fair procedures must meet certain criteria, i.e. the extent to which they restrain prejudice and favoritism, create regular allocations, rely on precise information, represent all beneficiaries’ concerns, and prevail on ethical and moral standards (Swalhiet et al., 2017).

Procedural justice is the root of any social exchange in any organizational setting. An employee’s behavioral and cognitive reaction toward an organization is greatly affected by procedural justice (Cohen-Charash and Spector, 2001). In addition, Cropanzano et al. (2002) added that it is associated with reliance on organizational commitment. Moreover, an employee’s engagement in work, sharing knowledge with other colleagues at work, and innovative work behavior are positively influenced by it (Kim and Park, 2017). It assists employees to acknowledge the change in objectives and values of an organization to adapt pressure of any possible external change (Lee et al., 2017). Certain studies have suggested that reward allocation processes are more important than employee results (Lind and Tyler, 1988; Cohen-Charash and Spector, 2001).

Procedural justice is the clearness of the processes which are related to decision-making. It is deeply associated with transparency of activities and processes. (Kamran Nawaz, Mudassar Usman, 2018). Employees working in an organization will show and increase their trust regarding decisions if the written rules of an organization are not a deviation from its processes and activities (Mumin and Daya, 2008). Implementing complex decisions will be easy if the employees observe that decisions are free of biasness. It has been found that employees have no or low stress in an organization's working environment free from gender and ethnic discrimination. If followed, ethics of the working environment will increase employees' motivation in their work (Zeinabadi & Salehi, 2011).

Justice is a decision or action that is morally right and true based on law, fairness, ethics, and religion (Pekurinen et al., 2017). Procedural justice is a major concern for employees and organizations (Greenberg, 1990). Usman and Jamal (2013) identified the relationship between justice and job satisfaction and that all three aspects of justice, including procedural justice, are positively related to employees’ job satisfaction. When employees believe that the organization treats them fairly, they are more willing to work hard and show a higher level of performance (Kose, 2014).

It is essential to inform employees whenever management makes any important decision. Employees’ participation in the process will make its implementation easy. Another importance of employees’ involvement in discussion is that their questions and objections regarding the coming decision will be answered on the spot prior to its implementation. The actual needs of employees should be addressed by the organization in decision-making processes which must be fair as employees’ satisfaction is deeply related to it (Abdullah et al., 2019; Buluc & Gunes, 2014).

Every decision that organizations take must be free of favoritism; otherwise, other positive steps will be defamed. Organizations that treat their employees fairly have no job quitting ratio. Such organizations have a favorable working environment and task commitment (Akram, Hasim, and Akram, 2015). Employees will feel positive attitude toward that particular organization (Leventhal, 1976).

Job satisfaction replicates the retort of the employees against a part of a job or the whole job (Kim and Mauborgne, 1998). It is defined as positive and pleasant emotions that arose due to experience or evaluation of the job (Locke, 1976), perception of employees concerning the job and material, and insubstantial possibilities offered by the job (Luthans, 1994). It may result in the price for job satisfaction of employees or the determination of a job where they may be feeling positive and pleased senses (Locke, 1976), and it understands when the characteristics of the job overlie with the requirements of the
employee (Okray and Cakici, 2008). Interesting jobs that bring responsibilities and provide learning opportunities are all reasons for job satisfaction (Abdullah, 2020; Sevimli and İscan, 2005).

Theoretical Framework
The present study is based on the Control theory of procedural justice. According to this theory, a person included in the decision-making process will try to make out the results. The process of justice (e.g., Managerial-led disputes) is more just, even if the results they have made are not good or favorable to them, in another situation, where they have not been included in the processes and if even the outcomes of those processes meet their expectation and are finally better and favorable for them (Colquitt, 2001).

One of the social exchange model's primary ideas is that individuals seek control over their efforts' outcomes. They recognize to control their interest in the response of their cooperation with other people in the organization. People assess their loyalty to the group while considering whether the resource allocation by the authorities is beneficial and according to their expectations.

In light of the theories discussed above, naturally, individuals develop attitudes and perceptions toward colleagues within a group, and while observing, others' behavior are learned and observed, and a continuous attempt is made to get a measure of control over their behaviors. Based on these assumptions, individuals might make their perceptions of these groups' relations and attitudes while putting similar pressure on the collective perceptions and behavior (Şedat and Witold, 2015).

Objectives of the Study
- To explore faculty’s level of satisfaction with their jobs
- To identify the role of the procedural justice system and its association with faculty’s job satisfaction
- To suggest policy recommendations in the light of study findings

Methods and Procedures
The present study was conducted in higher educational institutions of Khyber Pakhtunkhwa, Pakistan, i.e. Bacha Khan University, University of Malakand, and the University of Swat. The nature of the study was quantitative, and a questionnaire was used as a data collection tool for collecting information from the sample size of 217 respondents out of a total of 517 selected through the proportional allocation method (Ullah & Muhammad, 2020). A conceptual framework consists of an independent variable, i.e. the procedural aspect of justice (opportunity to give suggestions, nature of procedures, rules and regulation, cooperation, and statutory bodies election), and a dependent variable, i.e. job satisfaction (satisfaction with administrative attitude and relationship with faculty, the opportunity of sharing opinion at work and satisfaction by working environment, satisfaction with the distribution of workload, remuneration, occupational facilities, work schedule and accommodation facilities) was cross-tabulated through the application of Chi-Square test statistics to ascertain the association between the dependent and independent variables.

Results and Discussion

Bi-variate Analysis
Bi-variate analysis procedures were used to determine the association between dependent and independent variables to reveal the route of responses and whether they favor or oppose any feature of variables under the study.

Association between Procedural Justice and Job Satisfaction of Respondents
Table 1 shows the chi-square result of procedural justices at universities with job satisfaction of faculty members. A highly significant association (P=.000) was noted between a fair organizational procedure that benefits faculty with faculty job satisfaction. This means that the level of fairness in the organizational procedure is directly linked with faculty satisfaction in their job.
It could be the reason for faculty involvement in policy formulation. Moreover, many Universities of Khyber Pakhtunkhwa faculty members are working in administrative positions, which seem to be a positive factor contributing to faculty job satisfaction. It can be deduced that faculty response toward fairness in the organizational procedure in dealing with their matter is linked with faculty’s job satisfaction. A likely conclusion has been drawn by Konovsky (2000) in his study in which he reported that fair procedures in dealing with teachers and students are related to their job or work performance as well as their level of motivation to work. Moreover, Ambrose, Seabright, and Schminke (2002) also reported that fairness in organizational procedures concerning job performance, evaluation, and promotion was highly associated with employee satisfaction.

Further, fair and unbiased academic policies were also significantly associated with (P=.000) faculty’s job satisfaction. This is in line with the study of McFarlin and Sweeny (1992), who accounted that procedural justice perception of the subordinates regarding unbiased treatment in academic matters and their involvement in academic decisions and policy formulation adds to employee’s job satisfaction. They also explained that employees consider the procedure fair only when given unbiased and accurate representation and opportunities. Hence, it can be concluded that unbiased academic policies result in job satisfaction for the faculty.

Provision to opportunity in participation in decision making of the faculty was found to be significantly
associated (p = .000) with faculty’s job satisfaction. It could be why faculty are part of various policy-making bodies in the shape of the senate, syndicate, board of faculty, and academic council, where they can give their input. Moreover, faculty heads and heads of the departments are also the faculty members whose key decisions are making positions. Similarly, Elovainio and Steen (2004) concluded that faculty prefers the organizational process where they can express their views during any decision-making for a favorable outcome and maximum benefits for students and faculty. It could be said that faculty involvement in university matters contributes to their job satisfaction.

Moreover, a significant association (P=.001) has been found between faculty members' influence over decisions and teaching faculty’s job satisfaction. This means that faculty members can influence any policy in their favor or may resist any policy they feel may not be in their favor or hamper the academic environment. In this regard, Kichkul and Gundry (2005) stated that procedural justice provides employees indirect influence over the rewards, outcomes, and policies according to the control model of justice. So, when faculty can influence procedures, they get rewards of their choice and feel satisfaction.

It was noted that neutral and unbiased procedure was significantly associated (P=.000) with teaching faculty’s job satisfaction. The neutral and unbiased procedure can help the organization work smoothly, and employees could be happy and work hard even if the outcomes are not according to their expectations, but they don’t feel discriminated against by other peers. It could be why the administrative staff is fair enough with the teachers to maintain neutrality. The second reason could be the presence of faculty members in administrative positions. Another reason could be the involvement of faculty members in formulating procedural rules they deem neutral and unbiased. This supports the findings of Greenberg (2005) and Leventhal (1980), who reported that an accurate record of performance and unbiased and neutral treatment of the faculty in the distribution of rewards and benefits adds up to their job satisfaction.

Regarding the clarity of procedure and its related rule regulation, a highly significant association (P=.000) was found between procedures based on rules regulation and teaching faculty’s job satisfaction. It can be deduced that procedures regarding faculty outcomes and positions are based on rules and regulations, which may be why these procedures are regulated and checked by the authorities to make them fair and unbiased. Likewise, Nowakowski and Conlon (2005) suggest that procedures and allocation processes should be according to all employees’ opinions and views to enhance their level of satisfaction. The information and procedure used in every decision by administrators should be according to the rules and regulations of the concerned organization.

Further, the non-discriminative procedure also had a strong relationship (p = .000) with faculty job satisfaction. It can be deduced that faculty view the rules and regulations regarding administrative procedures concerning just treatment as clear, non-discriminatory, and easy to understand and feel satisfied. Similarly, Sadaati (2013) concluded that organizational justice correlates significantly with job satisfaction; therefore, administrators try to establish justice based on non-discriminatory meritocracy, attitude, equal utilization of opportunities, and lawful observation.

A highly significant association (P=.000) was observed between taking suggestions of confidence from faculty members and teaching faculty’s job satisfaction. Similarly, a significant relationship (P=.000) was found between teachers’ ability to appeal against decisions arrived by these procedures and the teaching faculty’s job satisfaction. Further, a highly significant (P=.000) relationship was found between the perusing of the election process of statutory bodies promptly and teaching faculty’s job satisfaction. Employees’ suggestions of confidence are needed. Otherwise, they have the right to appeal or raise their voice on different forums if they feel the organizational procedure is unjust or they are treated unfairly. Here, the procedural rules and by-laws of the university cannot be ignored, which gives faculty the right to vote to send their representative to different policy-making bodies of the university. Timely organization of elections for different statutory bodies of the university has a positive impact on
the faculty’s job satisfaction as it’s a way they can raise their voice through their elected representative. These representatives also speak for faculty to address the concerns and grievances of faculty of unjust procedural treatment. As Bashir (2009) stated that perusing the election process of statutory bodies in a timely manner is very necessary because it will ensure the decision-making procedures work across the university in a consultative, transparent, and collaborative way. Moreover, Moorman (1991) concluded that procedural justice is based on various aspects such as whether a person is given a voice or asked in the procedures and this confirms their level of satisfaction within the organization hence making them trust administrators. Similarly, Posig (2015) stated that teachers who have the right to appeal against any decision which they think is unfair and biased were found to be more satisfied with their jobs in contrast to those who have no right to appeal against any decision.

Moreover, a highly significant association (P= .000) was observed between explaining decisions to everyone without hiding information and teaching faculty’s job satisfaction. It can be said that, unlike other governmental organizations in which employees are not involved in policy decisions, universities may not hide information from their faculty because faculty representatives are present at different policy-making bodies. Therefore, access to information is not a serious concern for faculty members; they can easily get whatever information they need through their representatives, who are members of different bodies. A similar conclusion was made by Cohen and Spector (2001), who accounted that for job satisfaction of the employees, their representative should be involved, and information should be shared with all the subordinates. They further noted that lack of information created an uncertain situation among teachers that affected their level of satisfaction and job performance.

Overall, the bi-variate analysis of the different factors of procedural justice shows a significant association with the job satisfaction of faculty members.

**Conclusion and Recommendations**

The concept of justice is not only relevant to society but is also found within the organizational domain. In the organizational context, this study concludes that procedural justice is highly related to the job satisfaction of faculty members of universities. Different factors of procedural justice such as fairness in administrative procedure, unbiased treatment of the faculty, neutrality, consultation in decisions, provision of voice, the right to appeal, and the right to vote for electing a representative for policy-making forums are procedural measures that contribute towards organizational justice in universities. Ensuring the presence and applications of such measures in universities is highly related to faculty’s job satisfaction within universities. Therefore, as a policy note, it is suggested that universities must maintain fairness in their procedures, share information openly, involve the faculty in decision making, conduct a timely election of the faculty and listen to their grievances to ensure employees satisfaction and good performance for achieving long term educational goals of the institute.

**References**


A Hand in Glove Theorem of Dividends and Earnings: Evidence from the Financial Sector of Pakistan

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ARTICLE DETAILS

History
Revised format: May 2022
Available Online: Jun 2022

Keywords
Dividend Policy, Market Capitalization, Accruals, ARDL approach.

JEL Classification
C45, C53, C61, D81, F65, G11, G17

ABSTRACT

Purpose: The available literature on various sectors to examine the impact of earnings on dividend payments, indicates that still, extensive research lacks in the financial sector of Pakistan. The rationale behind paying higher dividends has been observed in emerging countries like Pakistan to maintain a strong financial footing. This study aims to investigate various factors that can influence dividend payouts.

Design/Methodology/Approach: ARDL approach has been used to establish a long-term impact of selected variables on dividend payouts. Data of 50 financial listed firms for 2000-2021 has been used to subsume the impact of earnings-related variables on the dividend payouts of the financial companies of Pakistan.

Findings: Results indicate that market capitalization, ROA, EPS, and firm size have a significant and positive impact on dividend decisions, while leverage generates a significant inverse impact on dividend declarations. The study also indicates discretionary accruals (a factor in earnings management under IAS) do not impact dividends significantly. ROE has no impact on the volume of dividends due to the specific nature of the firms under study.

Implications/Originality/Value: The study demonstrates a conjecture that the financial sector must maintain its dividends not only to retain its old stakeholders but also to recruit new ones.

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Introduction

Among the key decisions, the financial managers cogitate dividend policy is one of them. To be precise, a dividend refers to the monetary benefit received by shareholders on the capital invested. It is from the annual
profits earned by the firm or may be kept as retained earnings for the sake of re-investment; sometimes called plow back of profits (Kajola, Adewumi & Oworu, 2015). The practice of paying dividends has transformed over the past decade. Firms earn a high percentage of earnings and distribute lower dividends (in the form of cash, stock, scrip, and property dividend) to their residual investors (Gormsen, N., & Koijen, R., 2020).

Earnings management is the key determinant of dividend policy. The related investigations propose that firms that distribute dividends are less inclined to manipulate their earnings since dividends can be utilized as a tool to alleviate the conflict between management and shareholders (Charteris, A., & Chipunza, K. J., 2020).

The matter of earnings is of significant importance due to pandemic diseases. Organizations sell out their obsolete assets & eliminate excess stock (property dividends) and adopt new tools to manage their earnings. Sometimes, ‘white elephant organizations’ that pay dividends by fits & starts, take money from reserve accounts (general reserve account or dividend equalization reserve account) to show that earnings have positive look and also use other complex techniques (called scrip dividend) to balance earnings (Tahtamouni, A., 2020).

Various experts have focused on the combination model of Johansen, and the causality test of Granger was applied to explain the long-term and short-term components of the variables; market value per share (MVPS), earnings per share (EPS), and dividend per share (DPS). The results show that dividend per share (DPS) was related to per-share market cost (MPS), whereas per-share earnings (EPS) don't have a critical impact on per-share market value. Some companies concentrate on reinvestment of dividends (plow back of profits) instead of paying to investors; ultimately, it will build the efficiency of firms (Ahmed F, Advani, & Kanwal, 2018).

**Problem Statement/Research Justifications**

Numerous elements affect dividend policy as the size of the firm, age of the enterprises, taxes, firm growth rate, controlling mechanisms, degree of financial leverage, profitability, and uncertainty but again, the key independent variable of this research is earnings management. Besides many variables, in this study, only a few variables are considered. The present paper is mainly concerned with an arena of concern and troubling questions that exist in scholarly literature. It is mainly concerned with the dividend behavior of the financial sector of Pakistan; which has been highlighted in a few studies. The impact of accruals under GAAP, leverage, size or volume of firms, market capitalization, and profits on the dividend policy of financial companies have not been investigated jointly to find out the long-run affiliation amongst the said variables. The real-time gap exists to investigate the influence of the said variables on dividends in the financial sector of Pakistan.

**Rationale of the Study**

There is an insufficient number of studies that have investigated the connection between earnings management (EM) and dividend policy; especially in the financial sector of Pakistan. Research gaps in terms of scope, policy-making & theoretical expansion exist in the current literature with special reference to Pakistan; supported by an extensive literature review, showing the financial sector (Insurance & Investment companies, Leasing Companies, banks, Modarabas, Securities Institutions) of Pakistan has not been analyzed extensively rather they have been studied individually. The present research is done to investigate the impact of EM (Accruals), especially operating leverage, profits (ROE/ROA), and market capitalization (Mkt Cap) on dividend policy in the financial sector of Pakistan.

**Significance of the Study**

Stakeholders need to be quick and accurate in their basic decision-making so they can enhance their stakes positively not only in quantitative terms but also in qualitative terms. The present research talks about the financial institutions of Pakistan through which all the interested parties will have a clear idea about the organization's progress, profitability, and dividend policies. By recognizing the wealth maximization perspective, this study shall give a wider picture of the nature of the financial sector and its dividend strategies; which have always been critical to prompt and rational decision-making.
Last but not the least, the present research endeavor has focused on owner’s wealth maximization through the delicate tool of dividend management.

The present paper is organized as: Section 2 contains an overall review of the given literature on the concept of dividend policies. This section has been divided into various parts to cover the relevant studies to support the exogenous variables. Section 3 covers the methodology used in the paper. Section 4 describes the data, methodologies, and data analysis. Section 5 describes the results, discussion, and future recommendations.

**Literature Review**

Dividend strategy has been a major element of conflict in the financial sector; this has been proven by various examinations of dividend arrangements (Sarwar, Kutan, Ming & Husnain, 2020; Sarwar, Ming & Husnain, 2020). The puzzle starts with Miller & Modigliani (1985), and Jones Model, (1991) in the last century, and some worth mentioning studies in the last two decades, like (Hussainey, Mgbame, & Chijoke-Mgbame, 2011). Some of the variables that have a direct impact on dividend payouts via earnings management have been analyzed in the present study.

**Earnings Management & Dividend Payouts**

Earnings management is pivotal for all the clients who use the firm’s information and earnings manipulation. It can hugely affect financial markets & the real economy. Hussainey, Oscar Mgbame, and Chijoke-Mgbame, (2011) tested the relation between dividend policy and volatility of share prices in the United Kingdom. They chose 123 English firms and the time frame of their research expanded from 1998 to 2007. Their study originated from (Baskin, 1989). Same as Baskin (1989), they applied analyses of multiple regression for checking the connection between dividend payout, dividend yield, and share price. They further added firm size, debt level, volatility in earnings, and growth levels, as explanatory factors in their research (Baskin, 1989; Tahtamouni, A., 2020). Ahmed, Advani, & Kanwal, (2018) investigated that the dividend approach to a great extent in the corporate sector, is related to components like future efficiency, ownership structures, & executives’ qualities. It has been researched that a positive association between dividends and income exists (Marito, B. C., & Sjarif, A. D., 2020).

**Size of Firms & Dividend Payouts**

Cohen & Zarowin, (2010) has pointed out a bunch of reasons to conclude a negative link between firm size and earnings management. Large-sized firms have comparatively effective internal control & reporting system which facilitated publishing more reliable information to all the stakeholders. This gave an ability to the top management to manipulate company profits (Tahtamouni, A., 2020; Gormsen, N. J., & Koijen, R. S., 2020). The size of a firm can be measured by the log of total assets (Zh, Husnain, Ullah, Khan & Ali, 2022). Extensive research was conducted in Sri Lanka by Vijitha & Nimalathasan, (2014) about the volume (size) of the companies by incorporating the various variables like price-earnings ratio (P/E ratio), book value per share (BV), ROA, ROE, EPS as independent variables and established a positive and significant impact on dividend payments. Boateng, Asongu, & Tchamyou, (2018) point out that the theory of information asymmetry has advocated that mega-firms have lesser information disruption based on strong governance, controlled mechanisms, and strong reporting system.

**Return on Assets/Equity/Investment & Dividend Payouts**

Experts have examined the link amid numerous determinants of dividend payout in Malaysian listed companies. The sample of the study which consists of one hundred (100) companies was randomly selected from Bursa Malaysia from 2002 until 2005. The study revealed that ROA and ROE showed a strong positive link with the dividend policy. The firm leverage showed a strong negative link with the dividend policies of sampled listed firms (Septiani, M., Ariyani, N., & Ispriyahadi, H., 2020; Marito, B. C., & Sjarif, A. D., 2020).

Kajola, Adewumi, & Oworu, (2015) examined the factors that influence firms. The study was based on high dividend payments covering the period from 2005 to 2014. The results indicated that financial firms are
directly influenced by their liquidity, profits, and size while non-financial firms are influenced by ROA & ROE. The sample consists of 100 companies out of 854 listed ones on Bursa Stock Exchange. The study concluded a positive significant impact of liquidity, firm size (log of total assets), and investment opportunities on dividend policies (Aprilyani, I., Widyarti, M., & Hamida, N., 2021).

**Leverage & Dividends Payouts**
In the finance literature, it is a well-documented fact that capital structure had been one of the contributing factors to a company’s performance (Sarwar, Ming, Husnain & Naheed, 2018). Conversely, the assumption of perfect capital markets given by Miller & Modigliani, (1985) stated that the future performance of any company is independent of capital structure. Still, some of the studies have found opposite results; a positive significant association between debt and dividends has been investigated by Vijitha, P., & Nimalathasan, B. (2014). Experts concluded that decisions on financial policy are based conjointly on capital structure designing and setting dividend policy. In one extreme, if the firm uses high leverage and low equity, most of the control is in the hands of investors. If the firms use low leverage and high equity, fewer dividends should be paid and more control lies with managers (Mengyun, Um-e-Habiba, Husnain, Sarwar, & Ali, 2021). Sarwat, Kashif, & Godil, (2019) have found an adverse impact of leverage on company profits. Leverage was analyzed by experts indicating a significant and negative correlation with equity (Septiani, M., Ariyani, N., & Ispriyahadi, H., 2020).

**Accruals & Dividend Payouts**
Earnings management has been classified into two main categories i.e., *accrual-based* and the second is *real-based earnings* as researched by Schipper (1989) and Healy & Wahlen (1999). Accruals must be handled under the guidance of generally accepted accounting principles or standards (GAAP/GAAS). It is always a tough task to calculate accruals due to violation of GAAP/GAAS, by the auditors. In the present research, a modified cross-sectional Jones Model (1991) has been used (Siladjaja, M., & Anwar, Y., 2020; Chen, N. Y., & Liu, C. C., 2019).

Accrual-based earnings management is the “use of GAAP to control the profits of companies by manipulating the rules of accounting”. Accruals sometimes lie in the hidden cushion, i.e., the cash flow stream will make it easy for the management to manipulate the financial data rather than increase the income smoothing that comes from accruals (Siladjaja, M., & Anwar, Y. 2020; Shah, R., & Shome, S., 2019). The studies indicated a positive and significant link between EM & a company’s sales level in Malaysian Firms. At the same time, negative and significant relationship was reported by Abbadi, Hijazi, & Al-Rahahleh (2016) in Iran.

**Market Capitalization & Dividend Payouts**
A well-synchronized financial system facilitates higher economic growth, better resource allocation, and significant and sustainable growth (Husnain & Akhtar, 2016). Literature highlights formal studies which have documented the magnitude, intensity, and extent of several factors that directly contribute to market capitalization in oil and gas sector (Ahmed, Coulibaly, and Zlate, 2017; Charteris, A., & Chipunza, K., 2020).

By checking the impact of bank loans, deposits volume, bank size, rate of inflation, GDP, and market capitalization on the company’s profits; expressed via ROA, ROE, ROCE, EBIT, and operating margins, the experts have concluded a strong impact of all these factors towards a higher rate of profits which will result in higher dividends. Ayyagari, Demirguc-Kunt, & Maksimovic (2017) concluded a positive link between capitalization and bank performance. They resolved that all the financial institutions pay less borrowing cost i.e., *dividends* due to higher capitalization and expensive external financing. Shah & Shome (2019) has concluded that a positive & direct link exists between market capitalization and bank performance.

**Justification of Present Study**
Though the area of research is not a new one in corporate finance, still, a gap exists where a study has the potential to cover most of the market players in the financial sector of Pakistan. The present study is a *rat race* on the part of the researcher to cover the said gap by using updated data after the impact of Covid-19; to have a
clearer understanding of dividend decisions of the financial sector of Pakistan that are not only bread-winners but also act as hand in glove for the non-financial sector.

**Research Methodology**

This study is based on a quantifiable research method. It is extracted from general to specific by taking the data of Pakistani financial market. After an extensive literature review, it is found that there are few studies involving this sector. The data has been taken from the financial sector including Commercial Banks, Insurance Companies, Leasing Companies, Modarabas, and Investment banks. These organizations are listed on Pakistan Stock Exchange and their financial statements are available (2000-2021) on their official websites.

**Sample Data**

Sectors chosen for the present research endeavor are as under:

[i] Commercial Banks: 20 of the commercial banks listed on the Pakistan Stock Exchange have been included in the present statistical analysis.

[ii] Leasing Companies: 06 of the leasing companies have been taken out of 10 listed leasing companies. The remaining 04 organizations were excluded from the analysis due to the non-availability of relevant data.

[iii] Insurance Companies: Insurance companies have good repute regarding the payment of dividends in Pakistani markets. There are 29 listed insurance companies but the data of only 17 companies was available and had been added to the analysis.

[iv] Investment Banks/Securities: 07 investment banks/securities companies have been taken into the present research endeavor based on data availability.

The objective of this study is to investigate the connection between earnings management (profits, leverage, market capitalization) and dividend policies (dividend payouts & dividend yield ratio) in the financial sector of Pakistan. Panel data for the years 2004-2021 has been used to apply ARDL bound testing approach Pesaran et al., (2001). ARDL approach is comparatively a new method to replace the classical co-integration approach. It is called the best econometric model as a general unrestricted dynamic approach along with the Least Square Model of regression analysis and F-statistics by using E-views.

**Conceptual & Statistical Model**

The discussion in the above section of ‘the review of the literature gives birth to the following proposed conceptual framework: -

![Figure-01 Conceptual Framework](image)

To test the hypothesis, the following statistical model has been developed: -

\[
DPO= \beta_0+\beta_1(DAC)+\beta_2(SOF)+\beta_3(ROE)+\beta_4(ROA)+\beta_5(DTE)+\beta_6(M.Cap.)+\beta_7(EPS)+\mu \quad \text{[Eq. 1]} 
\]

**Application of Jones’ (1991) Abnormal Accruals Model**

In the present study, Modified Jones Model (1991) has been used based on its absolute values of residuals. This model is termed ‘Jones’ abnormal accruals’ model; a basic measure of EM. This model denotes ‘accruals’ as
the changes in working capital and depreciation expenses. The two variables in the model directly relate to the changes in current assets and fixed assets i.e. plant, and equipment. Statistically, accruals can be estimated with the following formula:

\[ T_{Accr_i} = b_0 + b_1DREV_{it} + b_2PPE_{it} + 4_i \]  

[Eq. 2]

Here, in the above equation, ‘TAccr’ denotes total accruals in year ‘t’ for any given firm ‘i’. While DREV denotes the “changes occurred in the company’s revenue growth and PPE’ is the market value of its plant & equipment. Jones’ model will be estimated by using the cross-sectional data of every company. In the present study, the positive statistics mean ‘income increasing manipulation’ while negative statistics refer to ‘deflated reported incomes.

Data Stationarity & Non-Stationarity

Experts state that as the series of data set reverts to its long-run Mean, the stationary times series shocks will be surely tempora and ry, and its effects shall eliminate themselves. Any stationary time series takes three topographies:

- Mean \((Y_t)\) = is constant for all ‘t’
- Variance \((Y_t)\) = is constant for all ‘t’
- Covariance \((Y_t, Y_{t+1})\) = is constant for all ‘t’

Resultantly, statistics of time series, if assumed to be stationary entail persistency in three forms i.e. Covariance, Variance & Mean respectively in the reverse order. Non-Stationarity shall ultimately recoil bogus outcomes. Some statisticians prethe fer subsequent rule of the flick for bogus regression (If \(R^2 > DW\) statistics, at the moment reversion necessity).

Unit Root Tests

The variables, tested with a causality test must be checked for their stationarity first. In the study, the conventional ADF tests, KPSS (1992), and Dickey-Fuller GLS de-trending test developed by Elliot & Harackiewicz, (1996) are used. The present research used the ARDL bounds test that is based upon the assumption that variables are I(0) or I(1). It is mandatory to apply unit root test to determine the order of integration. Ultimate success is to ensure that none of the variables is stationary at I(2) to avoid spurious results due to confounding factors and cannot depict the true interpretation of the F-statistic (Pesaran, Shin, & Smith, 2001).

\[ X_t = y X_{t-1} + e \]  

[Eq. 3]

Whereas, it denotes a white-noise procedure and \((y) < 1\), shows a stationarity state, three probable scenarios exit as:-

- \((|y| < 1) = \text{if series is stationary}\)
- \((|y| > 1) = \text{if series is explosive}\)
- \((|y| = 1) = \text{if unit – root exists, non-stationarity}\)

By summing up the above in nutshell, the following two equations are the basis of calculating unit-root based on taking the difference on both sides:

\[ \Delta X_t = e_t \]  

[Eq. 4]

Co-Integration & Auto-regressive Distributed Lag Approach

The ultimate ambition of co-integration is to conclude long-run associations amid predictors. The sequence of variables \(Y_t\) & \(X_t\) indicates stationarity at the initial change of I(1) and from the co-integration reversion shows at the level I(0), as mentioned by Hanson (1995). This research aims to trace the long-run connections between exogenous & endogenous Johansen's co-integration method is preferred if the integration order is identical. By concluding the entire discussion concerning this paper, the integration order of exogenous variables resides at I(0) & I(1), hence ARDL method is a desirable technique to be used.

\[ Y_t = \alpha_o + \sum_{j=0}^{a} \beta_j L^j X_t + \sum_{j=0}^{p} \gamma_j L^j Y_t + e_t \]  

[Eq. 5]

In the above statistical model, ‘L’ denotes ‘Lag operative’, while \(L^j = X_{t-j}\) is an influential archetypal of the
predictors and subsequent ‘lag orders’. The ARDL technique incorporates ‘co-integration’ as error correction model (ECM) of the ARDL standard. In the explanation of ARDL Bounds Testing regarding the model statistically, \( \beta_1, \beta_2, \beta_3, \beta_4, \beta_5 \) denote short-term dynamics, while \( \gamma \) denotes the long-term links among the variables. ARDL method has been classified into two phases i.e., in phase one, \( F \)-statistics become ‘functional’ to check ‘co-integration’. Secondly, \( F \)-statistics become equated with \( F \)-tabulated values as discussed by Pesaran, Shin, & Smith, (2001).

**Results & Discussion**

The analysis begins with descriptive statistics, given in Table-1, that displays descriptive statistics about DPO, DACC, TACC, SOF, ROE, ROA, DTE, MCAP, and EPS. The range DPO is \([234.30 – 71.32]=305.62\), which shows a higher range of volatility (Hussainey, Oscar Mgbame, & Chijoke-Mgbame, 2011).

<table>
<thead>
<tr>
<th>Table-1</th>
<th>Descriptive Analysis of Financial Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPO</td>
<td>SOF</td>
</tr>
<tr>
<td>Mean</td>
<td>23.05</td>
</tr>
<tr>
<td>Median</td>
<td>25.52</td>
</tr>
<tr>
<td>Maximum</td>
<td>234.03</td>
</tr>
<tr>
<td>Minimum</td>
<td>-71.32</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>30.54</td>
</tr>
<tr>
<td>Skewness</td>
<td>1.712</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>5.041</td>
</tr>
</tbody>
</table>

The mean/median indicate that the distribution of DPO is closer to *symmetry*; the SD explains a small variation; while skewness showed data is *highly skewed* and lies within the acceptable range. The kurtosis of 5.041>3.00; shows the data is ‘leptokurtic or leptokurtotic’. The next indicator is SOF, having a small range of variation. The mean/median are almost the same which indicate the data is symmetrical & free from outliers. The SD explains small variations; the resultant size of the firms contributes positively to dividend payouts (Sarwat, Kashif, & Godil, 2019). The skewness, indicates that the distribution is perfectly symmetrical. The Kurtosis of 1.725<3.00 shows the data is ‘platykurtic’.

The mean & median of ROE indicate that the distribution is ‘asymmetrical’. The skewness indicates that ROE is positively skewed and the kurtosis shows ‘Leptokurtic’ distribution (Margaritis & Psillaki, 2010; Shah, R., & Shome, S., 2019). The results show that ROE is not relevant in dividend decisions. Table-01 shows that the range of ROA is comparatively less flexible compared to ROE. The mean>median, indicates data has no outliers; hence data is ‘symmetrical’. The skewness, indicating that ROA is negatively skewed. The kurtosis is 17.56; hence data is ‘Leptokurtic’. The indicators show good signs to establish a significant impact on dividends (Ahmed, Advani, & Kanwal, 2018; Sarwat et al. 2019).

The range of DTE is higher; which indicates that the debt/equity ratio has a significant and dynamic impact on dividends (Ahmed, Coulibaly, & Zlate, 2017). The use of debt in capital structure can affect dividend decisions in multiple ways. The mean>median, indicates data is ‘symmetrical’ with no outliers. The SD of DTE=70.03 is higher compared to ROA, ROE, SOF & DPO, explaining that a higher debt/loan can influence dividends more significantly. The skewness indicates DTE is positively skewed and kurtosis 4.088>3.00 shows that the data is Laptokurtic. All indicators highlight that DTE is a leading variable that can change DV by making changes in the capital structure (Marito, B. C., & Sjarif, A. D., 2020).

The values of MCAP for mean>median, indicate that the distribution is ‘symmetrical’. The skewness=4.86 & kurtosis=5.23 indicate that data is positively skewed, the data is Laptokurtic (Boateng, Asongu, Akamavi, & Tchamyou, 2018). Results show market capitalization is the major contributor in framing dividend policies.
The mean and median of EPS show stability, lesser variability, and more smoothness. The range of EPS \([200.80-(91.900)=292.70]\); shows a narrow range; compared to MCAP, DTE, and ROE. The SD is lower; explaining that EPS has a significant impact dividend policy. The skewness indicates that EPS is positively skewed; kurtosis shows that the data is \textit{Laptokurtic} (Siladjaja, M. K., and Anwar, Y., 2020). Hence, EPS shows a significant positive impact on dividend declaration and payments.

Table-2 indicates the range of TASS that is higher; and indicates assets have a significant and dynamic impact on dividends. The maximum tangible assets in capital structure can affect dividends; especially in the form of property dividends. The mean of TASS is 1996.80, very higher; which indicates distribution is ‘symmetrical’ & there are no outliers, denoting no need for winsorization. The SD of TASS is the highest in IVs; explaining that TASS can influence dividends directly and significantly in multiple ways (Margaritis & Psillaki, 2010). Results highlight that TASS is the \textit{leading variable} that can change dividend policies by making desirable changes in the capital structure of the financial entities.

| Table-2 Descriptive Analysis of Discretionary and Non-Discretionary Accruals |
|---------------------------------|----------|----------|----------|----------|----------|
| TASS   | TACC    | CTASS    | NDACC    | DACC     |
| Mean   | 1996.80 | 84.98    | 9.90     | 21.24    | 186      |
| Median | 1860.00 | 77.00    | 6.00     | 24.02    | 221      |
| Maximum| 2684.02 | 2556.00  | 4702.00  | 4708.00  | 2102     |
| Minimum| -80.00  | -3815.00 | -2664.00 | -2664.00 | -8523    |
| Std. Dev. | 40.50 | 41.56    | 21.30    | 36.40    | 28.08    |
| Skewness | 3.01  | -1.09    | -0.741   | -2.64    | 1.366    |
| Kurtosis | 3.69  | 5.75     | 3.705    | 2.05     | 2.239    |
| Observation | 7700 | 7700     | 7700     | 7700     | 7700     |

Accruals have been analyzed in (i) discretionary (DACC) & (ii) non-discretionary accruals (NDACC) in Table-2. The \textit{modified Jones Model} was used to minimize \textit{measurement error} by applying discretion in scale; that is preferable to standard Jones and industry model. The results show that NDACC has a wider range of variations. Similarly, NDACC has more fluctuation, shown by SD [36.40]; showing a higher impact on dividend announcement (Cohen & Zarowin, 2010; Vijitha & Nimalathasan, 2014; Ben Amar, & Jarboui, 2018).

Results of Granger Causality and ARDL Bound Testing
Table-3 covers the causality results. It shows uni-directional or bi-directional links between the variables. Here, discretionary accruals, size of firms, and market capitalization indicate the presence of bi-directional causality with DPO with p-value<10%. The table indicates strong causality runs from discretionary accruals to DPO with a p-value of 0.03 (Madyoningrum, A. 2019). Size of the firm does granger cause DPO at a p-value of 0.07. DPO does granger cause ROE at a p-value of 0.03 uni-directionally. ROA does granger cause DPO at 10%. DTE called \textit{leverage ratio} does granger cause DPO at 0.033 uni-directionally. While market capitalization does granger cause DPO and causality run in either direction.

Table-4 is the core of the study. It shows auto-regressive distributed lag results of the under-study variables. The table indicates that LNDAC(-1) has a significant impact on DPO with a coefficient of 2.18. The size of the firms becomes highly significant as the number of lags increases with positive coefficients of 1.34 & 4.53. The return on assets (LNROA) has a strong positive impact on DPO with a coefficient of 2.95. The return on equity (LNROE) does not significantly impact DPO. The leverage ratio has shown a significant negative impact on DPO with coefficients of -2.19 and -1.04.

| Table-3 Results of Granger Causality |
|-------------------------------------|----------|----------|----------|
| Null Hypothesis: | Obs | F-Statistic | Prob. |
| LN_DAC does not Granger Cause LN_DPO | 22 | 2.3965 | 0.0313 |
| LN_DPO does not Granger Cause LN_DAC | 3.0017 | 0.0612 |
LN_SOF does not Granger Cause LN_DPO 22 3.1949 0.0704
LN_DPO does not Granger Cause LN_SOF 0.0959

LN_ROE does not Granger Cause LN_DPO 22 1.2638 0.3756
LN_DPO does not Granger Cause LN_ROE 0.0348

LN_ROA does not Granger Cause LN_DPO 22 0.9796 0.0754
LN_DPO does not Granger Cause LN_ROA 0.9581

LN_DTE does not Granger Cause LN_DPO 22 0.7026 0.0339
LN_DPO does not Granger Cause LN_DTE 0.3583

LN_MCAP does not Granger Cause LN_DPO 22 2.3857 0.0152
LN_DPO does not Granger Cause LN_MCAP 0.0648

LN_EPS does not Granger Cause LN_DPO 22 0.7611 0.6311
LN_DPO does not Granger Cause LN_EPS 0.1901

The analysis of Table-4 indicates its DW-stats of 1.92 and adj. R^2 of 0.85 indicate the results under ARDL Bounds Testing are more valid. The Mean, SD & S.E. of Reg. also indicate that model has predicting power (Feizal, D. A., Sudjono, S., & Saluy, A. B., 2021).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-statistics</th>
<th>Prob*</th>
</tr>
</thead>
<tbody>
<tr>
<td>LN_DPO</td>
<td>0.4849</td>
<td>0.2512</td>
<td>1.9441</td>
<td>0.0768</td>
</tr>
<tr>
<td>LN_DPO(-1)</td>
<td>0.2005</td>
<td>0.2755</td>
<td>1.7179</td>
<td>0.0253</td>
</tr>
<tr>
<td>LN_DAC</td>
<td>1.1431</td>
<td>1.1748</td>
<td>0.9529</td>
<td>0.3433</td>
</tr>
<tr>
<td>LN_DAC(-1)</td>
<td>2.1812</td>
<td>1.2437</td>
<td>-1.9808</td>
<td>0.0485</td>
</tr>
<tr>
<td>LN_SOF</td>
<td>1.3378</td>
<td>0.6097</td>
<td>2.1635</td>
<td>0.0483</td>
</tr>
<tr>
<td>LNSOF(-1)</td>
<td>4.5259</td>
<td>1.9304</td>
<td>2.3187</td>
<td>0.0363</td>
</tr>
<tr>
<td>LN_ROA</td>
<td>2.9529</td>
<td>1.9102</td>
<td>-0.1804</td>
<td>0.0509</td>
</tr>
<tr>
<td>LN_ROE</td>
<td>-2.7583</td>
<td>1.3198</td>
<td>-2.0137</td>
<td>0.1088</td>
</tr>
<tr>
<td>LN_ROE(-1)</td>
<td>-1.0668</td>
<td>3.2432</td>
<td>-0.3001</td>
<td>0.7622</td>
</tr>
<tr>
<td>LN_DTE</td>
<td>-2.1916</td>
<td>2.2125</td>
<td>-0.9045</td>
<td>0.0448</td>
</tr>
<tr>
<td>LNDTE(-1)</td>
<td>-1.0432</td>
<td>1.5003</td>
<td>0.0399</td>
<td>0.0342</td>
</tr>
<tr>
<td>LN_MCAP</td>
<td>-0.9574</td>
<td>1.0293</td>
<td>-0.9398</td>
<td>0.0353</td>
</tr>
<tr>
<td>LNEPS</td>
<td>1.5254</td>
<td>1.0231</td>
<td>0.9575</td>
<td>0.1757</td>
</tr>
<tr>
<td>C</td>
<td>0.2955</td>
<td>1.7570</td>
<td>0.8754</td>
<td>0.0057</td>
</tr>
</tbody>
</table>

Graphical & Mathematical Diagnostics
Table-5 indicates the results of the Wald test, indicating the explanatory model variables are contributing significantly. The table shows that the value of a parameter is not zero which means no variable should be removed from the statistical model, all the explanatory variables are adding something to the model. Table-6 shows the results of Breusch-Godfrey, which can detect auto-correlation up to any predesignated order compared to DW-stats, which is restricted to detect only first-order auto-correlation. The Breusch–Godfrey serial correlation LM test is applied which is the test for autocorrelation in the errors of a regression model. The null hypothesis of this test is 'that there is no serial correlation.'
Table-6 shows that ‘LM test is used to detect serial correlation with the number of lags set at ‘2’. Since the calculated value of Breusch-Godfrey LM \{117.67\} exceeds critical value of \(\chi^2(2)\), we accept Null hypothesis of no serial correlation up to lag 2. The probability Obs*R-squared statistic represents the probability of rejecting the null hypothesis i.e., no serial correlation (Septiani, M., Ariyani, N., & Ispriyahadi, H., 2020).

Table-5 Results of Wald Test

<table>
<thead>
<tr>
<th>Equation</th>
<th>Test Statistic</th>
<th>Value</th>
<th>d.f.</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F-statistic</td>
<td>72.56646</td>
<td>-1487</td>
<td>0.005</td>
</tr>
<tr>
<td></td>
<td>Chi-square</td>
<td>72.56646</td>
<td>1.0101</td>
<td>0.007</td>
</tr>
</tbody>
</table>

Table-6 Results of Presence of Serial Correlation

<table>
<thead>
<tr>
<th>Breusch-Godfrey Serial correlation LM Test:</th>
<th>F-Statistic</th>
<th>Obs*R-squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Statistic Value</td>
<td>75.61994</td>
<td>117.6659</td>
</tr>
<tr>
<td>d.f.</td>
<td>Prob. F(2485)</td>
<td>Prob. Chi-Square(2)</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Figure-2 contains the graph that shows the symmetry between the actual, and the residuals; that means the model is a good fit. The residuals are normally and independently distributed. This graph shows the fitted values indicate that the pattern of fitted and actual observations is the same. It means the closeness of actual and fitted values directly impacts the residuals of fitted model. Due to the closeness of actual and fitted observations, the residuals are normally & independently distributed (Farrukh, K., & Shams Khakwani, M., 2017).

Figure-03 indicates that standardized residuals & DPO residuals can be seen respectively, depicting the model as a good fit. It can also be seen that the standardized residuals and DPO residuals from 1 to 250 observations are showing the same pattern and normality, but from the scale (250 to 350), observations are showing a little bit of fluctuation.

![Graphical Presentation of Standardized Residuals](image)

After scaling of 350 to 500 till the end of the scale, again the pattern is the same and normal. Both graphs are showing the same pattern which tells us that the fitted model is significant.
Conclusion & Policy Implications
The purpose of this study is to find out the impact of various explanatory variables on the dividend policies of financial companies listed on the Pakistan Stock Exchange. The research indicates that discretionary accruals harm dividend payouts though not significantly. The value of the coefficient indicates its impact on forecasting. It directly affects almost revenues and expenses. Companies must handle the volume of accruals by applying GAAP & IAS to make the financial performance of financial companies more desirable as investigated by international researchers. This is advisable for companies to use this delicate tool for window-dressing financial statements. The size of the firm, irrespective of its nature of business plays a significant role in dividend decisions as supported by previous studies.

Return on the asset does contribute significantly and is an eye-opening result in the case of financial firms. At the same time, ROE does not contribute significantly to the firms; denoting that financial firms have to sacrifice their major profits for the sake of maintaining goodwill, solvency and liquidity in the financial markets, as supported by (Farrukh, Irshad, & Shams Khakwani, 2017). The role of debt has always been of great concern for business concerns. In the present research, the results indicate that debt decisions do not impact financial companies positively; rather the mixture of debt and equity maximizes the owner’s wealth.

Earnings are considered a direct/significant contributor to dividend decisions. The coefficient of earnings shows a routine donor in the case of financial enterprises. The reason is whatever the circumstances; the financial firms must stick to their dividend decisions (Abbadi, Hijazi, & Al-Rahahleh, 2016). Last but not the least, market capitalization has gained importance for financial companies.

Limitations of the Study
In the present study, the researcher has focused on the financial sector of Pakistan only. Still, Modarabas & Close Ended Mutual Funds can become a part of this study in future. Moreover, the data availability in Insurance, Investment & Securities sectors can make future research more authentic and reliable.

A separate study for each financial sector can be conducted with the comparative study. In future, the study can include a comparative analysis of the Pakistani financial sector with other emerging/frontier countries of the world. The inclusion of control variables shall make the results more result-oriented, logical, and rational to the future directions for the financial sector of Pakistan in particular, but it will be a milestone for emerging countries in general.

References


Mediating Role of Perceived Fairness between Organizational Commitment, Organizational Trust and Work Engagement of Female Faculty Members of Public Sector Universities in Punjab, Pakistan

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**ARTICLE DETAILS**

**History**  
Revised format: May 2022  
Available Online: Jun 2022

**Keywords**  
Perceived Fairness, Organizational Trust, Organizational Commitment, Work Engagement.

**JEL Classification**  
O15, 120

**ABSTRACT**

**Purpose:** Ensuring the competitive advantages for female faculty members and to attain sustainable progress in rapidly transforming educational environment in the current era.

**Design/Methodology/Approach:** Structural Equation Modeling (SEM) has been applied by using MPlus Software. The construct in the Context of Pakistan is exploratory in nature.

**Findings:** The study has examined the mediating relationship of fairness between organizational trust, organizational commitment and work engagement of female faculty members working in public sector universities of Punjab, Pakistan.

**Implications/Originality/Value:** It is necessary to explore the other suitable attributes of the relevant construct in the context of Pakistan. As the results remained not satisfactory and generalizability of the results is not possible.

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**Introduction**

Universities are focusing on innovative activities for creating new value additions in the society whereas, the sustainability in such a competitive environment is not an easy task. Especially for the academicians it is very much necessary to upgrade and innovate themselves. They should be equipped with new tools of the modern classroom teaching, research, and innovation. Their survival and progress
depend upon the volume to their being competitive (Rehan, Mumtaz, Khan, & Iqbal, 2021). This change of market structure is dynamically reshaping the working environment in academia, systematic approaches to management are not quick enough to describe the dynamics in education sector, they seem incapable of helping researchers and experimenters, due to scarcity of resources and regulations of the Government (Khan, Mumtaz, Rehan, & Ilyas, 2021).

Whereas, in general many researchers and experimenters attempt to the work in accordance to changes in market structure, whilst, the policies of the HEC are not consistent, it seems like problem creator rather than facilitator institution (Nelofer, 2013). An interpretative framework to identify new key challenges in academia can enable higher management to improve modern working environment (Khan et al., 2021; Saher, Bibi, Farmanullah, & Abbas, 2014; Zafar, Mohsin, Abrar, & Ghazanfar, 2014). Many researchers provided input to the functioning of public sector universities, but an interesting motivation of the phenomena is that the policy maker are not interested to adopt the innovation and change in the current structure (Rehan et al., 2021).

Recognize the importance of universities in the society in necessary. Like Massachusetts Institute of Technology (MIT) has served the society in restored way. As an instance, the contribution of more than 2000 companies owned by the alumnae; the revenue generation of these companies in the economy of United States of America (USA), is 5 times higher than the total GDP of Pakistan (Mumtaz, Khan, & Rehan, 2021; Rehman, 2016). There is need of fairness in rewards to enhance organizational commitment and building trust of faculty members, so that they might engagement them in work. The engagement of faculty members especially female faculty members is not an easy task as well, as female faculty members having lack of trust in organizational policies and their busy lives. Mostly they have to come late in universities as they have to prepare breakfast for kids, husband and family members, and furthermore, they need to leave office early to welcome kids at home (Ahmadi & Keshavarzi, 2012).

Review of Literature

Traditional approaches appear to have failed in involving female faculty members to participate fulltime in research and innovation for the betterment of universities and to contribute to the society. How can we progress by ignoring the fifty percent contribution for female faculty members at workplace. Human Resource Managers are required to frame such HR practices which can enhance the contribution of female faculty members in universities (Khan et al., 2021; Rehan et al., 2021).

In this regard, human resources and interesting ideas about them can be prepared. Potential partnership to corporate performance and Capacity HR can be considered as a relevant pillar for understanding market dynamics (Shen, Benson, & Huang, 2014). The resources are scarce, we possess the necessary skills and abilities, referring to the last point, it can be said universities must have a neutral workforce as a group of human beings. Many resources to learn about the perspective of social and economic dynamics, to translate emerging dynamics, socially and economically trends into guidelines and practices to help the administration. We have two type of resources (i) Personal and (ii) organizational, unlikely we use organizational resources for personal grooming and not ready to use personal resources for uplifting organization (Mohsin et al., 2011; Zafar et al., 2014). Effectiveness of a person is her/his ability to understand and accept to market’s economic and social dynamics, which can help the policy makers to determine their efficiency and competitiveness (Aina, Bratti, & Lippo, 2021; Hubaut, Guichard, Greenfield, & Blandeau, 2022).

The field of management has long been concerned with human resources. It is influenced by a number of changes that affected social and economic dynamics, however HRM has received a lot of attention in fields of education as well, the change that affected human management study is market dynamics which are changing rapidly. A global vision of human resources management is an "industrial approach". Based on the consideration of human resources as an element of the production process (Edgar & Geare,
In recent years, human resource research has developed a comprehensive approach for analyzing and understanding the factors affecting employee productivity, work engagement, and performance (Chen, 2011; Ter Bogt & Scapens, 2012).

Human Resources Management extends the previous approaches to human resources studies with the aim of deciphering the potential ways that can make human resources a "key resource" that provides a competitive advantage to companies. In this regard, the researchers have made many contributions at different levels affecting the efficiency and effectiveness of human resources and most of this association focus on scalability. Human resource flexibility enables companies to better respond to the ongoing socially and economically “revolution” (Bizri, 2014; Zhang, Jiang, Liu, & Liu, 2020). By the bad luck, the partnership focused on understand the need for increased the resistance in human resource management are key to defining corporate strategies, pathways, and mechanisms to better cope with social adversity and economic in an integrated way (Aina et al., 2021; Gibari, Perez-Esparrells, Gomez, & Ruiz, 2021; Yudianto, Mulyani, Fahmi, & Winarningsih, 2021).

To organizing past partnership of this subject, the concept of the ombudsman workforce can be described as a general framework for describing the potential involvement of HR in company that represent market segments. To providing possible answers to the above research questions, this article develops a possible theoretical framework based on the previous research, the following hypothesis is being presented here as below:

**H1:** Fairness mediates between organizational commitment, organizational trust, and work engagement.

**Research Design and Methodology**

A quantitative research design has been found suitable for the construct. A questionnaire has been adopted for the measurement of the variable and statistical software named MPLUS has been used. SEM as an appropriate technique has also been applied on PLS. Data were collected from female faculty members working in public sector universities of Punjab, Pakistan by online survey. More than 1200 questionnaire were distributed/sent electronically, but only 231 respondents has participated in the study. 04 responses were rejected having missing values/incomplete participation. However, only 227 responses were found fit for analysis. The following figure represents the construct as below:

![Research Framework](Figure: 1.1)

**Results and Analysis**

For the purpose to understand the statistical finding the following tables are presented as below, all the values are rounded up to three digits. The following information regarding the model fitness have been extracted from MPLUS software. Loglikelihood $H_0 = -3814.852$ and $H_1 = -3596.579$. Values of
information criteria are as AIC = 7737.705, BIC = 7922.652 and Sample size adjusted BIC is equal to 77514.511.

Chi-square test of model fit values are 436.546 with the degree of freedom is 98. Root Mean Square Error of Approximation (RMSEA) is 0.135; CFI = 0.674 and TLI = 0.600. For further explanation regarding model results the Table 01 is presented as below:

<table>
<thead>
<tr>
<th>Table: 01</th>
<th>Model Results (DV):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimate</td>
</tr>
<tr>
<td>Work Engagement ON</td>
<td></td>
</tr>
<tr>
<td>Fairness</td>
<td>0.056</td>
</tr>
<tr>
<td>Organizational Trust</td>
<td>0.469</td>
</tr>
<tr>
<td>Organizational commitment</td>
<td>0.542</td>
</tr>
</tbody>
</table>

The results in the above table represents that there is no relationship of fairness and organizational trust with work engagement of female faculty members working in public sector universities of Punjab, Pakistan. Whilst, a positively significant relationship of organizational commitment has been found with work engagement.

<table>
<thead>
<tr>
<th>Table: 02</th>
<th>Model Results (Mediator):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimate</td>
</tr>
<tr>
<td>Perceived Fairness ON</td>
<td></td>
</tr>
<tr>
<td>Organizational Trust</td>
<td>0.111</td>
</tr>
<tr>
<td>Organizational commitment</td>
<td>0.390</td>
</tr>
</tbody>
</table>

The above table represents that there is no relationship of organizational trust with fairness and nevertheless, organizational commitment has positively significant relationship with fairness. The study also examined the indirect relationship as demonstrated in the construct; it has been found that effect from fairness to work engagement is Estimate/S.E = 0.037/0.114 (T-value = 0.324) and P-value = 0.746 which represents that the fairness does not mediate the relationship between organizational trust, organizational commitment and work engagement.

**Discussion and Future Recommendations**

The field of human resource management, in the education sector focused on training and development and performance. A fundamental change is needed in the traditional mode of education and training. HR aims to improve their making of decision skills among the focusing on the several studies of human resource management. Analysing these contributions are in view of the growing need for flexible adaptability of the human resources are necessary to create an emerging market that appears as a possible way to ensure interdisciplinary competence in human resources study programs. Individual contributions to HR better align business goals (Li et al., 2021; Utami, Sapta, Verawati, & Astakoni, 2021).

Therefore, the multifaceted nature of background studies in human resources that can be seen as a valuable resource for interested companies. Understand market dynamics before competitors identify market intentions that best meet market expectations and needs. As a result, the multifaceted context of human resources studies can have positive effects (Alsughayir, 2021; Chunyu & Liping, 2021).

The construct as presented in figure 1 is evident that organizational commitment has positively significant relationship with fairness and work engagement with T-values 3.39 and 2.68 respectively. On
the other hand, organizational trust has positively significant relationship with fairness having T-value = 2.60 as presented in the diagram. All other relationships have not been found significant as having lesser values than the threshold values.

The future researchers are recommended for the qualitative research design to explore the true results. The results of the study are not generalizable.

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https://doi.org/10.26710/sbsee.v3i3.2046


Impact of Employee Engagement and Work Culture on Transformational Leadership of Female Teachers of Secondary Schools: A Mediating Role of Work-Life Balance

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ARTICLE DETAILS

History
Revised format: May 2022
Available Online: Jun 2022

Keywords

JEL Classification
M3, M31.

ABSTRACT

Purpose: Organizations are adopting transformational leadership practices, and there has been an increased focus on employee engagement and work culture in both the academic and practitioner communities in recent years. Specifically, this study examines the effects of employee engagement and work culture on transformational leadership among female secondary school teachers in Pakistan in terms of their work-life balance.

Design/Methodology/Approach: To collect data from the 196 female teachers of secondary schools in Pakistan, a questionnaire was distributed using a convenient sampling technique. We use an inferential statistical technique known as Structural Equation Modelling - Partial Least Squares (SEM-PLS) was employed.

Findings: Based on the findings of the study, employee engagement and work culture have a positive correlation with transformational leadership. The correlation between employee engagement and work culture with transformational leadership was also significantly mediated by work-life balance.

Implications/Originality/Value: When professionals practice work-life balance, employees' transformational leadership begins to rise in secondary educational institutions. The study will be of substantial assistance and benefit to policymakers and administrators of secondary schools, as well as researchers in Pakistan. Consequently, they will be able to adjust their programs and policies in order to meet the professional needs of female teachers in regard to employee engagement, work culture, and work-life balance.

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**Introduction**
COVID-19 pandemic has made a new external image that has exposed poor markets as well as real political, economic, and social issues all over the world, trying to pose new opportunities for managers (Carnevale & Hatak, 2020). Worker well-being is a major element of employee productive output and among the most key factors in determining an important role in the long effectiveness. This company culture can be described as a work culture shaped by the strategic goals and values of the organization (Padhi, 2017). Employee engagement has recently been recognized as an important criterion in human resources in all organizations. Employers have gone above and beyond by allowing employees to work from home, and numerous measures have been implemented to retain employees. Working hours’ flexibility and innovative ideas for making employees feel engaged in the organization have become important criteria in human resources. While research on the relationship between gender and leadership style is mixed e.g., Agha et al. (2018). Transformational leaders mentor subordinates, assist employees in establishing a connection with the organization, and train individuals to become future leaders (Rana et al., 2016). Work-life balance entails balancing work and family obligations and responsibilities. As a result, organizations, workers, and communities must put in place work-life practices that help employees achieve greater work-life balance. The goal of these leaders, who are able to inspire complete loyalty from their employees, is to achieve both productivity and happiness at work at the same time (Saif et al., 2018). Working women face serious challenges as a result of the requests of work and family. Women workers have started to seek a better quality of life and a better work-life balance. The main goal of our analysis is to assess the impact of employee engagement and Work Culture on Transformational Leadership in Female Teachers in Secondary Education Institutions with the mediating role of Work-Life Balance.

Earlier, literature on leadership examined a wide range of concepts and their key implications, many of which have evolved over time. Transformational leadership can be classified into three types: charismatic and inspiring leadership, individual concern, and intellectual stimulation. Transformational leadership can take place in both men and women Sharif (2019), but it is more strongly associated with female leadership, prompting some researchers to label it a "feminine leadership style" (Khan & Siddiqui, 2020). Over the last few decades, the term "satisfaction" has been extensively researched in the literature and is typically defined as the difference between what is received and what is expected (Salim & Rajput, 2021). The findings revealed a link among work satisfaction and transformational leadership, with mental stimulation being the best predictor of job pleasure. In another Libyan study, According to Khan and Siddiqui (2020), work culture has a positive influence on the association between transformational leadership and employee satisfaction.

Culture is a common but regularly ill-defined and nebulous concept in modern American discourse. Secretaries and engineers, as well as paralegals and attorneys, may have distinct work cultures even within the same organization (Minhaj et al., 2019). Similarly, the culture of a tiny office may differ from that of a larger company. Moreover, the working culture has shown little consistency over time. The workplace culture is constantly expanding and changing as a result of internal disputes and discussions (Jnaneswar & Ranjit, 2020). The cultural milieu of Pakistan is distinguished by massive power disparities and a high sensitivity to ambiguity. Numerous studies indicate that the antecedents of employee engagement exist at both the individual and organizational levels (Dappa et al., 2019). Leadership style affects employee engagement in organizations. Motivation and affective commitment, on the other hand, are individual-level antecedents. There has been a lot of discussion about the relationship between transformational leadership, motivation, organizational commitment, and engagement. Work-life balance research is still in its infancy. The role of transformational leadership
(TL) in increasing employee engagement will be investigated in this study using work-life balance as a mediator (Azis et al., 2019). People in emerging countries respect their leaders more than people in Western-influenced countries. As a consequence, this research will contribute to the body of information about the link between transformational leadership, workplace culture, and female primary school teachers' engagement, as well as explain how that relationship evolves.

Purpose of finding is to learn more about the correlation between employee engagement, work culture, and transformational leadership, as well as the role of work-life balance as a mediator. The task of this research is to give the general public a greater idea of how important employee engagement and work culture are to a company's leadership and overall performance. This study may focus on transformational leadership in order to effectively leverage employee engagement and work culture to achieve objectives and missions, as well as providing an academic focus on research gaps in organizational employee engagement and work culture. The goal of this research is to gain new insights into the link between employee engagement, work culture, and transformational leadership, as well as the function of work-life balance as a mediating factor.

**Literature Review**

**Overview of Secondary Educational Institutions of Pakistan**

In order for a country to prosper, its citizens must first be educated. As a result, they develop a sense of accountability. People who have had an education are more aware of the requirements as people of the United States, members of the society, and global citizens as a result of their education. One of the major purposes of education is to educate individuals to be more self-aware by educating them on their role in global society. Education is vital that people can use to gain a good for their personal development and growth in a variety of ways. It is a positive impact of the educational experience because education allows people to discover and create their latent skills (Lokaj & Sadrija, 2020). This study focuses on female teachers of the secondary educational institutions of South Punjab region of Pakistan.

**Employee Engagement**

Employee engagement as a people's enhanced mental and emotional connection to his or her job, company, management, or workmates, which encourages the person who puts in more discretionary effort on the job. Employees who are engaged with their work identify with it and, as a result, exhibit elevated amounts of vigor, devotion, and a strong sense of intake in there's own work (Timms et al., 2013).

**Work Culture**

According to Schneider et al. (2013), workplace culture is the shared basic judgments, norms, and faiths which represent a workforce and are chosen and taught to new arrivals. An organization's strategy can influence employee satisfaction, dedication, efficiency, functional capacity, and emotional well-being, as well as supervisors' leadership styles.

**Work Life Balance**

Work-life balance is defined by Felstead et al. (2002), as the interaction between institutional and cultural times and locations where people are supposed to work and even those where they are not.

**Transformational Leadership**

According to Kibozi and Michael (2018), transformational leadership is the ability to move people to go beyond their perceptions in a better direction. According to some specialists, the power to inspire and motivate others' opinions is a defining feature of transformative leadership. It is a relational leadership style in which members has trust and showing appreciation and encouraged to go beyond to attain organizational goals.
Hypothesis Development

Relationship between Employee Engagement and Transformational Leadership

Many organizations and their employees become more engaged in employee engagement as an outcome of the numerous benefits it may provide, which in turn has a positive influence on the overall performance of the company. Employee engagement on a variety of scales, including feeling, intellectual, and physical engagement, has now been recognized as a key factor in a company's performance by researchers (Lee et al., 2020). The idealized influence on traits and behaviors; inspirational motivation and stimuli; intellectual stimulation; and personalized attention are the four basic elements of transformational leadership that must be addressed. Furthermore, because these elements provide potential leverage for the team, the leader's shifting behaviors aid in team-building activities. This type of leader, according to Chua and Ayoko (2021), has the potential to have a significant impact on the company's strategy, vision, attitude, and culture, among other things. As a result, there will be a greater involvement of staff. "Transformative leadership practices should compel others to participate because the leaders demonstrate genuine enthusiasm for their corresponding tasks and responsibilities. Employee engagement has been connected to transformational leadership in a variety of organizations, including service and industrial enterprises. Based on the literature, we hypothesized:

Hypothesis 1: There is significant impact of Employee Engagement on Transformational Leadership.

Relationship between Work Culture and Transformational Leadership

An organization's efficiency and efficacy, as well as its structural characteristics, organizational structure, levels, and power lines, are just a few of the distinctive qualities that set it apart from its competitors. The beliefs, values, norms, attitudes, behaviors, and practices that exist within an organization make up its culture (Cahyandani, 2021). These organizations will need to make changes to their operations in order to adapt to the changing environment. Human resource, main objective, strategy, and organizational structure modifications are just a few examples of how organizations may adapt (Murali & Aggarwal, 2020). Transformational leaders have a positive impact on the productivity of the organizations in which they work. A transformational leader's efforts help company achieve its long-term goals and make them more achievable. According to the majority of scholars and other researchers who study organizations, work culture has a strong influence on the transformational leadership, organization's performance and long-term achievement. Transformational leaders, he claims, are capable of charting new and necessary paths for modern enterprises because they are change agents in their organizations.

Hypothesis 2: There is significant relationship between Work Culture and Transformational Leadership.

Relationship between Employee Engagement and Work Life Balance

There is a broad array of theoretical perspectives that explain the links between employee engagement and the work–family interface. A literature review showed both favorable and unfavorable relationships between the many structures, that were investigated using acquisition and reduction techniques, respectively (Felstead et al., 2002). To begin, perspectives on resource accumulation/enrichment were used to explain positive relationships between them, like the position betterment and conservation of resources (COR) theory (e.g., either positive effects of work engagement on WLB or positive effects of WLB on work engagement). According to the COR theory, employee engagement and work–life interface factors can mutually reinforce each other. Work-life balance and employee engagement become visible benchmarks among top performing firms that gain the economic and reputational rewards of being publicly acknowledged as a 'places to work' or an ‘employer of choice’. Workers' needs for an overall package and advantages supplied by the business world prompted the development of the concept of CTC. For the employer to keep their workforce motivated, it was more like a cost-benefit analysis.

Hypothesis 3: There is significant relationship between Employee Engagement and Work Life Balance.
Relationship between Work Culture and Work Life Balance

An organization's Work culture is critical for everyone involved and for the organization's success. According to Unawekla and Loisa (2021) workers of an organization are concerned about maintaining a healthy balance between their personal and professional life at various phases of their careers. The culture influences leadership styles and top management roles, which able to remedy work-life balance. Companies that emphasize culture are usually more appreciative of a great work balance than others who main beliefs, norms, opinions, and artifacts are solely concerned with increasing net income and generating outcomes. According to Kibozi and Michael (2018) everyone wishes to achieve a healthy balance between their personal and professional life so that they may dedicate time outside of work to a variety of activities such as child care, housekeeping, and personal development, among others. Employees will start to have a greater work-life balance through flexible hours, kid and adult care assistance, charged prenatal care and parental leave, acceptance guidance, medical leave/time off, learning guidance, medical assistance, housing subsidies, and flexibility with remote workers and part-time work. Employees must also have access to these policies, and provide relaxation using what is possible. As a result, I hypothesized that the organization's work culture influences individual employees' work-life balance.

Hypothesis 4: There is significant relationship between Work Culture and Work Life Balance.

Work Life Balance as a Mediator:

Mediation impact on the relationship between Employee Engagement and Transformational Leadership

Theoretical model, notably the potential mediation process including the impact of transformational leadership on work engagement. Work-life balance, acts as a mediator between work and family elements (conflict and enrichment) in terms of work and wellbeing outcomes. Transformative leadership has a positive impact on Work-Life Balance practices and is well-liked by employees, resulting in increased transformational Leadership. A skilled leader can aid in the resolution of conflicts that develop between work and family responsibilities. Leaders have a substantial impact as to whether or not people have a positive or negative job experience, as per (Babiak, 2018). Moreover, the study focused on Employee Engagement support, which correlates with Transformational leadership's focus on nurturing and growing followers in some ways. As a result, we predict work-life balance to mediate influence of Employee Engagement on Transformational leadership in the current study. Perceiving support from one's leader in the context of a transformational leadership style improves an employee's perceptions of support at work, which helps to establish work-life balance resources. This leads to our final set of hypotheses.

Hypothesis 5: Work Life Balance mediates the relationship of Employee Engagement and Transformational Leadership.

Mediation impact on the relationship between Work Culture and Transformational Leadership

Businesses with Work-Life Balance policies, according to Alegre and Pasamar (2018), are more likely to be innovative, learn, and creative. There is also a reduction in workplace conflicts, bodily and intellectual health, fulfillment, and devotion, as well as a reduction in absences and high turnover. Such factors can lead to increased employee satisfaction and, as a result, a higher level of retention and recruitment. As a result of this evolution, people began to distinguish between their job and personal lives. Previous studies have discovered a link between work culture and transformational leadership and WLB's role as a mediator. It's worth noting that the study of "family-friendly" work culture revealed its impact on both work and family. Team members who consider management to be supportive of family policy have less stress at work and a better sense of family balance and direct supervisor support is linked to job satisfaction and personal well-being (Humayon et al., 2018).

Hypothesis 6: Work Life Balance mediates the relationship of Work Culture and Transformational Leadership.
**Underpinning Theorie**

**The Trait Theory of Leadership**

A detailed examination of the literature reveals that these ideas have evolved through time, and that they all have some relevance and build on one another depending on the context in which they are used. Several social scientists, like Khan and Siddiqui (2020), have acknowledged that leadership styles alter and adapt over time. Rather than contradicting previous results, the most current study just expands on what has already been established.

**Social Exchange Theory**

Social exchange theory provides as a foundation for understanding the interactions that arise between superiors and their subordinates in this situation. As a result, project leaders deliver benefits and privileges to their subordinates via transformational leadership and other empowerment strategies; in response, subordinates react more favorably to their individual project leaders by synchronizing and aligning their attitudes and actions. As a consequence, subordinates' performance coincides with the preferences of project leaders.

**Research Framework**

The purpose of this research is to test hypotheses about the connection between dependent and independent variables. The research will focus on the organization's employees. In the inquiry, regression will be used. The sample will be selected at random, with a sample size that is reflective of the population. Because there is no closed environment, the study is conducted with minimal interference. The research is finished all at once. Data will be gathered using a questionnaire. The Likert scale, rather than the nominal scale, will be used for the most of the measurements. Hypothesis testing is used to examine the data. The primary choice in this section is that the study should be conducted using a quantitative, qualitative, or mixed method approach (Saunders et al., 2020). The present research employs a questionnaire as a quantitative method.

This research depended on primary data. In order to establish the study's population, the authors tried to collect information from several secondary education institutions in Pakistan's South Punjab region. The questionnaires were sent to educators at all levels of the institution who are associated in the teaching process. 196 Female Teachers took part in the evaluation by completing questionnaires. The gender divide among sampled population is notable, with men recording for 68 % sample and women contributing for 32 %. According to Hair et al. (2019), the sample size for the unknown population is 200. The questionnaire used a 5.0 Likert-type response scale including; 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, and 5=Strongly Agree.

Research Instruments and Scale measures...
Employee Engagement
In order to assess the Employee Engagement of female secondary school teachers, the study applied a scale that had previously used in a study performed by (Rothbard, 2001). The scale designed in 5.0-point Likert Scale anchored with: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, and 5=Strongly Agree.

Work Culture
Item scale was used to measure work culture provided to the female educationists in secondary education. The scale was applied by Shah et al. (2018), on a five-point likert scale ranging from 1, “Strongly Disagree,” to 5, “Strongly Agree.”

Work Life Balance
The present study modified the scale used previously in the research investigation led by (Allen, 2001; Lambert & Hogan, 2009; Pocock, 2005) to evaluate the work-life balance formed in female secondary educationists (2005). The model employs a 5.0-point Likert Scale, with 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, and 5=Strongly Agree.

Transformational Leadership
While attempting to measure transformational leadership provided to the educationists in secondary education, the present study adapted the scale already used in research study conducted by Leithwood and Jantzi (2008) anchored with following scale: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, and 5=Strongly Agree.

Analysis and Results Discussion
Table explain the details of sample. We spread 240 (85%) questionnaires among the respondents in our target population (Hair et al., 2019). Out of 240, 204 responses were received and amongst 252. Finally, 196 questionnaires were the finalized responses of the required data collection.

<table>
<thead>
<tr>
<th>Table-1: Response Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nos.</td>
</tr>
<tr>
<td>Questionnaires Circulated</td>
</tr>
<tr>
<td>Questionnaires Received</td>
</tr>
<tr>
<td>Questionnaires Finalized</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table-2: Demographics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Age of Respondent</td>
</tr>
<tr>
<td>Above 40</td>
</tr>
<tr>
<td>30-40</td>
</tr>
<tr>
<td>20-30</td>
</tr>
<tr>
<td>Year of Experience</td>
</tr>
<tr>
<td>Above 15 years</td>
</tr>
<tr>
<td>10-15 year</td>
</tr>
<tr>
<td>5-10 year</td>
</tr>
<tr>
<td>1-5 year</td>
</tr>
<tr>
<td>Level of Education</td>
</tr>
<tr>
<td>PhD</td>
</tr>
<tr>
<td>Master</td>
</tr>
<tr>
<td>Bachelor</td>
</tr>
</tbody>
</table>
Descriptive Statistics
This shows that variation between data is very low, but there is a greater gap between the minimal and highest value. If see minimum and maximum value of Employee Engagement is in-between 5-25 that is highly difference and the values of mean is greater i.e., 12.219 and standard deviation is low i.e., 4.340 that shows variation between data is very low or most of the values are below the mean and vice versa.

| Table-3: |
|---|---|---|---|---|
| | Num | Min | Max | Mean | StdDev |
| Employee Engagement (EME) | 196 | 5.00 | 25.00 | 12.219 | 4.340 |
| Transformational Leadership (TL) | 196 | 6.00 | 29.00 | 14.765 | 5.008 |
| Work Culture (WC) | 196 | 7.00 | 27.00 | 15.806 | 3.942 |
| Work Life Balance (WLB) | 196 | 4.00 | 20.00 | 9.842 | 3.549 |

Skewness and Kurtosis
According to Tabachnick and Fidell (2007), depending on the outcomes of statistical analysis, the mathematical values of kurtosis and variance for both variables range from -2 to +2. The result of our study was in between +2 and -2. It means data was normally distributed.

| Table-10: Skewness and Kurtosis |
|---|---|---|---|
| | Skewness | Kurtosis |
| | Statistic | Std. Error | Statistic | Std. Error |
| Employee Engagement (EME) | 0.599 | 0.174 | -0.068 | 0.346 |
| Transformational Leadership (TL) | 0.605 | 0.174 | 0.140 | 0.346 |
| Work Culture (WC) | 0.584 | 0.174 | 0.128 | 0.346 |
| Work Life Balance (WLB) | 0.440 | 0.174 | -0.120 | 0.346 |

Data Screening and Normality Test
Pearson Correlation
There is a contact distance difference between -1 and +1. It is a two-way relationship were altering one independent variable affects the other dependent variable. A Pearson correlation with an absolute value of 1 denotes a perfect linear relationship. The absence of a linear relationship between the variables is indicated by a correlation close to zero. The transformational leadership (TL) and work life balance (WLB) both have strong relationships, which had scores of 0.786.

| Table-4: Matrix of Correlation |
|---|---|---|---|
| | EME | WC | WLB |
| EME | Pearson Correlation | 1 | .705** | .764** |
| N | 196 | 196 | 196 |
| Sig. (2-tailed) | 0.000 | 0.000 | 0.000 |
| WC | Pearson Correlation | .705** | 1 | .707** |
| N | 196 | 196 | 196 |
| Sig. (2-tailed) | 0.000 | 0.000 | 0.000 |
| WLB | Pearson Correlation | .764** | .707** | 1 |
| N | 196 | 196 | 196 |
| Sig. (2-tailed) | 0.000 | 0.000 | 0.000 |
| TL | Pearson Correlation | .771** | .658** | .786** |
| N | 196 | 196 | 196 |
| Sig. (2-tailed) | 0.000 | 0.000 | 0.000 |

Validity and Reliability
Average Variance Extracted (AVE)
In statistics, the AVE is used to compare the variance inferred by a construct to the variation caused by measurement error. To boost accuracy, raise the AVE to 0.5. This study's AVE value is larger than 0.5,
which satisfies the requirements for AVE. In statistics, the AVE is used to compare the variance inferred by a construct to the variation caused by measurement error. Table 5 shows the boost accuracy, raise the AVE to 0.5. This study's AVE value is larger than 0.5, which satisfies the requirements for AVE (Huang et al., 2013).

Table-5: Average Variance Extracted (AVE)

<table>
<thead>
<tr>
<th>CONSTRUCTS</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee Engagement (EME)</td>
<td>0.607</td>
</tr>
<tr>
<td>Transformational Leadership (TL)</td>
<td>0.577</td>
</tr>
<tr>
<td>Work Culture (WC)</td>
<td>0.586</td>
</tr>
<tr>
<td>Work Life Balance (WLB)</td>
<td>0.627</td>
</tr>
</tbody>
</table>

Composite Reliability (CR)
The overall scale score variation suggests that the actual score variance equals the total amount. The data in the table is greater than 0.45 which is acceptable. In addition, the median confidence interval is greater than 0.75 (Hair et al., 2019).

Table-6: Composite Reliability (CR)

<table>
<thead>
<tr>
<th>CONSTRUCTS</th>
<th>Composite Reliability (CR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee Engagement (EME)</td>
<td>0.885</td>
</tr>
<tr>
<td>Transformational Leadership (TL)</td>
<td>0.891</td>
</tr>
<tr>
<td>Work Culture (WC)</td>
<td>0.848</td>
</tr>
<tr>
<td>Work Life Balance (WLB)</td>
<td>0.870</td>
</tr>
</tbody>
</table>

Convergent Validity
An acceptable correlation range is typically identified when hypotheses are more than 75% accurate or when relationships with the same construction tools are greater than 0.50. All of the values in this study are within or above the range of 75%, demonstrating the accuracy of the data.

Table-7: Convergent Validity

<table>
<thead>
<tr>
<th>CONSTRUCTS</th>
<th>rho_A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee Engagement (EME)</td>
<td>0.842</td>
</tr>
<tr>
<td>Transformational Leadership (TL)</td>
<td>0.856</td>
</tr>
<tr>
<td>Work Culture (WC)</td>
<td>0.779</td>
</tr>
<tr>
<td>Work Life Balance (WLB)</td>
<td>0.820</td>
</tr>
</tbody>
</table>

Cronbach’s Alpha
Even if alpha has a "high" value, the measurement may not be one-dimensional. The specificity of the Alpha scale is determined by the Cronbach's alpha value between 0 and 1. The scale is considered reliable because all of its Cronbach's alpha values are less than nine, as shown in the table below.

Table-8: Cronbach's Alpha

<table>
<thead>
<tr>
<th>CONSTRUCTS</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee Engagement (EME)</td>
<td>0.836</td>
</tr>
<tr>
<td>Transformational Leadership (TL)</td>
<td>0.853</td>
</tr>
<tr>
<td>Work Culture (WC)</td>
<td>0.759</td>
</tr>
<tr>
<td>Work Life Balance (WLB)</td>
<td>0.800</td>
</tr>
</tbody>
</table>

Discriminant Validity
Discriminant validity is a method of demonstrating that construct measurements that should not be highly associated. As a result, two pathways are not connected to each other. HTML elements are used to identify terms such as prejudice and racism that should be viewed as less than one (Wang et al., 2015).

Table-9: Discriminant Validity

<table>
<thead>
<tr>
<th>CONSTRUCTS</th>
<th>Employee Engagement</th>
<th>Transformational Leadership</th>
<th>Work Culture</th>
<th>Work Life Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee Engagement (EME)</td>
<td>0.779</td>
<td>0.777</td>
<td>0.760</td>
<td>0.774</td>
</tr>
<tr>
<td>Transformational Leadership (TL)</td>
<td>0.761</td>
<td>0.719</td>
<td>0.766</td>
<td>0.805</td>
</tr>
<tr>
<td>Work Culture (WC)</td>
<td>0.761</td>
<td>0.719</td>
<td>0.766</td>
<td>0.792</td>
</tr>
<tr>
<td>Work Life Balance (WLB)</td>
<td>0.774</td>
<td>0.805</td>
<td>0.764</td>
<td>0.792</td>
</tr>
</tbody>
</table>
Analysis
T-Values
The t value is 1.96, and the range of values is 0.05. As a result, if the T condition specified in the output is greater than 1.96, you reject the null hypothesis. You also reject the null hypothesis if the parameter is significant at 5%. For this investigation, one value less than 1.96 and four values greater than 1.96 are combined with the T data values in the table.

Table-11: T-values

<table>
<thead>
<tr>
<th>RELATIONSHIPS</th>
<th>T Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee Engagement -&gt; Transformational Leadership</td>
<td>3.701</td>
</tr>
<tr>
<td>Employee Engagement -&gt; Work Life Balance</td>
<td>6.830</td>
</tr>
<tr>
<td>Work Culture -&gt; Transformational Leadership</td>
<td>1.448</td>
</tr>
<tr>
<td>Work Culture -&gt; Work Life Balance</td>
<td>6.334</td>
</tr>
<tr>
<td>Work Life Balance -&gt; Transformational Leadership</td>
<td>6.012</td>
</tr>
</tbody>
</table>

P-Values
When p-value is greater than 0.05 (> 0.05), statistical significance is not shown. Instead, it provides overwhelming evidence to support the fallacy. This means that we have a wrong idea, and the alternative hypothesis has been rejected. P Statistical values are mixed values, as shown in the table for this study. Five values are less than 0.05 and three values are greater than 0.05.

Table-12: P-Values

<table>
<thead>
<tr>
<th>RELATIONSHIPS</th>
<th>P Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee Engagement -&gt; Transformational Leadership</td>
<td>0.000</td>
</tr>
<tr>
<td>Employee Engagement -&gt; Work Life Balance</td>
<td>0.000</td>
</tr>
<tr>
<td>Work Culture -&gt; Transformational Leadership</td>
<td>0.148</td>
</tr>
<tr>
<td>Work Culture -&gt; Work Life Balance</td>
<td>0.000</td>
</tr>
<tr>
<td>Work Life Balance -&gt; Transformational Leadership</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Measurement Model (Graphical Representation of Initial Model)
Reflective Model and Formative Model
The two types of structural scaling models that are available are skeletal and reflecting structural mathematical parameters. Latent variables explain the initial measures, while structural measures are linked to the latent structure. Constructive reflexes are frequently "reflexive" or reflexive things. The "form" of an object is a structural feature. This is a preliminary study because the variables are related to or made up of latent components.

Structural Model
Graphical Representation
A loading factor of 0.5 or higher was shown to be appropriate in this experiment (Hair et al., 2019). All loading factors are within permissible limits and meet the loading parameters in Table 13. Due to lower factor loading (less than 0.5), two variables, W5 and W6, are omitted.

### Table 13: Factor Loadings

<table>
<thead>
<tr>
<th>OUTER LOADINGS</th>
<th>INDICATORS</th>
<th>VALUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee Engagement</td>
<td>EME1</td>
<td>0.706</td>
</tr>
<tr>
<td></td>
<td>EME2</td>
<td>0.779</td>
</tr>
<tr>
<td></td>
<td>EME3</td>
<td>0.856</td>
</tr>
<tr>
<td></td>
<td>EME4</td>
<td>0.827</td>
</tr>
<tr>
<td></td>
<td>EME5</td>
<td>0.715</td>
</tr>
<tr>
<td></td>
<td>TL1</td>
<td>0.794</td>
</tr>
<tr>
<td></td>
<td>TL2</td>
<td>0.724</td>
</tr>
<tr>
<td></td>
<td>TL3</td>
<td>0.782</td>
</tr>
<tr>
<td>Transformational Leadership</td>
<td>TL4</td>
<td>0.794</td>
</tr>
<tr>
<td></td>
<td>TL5</td>
<td>0.751</td>
</tr>
<tr>
<td></td>
<td>TL6</td>
<td>0.708</td>
</tr>
<tr>
<td></td>
<td>W1</td>
<td>0.681</td>
</tr>
<tr>
<td></td>
<td>W2</td>
<td>0.649</td>
</tr>
<tr>
<td></td>
<td>W3</td>
<td>0.858</td>
</tr>
<tr>
<td></td>
<td>W4</td>
<td>0.851</td>
</tr>
<tr>
<td></td>
<td>W5</td>
<td>Dell</td>
</tr>
<tr>
<td></td>
<td>W6</td>
<td>Dell</td>
</tr>
<tr>
<td></td>
<td>WLB1</td>
<td>0.684</td>
</tr>
<tr>
<td>Work Culture</td>
<td>WLB2</td>
<td>0.821</td>
</tr>
<tr>
<td></td>
<td>WLB3</td>
<td>0.860</td>
</tr>
<tr>
<td></td>
<td>WLB4</td>
<td>0.792</td>
</tr>
</tbody>
</table>

Figure 4.1: Structural Model
Path Analysis

Path Co-efficient (β)
The p value indicates a substantial correlation of variables, and with the exception of two, all beta values are positive, indicating that all hypotheses are fairly acceptable. The number of standard deviations indicates a significant relationship between the two variables and the mean.

<table>
<thead>
<tr>
<th>Path Coefficients</th>
<th>Transformational Leadership</th>
<th>Work Life Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee Engagement</td>
<td>0.336</td>
<td>0.457</td>
</tr>
<tr>
<td>Work Culture</td>
<td>0.115</td>
<td>0.416</td>
</tr>
<tr>
<td>Work Life Balance</td>
<td>0.457</td>
<td></td>
</tr>
</tbody>
</table>

Co-efficient of Determination (R²)
According to Falk and Miller (1992), R² values should be greater than or equal to 0.10 in order to justify the definition of a given internal structure. The findings in Table 15 for this study reveal that every result exceeds the Falk and Miller criterion, implying that independent constructs may account for more than 70% of our dependent variables.

<table>
<thead>
<tr>
<th>Path Coefficients</th>
<th>R Square</th>
<th>R Square Adjusted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transformational Leadership</td>
<td>0.711</td>
<td>0.707</td>
</tr>
<tr>
<td>Work Life Balance</td>
<td>0.672</td>
<td>0.668</td>
</tr>
</tbody>
</table>

Co-efficient of Effect Size (f²)
According to Cohen (1988), it is appropriate for calculating the effect size within a multiple regression model in which the independent variable of interest and the dependent variable are both continuous the small, medium, and large bearing sizes are f² 0.02, f² 0.15, and f² 0.35, respectively.

<table>
<thead>
<tr>
<th>Path Coefficients</th>
<th>Transformational Leadership</th>
<th>Work Life Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee Engagement</td>
<td>0.130</td>
<td>0.268</td>
</tr>
<tr>
<td>Work Culture</td>
<td>0.016</td>
<td>0.222</td>
</tr>
<tr>
<td>Work Life Balance</td>
<td>0.238</td>
<td></td>
</tr>
</tbody>
</table>

Confidence Interval (CI)
A confidence interval is the mean of your estimate plus and minus the variation in that estimate. This is the range of values you expect your estimate to fall between if you redo your test, within a certain level of confidence. Confidence, in statistics, is another way to describe probability. The value of CI does not lie at zero. That means that all the P-values are correctly significant.

<table>
<thead>
<tr>
<th>Path Coefficients</th>
<th>O</th>
<th>M</th>
<th>2.50%</th>
<th>97.50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee Engagement</td>
<td>0.336</td>
<td>0.340</td>
<td>0.091</td>
<td>3.701</td>
</tr>
<tr>
<td>Work Culture</td>
<td>0.115</td>
<td>0.113</td>
<td>0.079</td>
<td>2.448</td>
</tr>
<tr>
<td>Work Life Balance</td>
<td>0.457</td>
<td>0.459</td>
<td>0.067</td>
<td>6.830</td>
</tr>
</tbody>
</table>

Hypothesis Testing
The value of the table determines whether the summary of all hypotheses is meaningful. P values indicate whether or not there is a significant correlation between the constructs and thus whether or not all hypotheses are accepted. Statistically, the results are inconclusive. All direct effects are significant at the 5% level. Furthermore, as evidenced by the results in this table, not all mediation analyses involving dependent and independent combinations are significant.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>O</th>
<th>M</th>
<th>STDEV</th>
<th>T Statistics</th>
<th>P Values</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1 Employee Engagement -&gt; Transformational Leadership</td>
<td>0.336</td>
<td>0.340</td>
<td>0.091</td>
<td>3.701</td>
<td>0.000</td>
<td>Accepted</td>
</tr>
<tr>
<td>H2 Work Culture -&gt; Transformational Leadership</td>
<td>0.115</td>
<td>0.113</td>
<td>0.079</td>
<td>2.448</td>
<td>0.008</td>
<td>Accepted</td>
</tr>
<tr>
<td>H3 Employee Engagement -&gt; Work Life Balance</td>
<td>0.457</td>
<td>0.459</td>
<td>0.067</td>
<td>6.830</td>
<td>0.000</td>
<td>Accepted</td>
</tr>
<tr>
<td>H4 Work Culture -&gt; Work Life Balance</td>
<td>0.416</td>
<td>0.416</td>
<td>0.066</td>
<td>6.334</td>
<td>0.000</td>
<td>Accepted</td>
</tr>
</tbody>
</table>
M1 & M2= PLS-SEM Models, this is not included in our study’s hypotheses.

Mediation Analysis

P-values indicate whether or not there is a significant correlation between the constructs and thus whether or not all hypotheses are accepted. Statistically, the results are inconclusive. All indirect effects are significant at the 5% level.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>O</th>
<th>M</th>
<th>STDEV</th>
<th>T Statistics</th>
<th>P Values</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Life Balance*Employee Engagement -&gt; Transformational Leadership</td>
<td>0.209</td>
<td>0.209</td>
<td>0.048</td>
<td>4.371</td>
<td>0.00</td>
<td>Accepted</td>
</tr>
<tr>
<td>Work Life Balance*Work Culture -&gt; Transformational Leadership</td>
<td>0.19</td>
<td>0.189</td>
<td>0.042</td>
<td>4.554</td>
<td>0.00</td>
<td>Accepted</td>
</tr>
</tbody>
</table>

Results Discussion

As per Table 17, H1 reflects the relationship between Employee Engagement and Transformational leadership, with the t-value being 3.701 (i.e., t ≥ 1.96) and the p-value being 0.000 (i.e., p ≤ 0.05). As a result, H1 is accepted. Furthermore, when hypothesis H2 was tested, the study discovered a significant relationship between work Culture and Transformational Leadership because t-value is 2.448 and p-value is 0.008. As a result, hypothesis H2 is accepted. Table 17 shows that there is a significant relationship between Employee Engagement and Work Life Balance, with a t-value of 6.830 and a p-value of 0.000. As a result, H3 is accepted. Results suggested that Employee Engagement has a significant influence on Work Life Balance. In hypothesis H4, the t-value is 6.334 and the p-value is 0.000. As a result, H4 is accepted. According to Table 18, H5 discovered that Work Life Balance mediates the association between Employee Engagement and Transformational Leadership, with a t-value of 4.73 and a p-value of 0.000 As a result, H5 is accepted. Finally, this study investigated the mediating effect of Work Life Balance between Work Culture and Transformational Leadership, H6, as shown in Table 18, where the t-value is 4.55 and the p-value is 0.000. As a result, hypothesis H6 is accepted.

Findings

Finally, the purpose of this research was to investigate the effect of Employee Engagement and Work Culture on Transformational Leadership of Female Employees in Secondary Educational Institutions. While such an impact was heavily supported, further investigation uncovered that Work Balance has seemed to play a major mediating role, fully mediating the impact of Transformational Leadership having a consistently strong effect on Employee Engagement dimensions. Employee engagement and work culture have been discovered to have a significant impact on transformational leadership in the Work Life Balance. In a tough market, business executives recognize that a motivated workforce can strengthen technology, efficiency, and achievement, as well as earnings, while reducing recruiting and retention costs (Kumar et al., 2014). According to the studies conducted, employee engagement among part-time students has a connection with work balance. Employee engagement elements such as vigor, dedication, and absorption have a positive response from the participant. Educators can manage their work-life balance while studying and working. The research was published to have some major implications, but it also contains some restrictions that prove that more research is required. The socio-economic circumstances and personal qualities of both survivors and perpetrators are ignored. This research was conducted in Pakistan. Due to geographical, social, cultural, and other factors, the findings were similar to those other South Asian countries. The impact of employee Engagement and Work Culture on Transformational Leadership in the sector should also be explored, with the study observation of Work life Balance acting as a moderator. Future research could reconstruct and expand the study in other countries and industries to determine whether work culture issues have impacts in different contexts. The same study approach can be used in future studies to validate across a number of organizations and cultures.
Limitations
This study has some limitations. The foremost limitation of the study is that it is rooted on regional data with no way to illustrate a causal link, making it impossible to draw concrete conclusions. However, critical topics like employee engagement and transformational leadership, as well as departure plans, necessitate confidentiality, enabling for a lengthy investigation (Podsakoff et al., 1990). This paves the way for future research into constant or randomly selected design methods, which could enhance the findings' causality. The study's second challenge was that the sample consisted of female employees of secondary schools in Pakistan. Female employees of secondary schools have policies that vary from those used by other companies in terms of uncomfortable treatment at work. As an outcome, future research may opt to concentrate on a specific topic in order to validate and broaden prior reports.

Future Research Direction
That whole investigation shall be beneficial for future studies. The research should be recreated with a greater sample packet and the results were compared to those discovered in this research to ensure reliability of the findings. If a similar study is carried out, the number of participants should be enhanced and should focus more to other elements of employee engagement such as immediate opportunity to use and develop capacities, social culture in the work organization, and social relevance of work life to know the effective relationship between employee engagement and job performance among part time teachers. Furthermore, other data collection techniques, such as interviews, can be created to enhance the study's precision and robustness. Future research could recreate the current study by employing more clear objective criteria of theoretical constructs. There hasn't been much research or investigation into the impact of such elements of Work life Balance. The impact of Employee Engagement and Work Culture on Transformational Leadership in other sectors should also be explored, with the study observation of Work life Balance acting as a moderator. Future researches can expand the study in other countries and industries to determine whether work culture issues have impacts in different contexts. The same study approach can be used in future studies to validate across a number of organizations and cultures.

Reference


Non-IMF Foreign Debt and Economic Growth: A Case of Developing Economy

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Abdul Sattar, Assistant Professor, Faculty of Management Sciences, BUITEMS, Quetta, Pakistan
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ARTICLE DETAILS

Purpose: This study aims to establish how foreign debt impacts Pakistan's long-term and short-term economic growth by categorizing it into two factors: IMF/non-IMF debt.

Design/Methodology/Approach: The link was studied using quarterly secondary data from the State Bank of Pakistan, Johansen cointegration methodology, and the VECM is used.

Finding: The study found that IMF debt is positively correlated with short-term economic development, while non-IMF borrowing is unrelated. Short-run study results show little link between international borrowings, inflation, and growth. Non-IMF external debt was found to have a positive link with economic growth, but IMF debt, foreign debt servicing costs, and inflation all had negative long-term relationships.

Implications/Originality/Value: The study found that if financing via foreign debt is ever required, the government should not seek out foreign loans from the IMF but instead rely on non-IMF foreign debt. The expense associated with making interest and principal payments on a foreign loan, has a major negative influence on the economic growth of Pakistan, cancelling out the long-term benefits of non-IMF foreign debt.

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Introduction

According to Dey et al. (2020), every country aims to achieve long-lasting, sustainable economic growth; however, the problem occurs when governments fail to achieve this objective and face a poor economic situation. In order to heal their economies, governments usually use easily accessible means of financial support, such as debt from foreign lending entities (Dey et al., 2020). Taking into consideration the case of Pakistan, Akram (2011), Ali et al. (2012), and Mahmood et al. (2014) reported high fiscal and current account deficits, mismanagement of the previous debts, high debt servicing, high defense expenditure, poor macroeconomic policies, corruption, poor law and order condition, and political
instability as some of the main factors which forced Pakistan to pursue the foreign debt.

Foreign debt is comprised of short-period and long-period commercial debt and debt from international lending institutions such as International Monetary Fund (Ali et al., 2012). Primarily, the IMF’s function was to bolster monetary cooperation and stabilize the exchange rates (Bordo et al., 2000). The function of the IMF gradually changed when the world withdrew from the gold standard, and the exchange rate system collapsed (Vreeland, 2003). Consequently, IMF had to change its function from exchange rate stabilization to managing the balance of payment problem (Jensen, 2004; Reinhart et al., 2016). IMF’s functionality evolved with the changes in the world economic system. Today, it acts as an emergency crisis manager and lender of last resort for developing nations facing financial difficulties and poor economic growth (Hackler et al., 2020).

The analytical aspect of the IMF is vital as the credit scoring assigned to different countries by the IMF has a significant influence on the economic horizon of any country. According to Cheema (2004), the credit score assigned by the IMF to the borrowing country is considered very serious by other international lending organizations/countries, and therefore, the lending cost of other lending institutions/countries is heavily dependent upon the credit scoring of the IMF. Thus, any bad credit score assigned by the IMF administration intensifies the lending cost and, consequently, the debt burden on the developing country. The political aspect of the IMF debt factor is also of great significance for developing economies. According to Dreher et al. (2015), permanent members of the UNSC have a stronghold on the IMF, which makes them in a position to use IMF debt as a tool to manipulate the domestic and foreign policies of the borrowing states in favor of their own political and financial interests. Therefore, Vestergaard et al. (2014) stated that the developing countries and the emerging economies are very much distressed with the stronghold of the western powers on IMF, which can be the reason for the rise of the BRICS on the international horizon.

Pakistan has also relied on IMF debt for the last few decades due to its continuous macroeconomic instability, but despite that, it is still suffering from a rising debt burden and poor economic growth (Naeem et al., 2016; Sajjad et al., 2018). Hence, considering the analytical, political, and economic aspects of the IMF debt programs for developing economies and to have a better understanding of the IMF debt in the case of Pakistan, this study examined the relationship between the IMF debt and the non-IMF debt as two separate variables to examine the relationship between foreign debt and economic growth, because both these debts, their conditions, nature, and the policies of their creditors are different from each other.

Two theoretical perspectives have previously been applied to the relation between foreign debt and economic growth (Akram, 2015; Shkolnyk et al., 2018). The first perspective is based on the Keynesian theory of public debt, which states that idol capital, when borrowed as public debt, helps in causing a positive trend in economic growth (Akram, 2015; Shkolnyk et al., 2018). Contrarily, the second perspective states that the rising level of debt creates a problem of overhang effect in the economy which negatively affects economic growth (Akram, 2015; Shkolnyk et al., 2018).

**Literature Review**

**IMF Debt and Economic Growth**

An analysis of the impact of public debt on the growth of the Bangladeshi and Indian economies has been conducted by (Bal et al., 2018). They used the 2SLS method for the data analysis and took the data for 1974-2014 in Bangladesh and 1970-2013 in India. The findings of these studies revealed that public debt has a significant positive impact on economic growth in Bangladesh, whereas, in India, the public debt and economic growth were positively related in the short run but negatively related in the long run.

Furthermore, Hilton (2021), Onafowora et al. (2019), and Shahor (2018) also conducted studies in Israel, which examine whether there is a boundness between public debt and economic growth in this country.
as well as other countries. A study found that when the debt level was low, economic growth was negatively related to public debt, but when it was high, it was positively related. The results of the study did reveal, however, that the level of public debt in five Caribbean countries had a significant negative relationship with economic growth. As a result, the amount of public debt in Ghana was found to have no significant correlation with the rate of economic growth in the short run, on the other hand, a unidirectional relationship was found in the long run between the amount of public debt and the rate of economic growth.

Mohamad et al. (2021) analyzed the relationship between the amount of debt owed to the IMF and the growth of the economic conditions in many Southeast Asian economies. The data was taken for 1971-2009 in 213 economies and 1990-2017 in Southeast Asian economies, and both studies used the OLS regression method for the data analysis. The results revealed that the relationship of IMF debt with economic growth was significantly negative in 213 economies but significantly positive in the context of the Southeast Asian economies. Furthermore, the Study of Mohamad et al. (2021) also found that those economies that relied on the IMF debt during the Southeast Asian economic financial crisis experienced better post-crisis economic growth.

H1: There is a significant relationship between the debt of the IMF and economic growth.

Non-IMF Foreign Debt

The relationship between external debt and economic growth has been found to be positive in several studies conducted in 84 emerging and advanced economies, Nigeria, 24 countries, and Bangladesh (Abdelaziz et al., 2019; Dey et al., 2020; Nemec, 2012; Umaru et al., 2013). The data was taken from 1980-2009 in 84 emerging and advanced economies, 1970-2010 in Nigeria, 2000-2017 in 24 countries, and 1980-2017 in Bangladesh. All the studies used the OLS regression method for the data analysis. The study revealed that external debt is significantly correlated with economic growth negatively.

Furthermore, Kinnavong (2018), Malik et al. (2010), and Sajjad et al. (2018), in order to examine the relationship between external debt and the growth of economic activity in Pakistan and Laos using the OLS regression by adding debt servicing as an independent variable. The annual data was taken for the period 1972-2005 and 1980-2016 in Pakistan and 1996-2015 in the case of Laos. It has been found from the empirical findings of these studies that both in Pakistan as well as Laos, external debt and debt servicing negatively affect economic growth.

Similarly, Kasidi et al. (2013) and Marobhe (2019), have investigated whether the external debt burden as well as debt servicing have an impact on economic growth in Tanzania. Taking annual data from 1990-2010 & 1970-2015 in Tanzania and using the OLS regression for the data analysis, both studies found a significant positive relationship between external debt and economic growth, whereas a significant negative relationship exists between debt servicing and economic growth.

Using the ARDL approach for the analysis of the data, Butts et al. (2012), Farhana et al. (2014), Ohiomu (2020), and Pahwa (2017), researchers have concluded that there is a significant relationship between external debt and economic growth. Taking annual data for the period 1970-2003 in Thailand, 1972-2011 in Bangladesh, 1980-2014 in India, and 1984-2018 in Nigeria, the results of the research studies found that the relationship between external debt and economic growth was significantly negative in Bangladesh, India, and Nigeria. Interestingly, Thailand showed a significant positive correlation between its external debt and economic growth, whereas Japan showed a negative correlation.

Furthermore, Akram (2015) and Guei (2019), in their study of 13 emerging economies and the Philippines, have examined the relationship between external debt and economic growth in the context of the debt servicing variable being added as an independent variable. The studies used the ARDL approach for data analysis and took annual data for 1990-2016 in 13 emerging economies and 1975-
2010 in the Philippines. In these studies, external debt and debt servicing were significantly negatively correlated with economic growth.

Similarly, Ali et al. (2012), and Mohamed (2018), were also employed in the analysis of the relationship between the level of external debt and the growth of the economy in Pakistan, Sudan and Vietnam, using the VECM. The data for these studies were taken from 1970-2010 in Pakistan, 1969-2015 in Sudan, and 2000-2013 in Vietnam. The findings identified that the relationship of external debt with GDP was significantly negative in Pakistan, but on the other hand, in Sudan and Vietnam, external debt was significantly positively correlated with economic growth as a result of its external debt.

H2: Economic growth is significantly influenced by foreign debt other than that of the IMF.

H3: Foreign debt service and economic growth have a significant relationship.

**Inflation**

Akram (2011), and Kharusi et al. (2018), concluded that there is a direct correlation between external debt and inflation in the growth of the economy of Pakistan and Oman. The ARDL approach and taking data for the period 1972-2009 and 1970-2009 in Pakistan and 1990 to 2015 in Oman, it was evident that there is a significant negative relationship between external debt and economic growth in this region. Furthermore, the Study of Akram (2011) showed that inflation is significantly positively correlated with economic growth, whereas Kharusi et al. (2018) and Ramzan et al. (2014) suggested that inflation and economic growth were negatively correlated.

In South Africa, Mhlabo et al. (2019) studied the relationship of public debt with economic growth. The data was taken quarterly from 2002-2016, and the analysis was performed using the ARDL method. According to the analysis of the study, the percentage of gross public debt over GDP as well as the inflation rate have a significant negative relationship with the GDP. According to Tahir et al. (2020), Pakistan's economic expansion is positively correlated with the amount of foreign capital. It is important to note that data for the period 1976-2018 was taken, and this data was analyzed using the ARDL method. As a result of the study, all of the factors that contribute to foreign inflows, such as remittances, external debt, foreign direct investment, and development assistance, were positively related to economic growth. Further, the study found that inflation and economic growth are significantly negatively correlated, which is significant.

H4: There is a significant relationship between inflation and economic growth.

**Methodology**

The quantitative research design and its relevant procedure were used in the Study (Checherita et al., 2010; Marobhe, 2019; Siddique et al., 2015). The study used the deductive research approach and adopted an explanatory type of nature to investigate the causal relationship of the variables under consideration (Saunders et al., 2007). The secondary data was taken quarterly for the period from January 2010 to September 2021 (Mhlabo et al., 2019; Thao et al., 2018). The study variables are reported in Table 1, and the logarithm of the data values was taken (Marobhe, 2019; Ramzan et al., 2014; Saifuddin, 2016; Thao et al., 2018).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sources of References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign Debt:</td>
<td></td>
</tr>
<tr>
<td>1) IMF debt</td>
<td>(Fidrmuc et al., 2015; Mohamad et al., 2021)</td>
</tr>
<tr>
<td>2) Non-IMF foreign debt</td>
<td>(Abdelaziz et al., 2019; Are, 2018; Pahwa, 2017; Umaru et al., 2013; Zaghdoudi, 2020)</td>
</tr>
<tr>
<td>3) Foreign Debt Servicing</td>
<td>(Are, 2018; Kasidi et al., 2013; Kinnavong, 2018; Malik et al., 2010; Marobhe, 2019)</td>
</tr>
</tbody>
</table>

(Independent Variables)
Economic Growth: GDP (CMP) (Dependent Variable) (Mhlaba et al., 2019; Pahwa, 2017)

Control Variables: Inflation Rate (Ramzan et al., 2014; Suidarma et al., 2021)

Econometric Model
The study used the Vector Error Correction Model (VECM) with the GDPCMP as a dependent variable, Debt to the IMF, Debt to Non-IMF Loans, and Interest on Foreign Debt are the three independent variables, and inflation as the control variable. The functional form of the model is as follows:

\[ GDPCMP = f (IMFD, NIMFFD, FDS, IR) \]

The econometric form of the short-run model of the study with log is written as:

\[ \Delta \text{Log GDPCMP}_{t-i} = \beta_0 + \beta_1 \sum \text{Log IMFD}_{t-i} + \beta_2 \sum \text{Log NIMFFD}_{t-i} + \beta_3 \sum \text{Log FDS}_{t-i} + \beta_4 \sum \text{Log IR}_{t-i} + \sum \text{VECT}_{t-i} \]  

\[ \text{(1)} \]

The econometric form of the long-run model of the study with log is written as:

\[ \text{Log GDPCMP} = \beta_0 + \beta_1 \text{Log IMFD} + \beta_2 \text{Log NIMFFD} + \beta_3 \text{Log FDS} + \beta_4 \text{Log IR} + \varepsilon \]  

\[ \text{(2)} \]

The GDPCMP shows the current market price of gross domestic product, \( \beta_0 \) represents the constant term, \( \beta_x \) represents the coefficient of IMF debt, non-IMF debt, foreign debt serving, and inflation rate, and \( \varepsilon \) denotes the error term of the given model. Whereas \( \sum \text{VECT} \) is the vector error correction term, \( t-i \) means that the variable is lagged by the \( t \) period.

The study analyzed the relationship of foreign debt with economic growth by applying the Johansen cointegration analysis and VECM model (Mohamed, 2018; Suidarma et al., 2021; Tahir et al., 2020; Thao et al., 2018). The analysis was done with STATA statistical software because this software is very suitable for time-series data analysis (Acock, 2005).

Results
The descriptive statistics of GDPCMP showed that the mean value was 5.412, the minimum value was 5.24, the maximum value was 5.516, and the standard deviation was 0.066. The mean value of IMFD was 3.777, the maximum value was 3.466, the minimum value was 3.951, and the standard deviation was 0.128. The standard deviation of lnIMFD was a bit higher, showing a significant rise in the IMF debt level during the sample period. Furthermore, the mean value of NIMFFD was 4.858, the minimum value was 4.723, the maximum value was 5.079, and the dispersion from the mean was 0.113. The standard deviation was a bit high, meaning a substantial increase in the non-IMF foreign debt during the sample period. An average FDS value of 3.183 was obtained, a minimum value of 2.844 was obtained, a maximum value of 3.623 was obtained, and a standard deviation of 0.199 was obtained. This means there was enough deviation of the data values from the mean values and a significant increase in the foreign debt servicing over the sample period. Finally, the mean value of CPI was 0.841, the minimum value was 0.223, the maximum value was 1.188, and the standard deviation was 0.232. The standard deviation of lnCPI was higher, showing a significant deviation of the data values from the mean values, which means a significant increase in inflation during the sample period.

As a result of the analysis, the results showed that lnGDPCMP was negatively correlated with lnIMFD and lnCPI and positively correlated with lnNIMFFD and lnFDS. The non-IMF foreign debt and the foreign debt servicing were positively correlated, whereas the correlation between IMF debt and foreign debt was negative. The highest correlation between non-IMF foreign debt and foreign debt servicing was
found, whereas the correlation between non-IMF foreign debt and inflation was the lowest. Furthermore, the results also showed the relationship between lnGDPCM with lnNIMFFD and lnCPI, lnIMFD with lnCPI, and the relationship between lnNIMFFD and lnFDS were found to be significant.

**Preliminary Data analysis**

**Unit Root Analysis**
The Augmented Dicky-Fuller test was used to conduct the unit root test. According to the results, all variables had lower t-statistics than the critical values at 1%, 5%, and 10%, and their probability values exceeded 1%, 5%, and 10%. This result led to the conclusion that all variables in the study were not stationary at the level where they were recorded (Gujarati, 2003). As a result of the first difference, it was found that for all variables, the t-statistics were greater than the critical values for 1%, 5%, and 10% levels, and the probability value was less than 1%, 5%, and 10%. Thus, the decision was made to determine that the proxies were stationary at the first difference in the data (Gujarati, 2003).

**Cointegration Analysis**
For the cointegration analysis, the study used the Johansen cointegration test (Gujarati, 2003; Thao et al., 2018). The results showed that trace statistics was greater than the critical value at 5% at zero ranks but less at the first rank, while the maximum Eigen statistic was less than the critical value at 5%. This means that the trace statistics indicated 1 cointegrating equation while the maximum eigenvalue indicated no cointegration. In such a case where the trace statistics and the maximum eigenvalues indicate different results, then the trace statistic results are preferred (Gujarati, 2003; Thao et al., 2018).

**Vector Error Correction Model**
As the cointegration analysis found one cointegrating equation, the study analyzed the relationship of the variables through the VECM (Gujarati, 2003; Thao et al., 2018). Before running the VECM, the selection of the appropriate lag is necessary. Table 2 presents the result of the lag order selection criteria:

<table>
<thead>
<tr>
<th>Lag</th>
<th>LL</th>
<th>LR</th>
<th>FPE</th>
<th>AIC</th>
<th>HQIC</th>
<th>SBIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>201.414</td>
<td>NA</td>
<td>7.40E-11</td>
<td>-17.53</td>
<td>-9.06</td>
<td>-8.931</td>
</tr>
<tr>
<td>1</td>
<td>425.112</td>
<td>447.4</td>
<td>7.30E-15</td>
<td>-17.802</td>
<td>-17.924*</td>
<td>-17.15*</td>
</tr>
<tr>
<td>2</td>
<td>439.67</td>
<td>29.116</td>
<td>1.20E-14</td>
<td>-17.963*</td>
<td>-17.061</td>
<td>-15.64</td>
</tr>
<tr>
<td>3</td>
<td>464.913</td>
<td>50.486</td>
<td>1.40E-14</td>
<td>-17.798</td>
<td>-16.695</td>
<td>-14.626</td>
</tr>
<tr>
<td>4</td>
<td>510.698</td>
<td>91.57*</td>
<td>6.90E-15*</td>
<td>-17.503</td>
<td>-17.284</td>
<td>-14.57</td>
</tr>
</tbody>
</table>

The study selected lag 2 based on Akaike’s information criterion (AIC) because when the sample observations are 60 and below, the AIC is a better criterion than the other criteria (Liew, 2004).

**Short Run Results of the Model**
The coefficient of the error term was found to be significant and negative with a magnitude of 0.201. According to this indicator, 20.1% is the speed at which an equilibrium adjusts from a short run disequilibrium to a long run equilibrium. The short-run result of the model showed that in the short-run, the relationship of lnIMFD with lnGDPCM was positive and significant, whereas lnNIMFFD had insignificant. Furthermore, the relationship between the lnFDS and lnCPI with the lnGDPCM was insignificant and negative in the short run.

<table>
<thead>
<tr>
<th></th>
<th>Coef.</th>
<th>St.Err.</th>
<th>t-value</th>
<th>p-value</th>
<th>[95% Conf Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ce1_L1</td>
<td>-.201</td>
<td>.043</td>
<td>-4.61</td>
<td>.004</td>
<td>-.287 to -.116</td>
</tr>
<tr>
<td>lngdcmp (LD)</td>
<td>-.476</td>
<td>.188</td>
<td>-2.53</td>
<td>.011</td>
<td>-.845 to -.108</td>
</tr>
<tr>
<td>lnimfd (LD)</td>
<td>.251</td>
<td>.123</td>
<td>2.05</td>
<td>.04</td>
<td>.011 to .492</td>
</tr>
<tr>
<td>lnnimffd (LD)</td>
<td>.362</td>
<td>.421</td>
<td>0.86</td>
<td>.389</td>
<td>-.462 to 1.187</td>
</tr>
</tbody>
</table>
Lnfd (LD)  
lnpci (LD)  
Constant

Lnfd (LD)  
lnpci (LD)  
Constant

|                | Coef. | St.Err. | z-value | P>|z| | [95% Conf Interval] |
|----------------|-------|---------|---------|-----|----------------------|
| Lngdpcmp       | 1     | -       | -       | -   | -                    |
| Lnimfd         | 0.2601| 0.0954  | 2.73    | 0.006| 0.0731               | 0.4472               |
| Lnimffd        | -1.4171| 0.1975  | -7.17   | 0.000| -1.8042              | -1.0299              |
| Lndfs          | 0.5494| 0.1061  | 5.18    | 0.000| 0.3414               | 0.7574               |
| Lncpi          | 0.1825| 0.0526  | 3.47    | 0.001| 0.0792               | 0.2857               |
| Constant       | -1.4227| 0.0526  | 3.47    | 0.001| -1.8042              | -1.0299              |
| R²             | 0.455 | -       | -       | -   | -                    |
| p-value        | 0.000 | -       | -       | -   | -                    |
Discussion
The result of the study showed that the relationship of the IMF debt with economic growth was significantly positive in the short run but significantly negative in the long run, and this meant the overall effect, in the long run, was negative (Abdelaziz et al., 2019; Dey et al., 2020; Kharusi et al., 2018; Kinnavong, 2018; Pahwa, 2017; Sajjad et al., 2018). Long-term economic growth is significantly and positively correlated with non-IMF foreign debt, but the relationship is insignificant in the short run. There is no doubt that there is evidence that the economic growth of Pakistan has been positively affected both in the short and long term by the non-IMF foreign debt (Agyapong et al., 2019; Marobhe, 2019; Rahman et al., 2012; Shahor, 2018; Suidarma et al., 2021).

Thus, foreign debt servicing has a negligible impact on short-term economic growth, but a significant negative relationship with long-term economic growth. Thus, the increase in foreign debt servicing negatively affected Pakistan's economic growth because it resulted in outflows of capital (Kasidi et al., 2013; Malik et al., 2010; Marobhe, 2019; Sajjad et al., 2018; Shabbir, 2013). Additionally, inflation was positively correlated with economic growth in the short run, but negatively correlated in the long run.
(Mhlaba et al., 2019; Ramzan et al., 2014; Tahir et al., 2020).

Conclusion
According to the study's results, it has been revealed that the long-run results of the study are significant, whereas the short-run results found in the study are mostly insignificant. Pakistan's IMF loan debt correlates negatively with economic growth, but non-IMF loan debt correlates positively. Furthermore, the study also found that foreign debt servicing as well as the inflation rate of Pakistan had a significant negative impact on the economic growth of the country in the long run. According to the study's findings, the perspective of debt overhang theory was supported in the context of IMF debt to Pakistan, whereas the Keynesian theory of public debt was supported in the case of non-IMF foreign debt to Pakistan.

Recommendations and Future Directions
The study gives the following policy recommendations in the light of its findings:

• The authorities of Pakistan should decrease their reliance on the IMF debt. However, if the foreign debt is still inevitable, then the Government can approach the non-IMF creditors.
• Non-IMF foreign debt influences GDP growth positively, but foreign debt servicing negatively. Therefore, a much better option for the authorities is to increase reliance on other capital such as FDI, remittances, household savings, public-private investment, and boost trading activities (Bal et al., 2018; Onafowora et al., 2019; Tahir et al., 2020).
• Suppose the foreign debt is still needed from IMF in the future and cannot be avoided. In that case, the authorities should negotiate for lenient economic conditions, fixed interest rates, fixed exchange rates to minimize IMF debt's impact on Pakistan's growth (Ali et al., 2012; Ramzan et al., 2014).

Limitations
the study has the following limitations:

• The study has taken the quarterly data with 47 observations for each variable, but future studies can improve results by increasing the number of observations.
• The study has not taken the corruption index of Pakistan due to the unavailability of the quarterly data, but future studies can take this variable to get better findings.
• Furthermore, the study has also dropped the quality of governance due to the unavailability of the quarterly data, but future studies can take this variable to have an improved understanding.

Reference


