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Department of Economics

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Aims and Scope

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Editorial Board

Advisory Board

Table of Contents

Identifying Managerial Awareness Level on Negotiation and Conflict Resolution in Nepalese Banking Sectors: Descriptive Cross-sectional Analysis

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Abstract

These days conflict resolution and negotiation seem to be tough and challenging tasks for managerial-level employees. Conflict with various stakeholders in the banking industry can be considered a major aspect. The study employs a descriptive data analysis procedure that covers a sample of 267 managerial-level staff. The purpose of this study is to identify the managerial awareness level of negotiation and conflict resolution in Nepalese banking sectors. The results of the study illustrated that managerial levels at commercial banks in Kathmandu Valley have high (86.14%) negotiation skills. Also, 67.16% of managers in the banking sector focus on maintaining a good relationship with another party while trying to resolve conflict through negotiation. Managerial employees even agreed that they faced challenges in the process of negotiation and conflict resolution. One of the major challenges is the lack of timing among the employees at commercial banks, due to which proper negotiation rarely takes place.

1. Introduction

Managers of different organizations require expertise, leadership skills, and the ability to conduct effective negotiations in a wide range of business situations, including business transactions, job agreements, team building, contracts, and conflict resolution (Miller, 2014; Paudel et al., 2021a). Unless these skills and roles are clearly understood, managers will not be able to effectively plan tasks, convey expectations, provide input, or be prepared for job changes or other training and career development activities (Gentry et al., 2008). For managers to be effective, they must have cognitive, interpersonal, business, and strategic skills (Mumford, Campion, & Morgeson, 2007). Interpersonal skills including negotiating skills, communication skills, and collaborative problem-solving skills are important skills for organizational managers (Martin-rough et al., 2019). The increasing complexity of working relationships and the rise of new organizational models place immense pressure on managers to become more effective in resolving various conflicts that arise in the workplace (Ma, 2007).

Conflict is an inevitable issue in any organization (Oredein & Eigbe, 2014), conflict may arise when a group of people accuses one another in a manner that will provoke an argument that can lead to verbal abuse, violence, loss of life, and property. In some settings, conflicts can grow to a very high extent. Strategies have been developed to resolve the processes involved, escalate tensions into violence, and de-escalate them through negotiation and mediation into a mutually satisfactory resolution. Negotiation may prove to be an effective way of putting an end to or resolving disputes to the mutual satisfaction of parties through discussion and shared compromises between opponents. Likewise, Caputo et al. (2019) explain that negotiation is a mechanism of possibly opportunistic interaction through which two or more parties, with some obvious disagreement, try to do better by mutually agreed action than they otherwise would. Real-world negotiations also involve incentives for mutual benefit and personal gain opportunities at the other party's expense (Martin-raugh et al., 2019). According to Miller (2014), understanding how a group interacts in a situation of interpersonal conflict is the first aspect of successful negotiation.

Conflict resolution is generally described as when people or groups enter into a negotiation process to resolve conflict, a certain viewpoint will be brought to the table in their attempts to resolve the conflict (Oredein & Eigbe, 2014). A negotiation is a key tool used in conflict management and resolution (Cenere, Gill, Lawson, & Lewis, 2018). Negotiations are any social interaction in which two or more parties mutually decide how to allocate scarce resources or address conflicting interests (Van Zant & Kray, 2015). According to Zohar (2015), there are two forms of strategy: cooperation and control. The controlling strategy depicts one benefit only from the defeat of the other. This strategy is less common, but successful, and is getting certain results. Strategy for cooperation on the other hand is a theoretical possibility that both parties will reach their goal by compromise. However, Ganesan (1993) from conflict resolution research found that there are five negotiation styles or strategies often used in business. These strategies are: integrating, competing, avoiding, compromising, and accommodating.

Nepal still has to reach the level of maturity and articulation on the scope of the negotiation (Paudel et al., 2020; Parajuli et al., 2020; Shrestha et al., 2020; Paudel et al., 2021; Paudel & Devkota, 2022). With so many new developments in trade and commerce, fierce competition, and very little knowledge of the subject, one can only imagine what our negotiators are going to do. Nepalese lack emphasis on their needs and therefore seriously lack negotiating skills (Pawan, 2007). Negotiation is seen as a highly desired tool for keeping the other side committed to problem-solving (Shrestha, 2006). Management skills are a collection of knowledge, skills, behaviors, and attitudes that a person needs to be successful in a wide variety of managerial jobs and organizations (Khadka, Gurung, & Chaulagain, 2013). Lack of managers' skills and competencies in companies leads to inefficient resource allocation, efficiency, and outcome of company services. Gyawali (2014) explains that it is important to have good communication skills in today's highly informative and technical environment. Most people still seem to be struggling with communication in Nepal. They will be held back not only by the inability to communicate effectively in their professions but also in their social and personal relations.

Without good communication skills, things will turn into chaos. Good communication skills should be given high priority in Nepalese organizations (Paudel et al., 2020). Effective communication skills can encourage more effective business practices and enable people within the company to communicate easily with each other (Parajuli et al., 2020; Shrestha et al., 2020). Thus, though several separate studies have been conducted in the areas of conflict, negotiation, and communication in the Nepalese market the study of the managerial role in conflict management and negotiation in the banking sector of Nepal is a noble area in Nepal. So, this would be useful for managers of different fields such as banks, universities, manufacturing companies, and other

professionals to enhance their communication and negotiation skills and to know about how the negotiation process can help in resolving various conflicts that might arise in the workplace.

The remaining part of this study is organized as follows: the second part discusses review from empirical literature, the third part covers methods used in the study, the fourth section includes results and the final section includes the conclusion.

2. Review of Literature

This section is related to the various empirical studies conducted in different countries. Many researchers worked on many variables that are in some way related to this study and presented their results and interpretation according to the method they had chosen.

Effective leadership allows managers to cultivate intellectual, social, and emotional intelligence to understand the needs of all team members and to foresee and act accordingly (Cherian & Farouq, 2013). Management efforts to improve employee engagement include direct communication, highlighting the importance of communication and negotiation skills for managers when leading the activity team (Fatehi & Choi, 2019). Negotiation has always been an important part of a manager's job, and its significance is likely to be enhanced by current trends toward more networked organizations, employee engagement, and group dynamics that dramatically alter the nature of relationships between members of the organization. Managers negotiate with peers and superiors within the company, vendors, and clients, and even with subordinates when the director chooses not to use legitimate authority or force or is unable to do so (Watson & Hoffman, 1996). Thus, this section highlights the following issues related to the area of study.

Relation between Negotiation and Conflict Resolution

Conflict is a complex phenomenon that is prevalent in our society (Henning, 2003; Van Zant & Kray, 2015). A situation of conflict or negotiation is one in which there is a conflict of interests or what one wants is not necessarily what the other wants and where both sides prefer to seek solutions instead of breaking off contact (Wertheim, 1996). Conflict resolution is generally described as when people or groups enter into a negotiation process to resolve conflict, a certain viewpoint will be brought to the table in their attempts to resolve the conflict (Oredein & Eigbe, 2014). Conflict resolution can be psychologically exhausting and emotionally draining. Yet understanding that conflict requiring resolution is neither good nor bad, is essential because there can be both positive and negative results. It can be harmful but can also play a positive role for you individually and for your personal and professional relationships (Wertheim, 1996). A negotiation is a key tool used in conflict management and resolution (Cenere et al., 2018). Negotiations are any social interaction in which two or more parties mutually decide how to allocate scarce resources or address conflicting interests (Van Zant & Kray, 2015). Negotiation is used to prevent violence before it has taken hold, to stop violence once it has begun, and to avoid or prevent its recurrence and create conditions for lasting peace after the violence (Cenere et al., 2018).

Negotiation Strategies used by managers

Negotiation strategies are the interaction techniques used by the opposing parties to resolve conflicts (Ganesan, 1993). According to (Zohar, 2015), There are two forms of strategy: cooperation and control. The controlling strategy depicts that one benefits only from the defeat of the other. This strategy is less common, but successful, and is getting certain results. Strategy for cooperation on the other hand is a theoretical possibility that both parties will reach their goal by compromise (Zohar, 2015). However, Ganesan (1993) from conflict resolution research found that there are five negotiation styles or strategies often used in business. These strategies are; Problem-solving strategy that helps to resolve conflicts through the development of solutions that integrates the requirement of both parties, hence also known as integrating strategy (Ganesan, 1993; Mahmoodi, 2012). The compromising strategy helps in conflict resolution through the

87

development of a middle course on the issues of both parties (Wertheim, 1996). A competing strategy which is also known as dominating strategy refers to a preference for satisfying your needs rather than satisfying the other's needs. Avoiding strategy refers to being indifferent about satisfying either your needs or the other's needs and the final strategy is accommodating strategy where: simply it doesn't matter to you but it matters to the other person to win (Wertheim, 1996).

Types and major causes of conflicts in a workplace

Past studies on organizational conflicts are generally distinguished between process, relationships, and task conflict (Rispens & Demerouti, 2016). Disagreements regarding job-related issues are task conflicts. Relationship conflicts are problems that are not related to the task but deal with personal values and issues that underlie the relationships of people at work. process conflicts address logistical issues related to the task (Rispens & Demerouti, 2016). Most conflicts are caused due to opposing interests. We face these situations multiple times a day in this highly complex society. The modern organization adds a whole new group of possible conflict-causing factors that already exist (Wertheim, 1996). Some of the major causes are differences of people in terms of work styles, perceptions, and communication problems, competition of employees over scarce resources, complex and contradictory incentive systems, continuous tension between equality and equity, increasing interdependence, ambiguity over responsibility and authority, etc. (Wertheim, 1996)

Importance of negotiation for conflict resolution to Managers

Every need that calls for satisfaction and every need to be fulfilled is potentially an opportunity for negotiation (Wertheim, 1996). Whenever people are exchanging ideas to improve relationships, whenever they are discussing to reach an agreement, they are negotiating. A manager is a person responsible for administering and controlling an organization or managing a group of staff. To be successful, managers need to have a clear understanding of the importance of different skills in their managerial role (Gentry et al., 2008).

Every manager requires to have good knowledge about the different negotiation strategies and should have the necessary negotiation skills for resolving conflicts as it helps in preventing or stopping violence in an organization. When conflict arises, managers can stop violence through negotiation (Cenere et al., 2018). Another importance of negotiation is that it helps in advancing and protecting the interest of the parties in conflict. Durable peace can be built through effective negotiation and by talking through problems by managers at the workplace. When conflict arises, effective negotiation also helps in solving the problem and building and improving the relationship between the parties (Cenere et al., 2018).

3. Data and Methodology

Study Area

The study area selected for this study is Kathmandu Valley which lies in province 3 of Nepal. Kathmandu Valley is the most populated and developed city in Nepal covering an area of about 30x35 km (Haack & Rafter, 2006). Valley's latitude is 27°32'13" and 27°49'10" north and its longitudes are 85°11'31" and 85°31'38" east (Paudel et al., 2020). It is bowl-shaped and is located at a mean elevation of about 1300 meters i.e., 4265 feet above sea level (Figure 1). Kathmandu valley is becoming a center for many business activities and services. Kathmandu valley is chosen as the study area because there are many business activities taking place in this area and all 27 commercial banks also have their head offices in Kathmandu Valley.

Population and Sample

The population for this study is the managers and employees at the officer level from the different selected commercial banks located in Kathmandu Valley. The banking sector is chosen because of its competitive nature and its performance (Bhandari et al., 2021). Among the other sector, the Banking sector is the most integrated, sophisticated and alluring, and demanding one. It attracts more youngsters as an employee and covers almost 61% of the population (NRB, 2019). Conflict

in the banking sector means there is a lot of distortion in the other sector of an economy. Non-probability sampling was used for the research. Purposive sampling which is also known as judgmental sampling is selected for the study. It is a form of non-probability sampling in which the researchers rely on their judgment while choosing members of the population.

The formula for sample size determination is shown as n= z^2pq/l^2 (Israel, 1992). Where,n_0= sample size required for the study, the Standard tabulated value for 5% level of significance (z)= 1.96, p= Prevalence or proportion of an event 50 % = 0.50 (More et al., 2012). So, p= 0.50,q= 1-p, = 0.50. An allowable error that can be tolerated (e) = 6 %. Thus, the sample size taken for the study was 280 but due to various restrictions imposed because of COVID-19, only 267 responses were collected.

Figure 1: Study Area
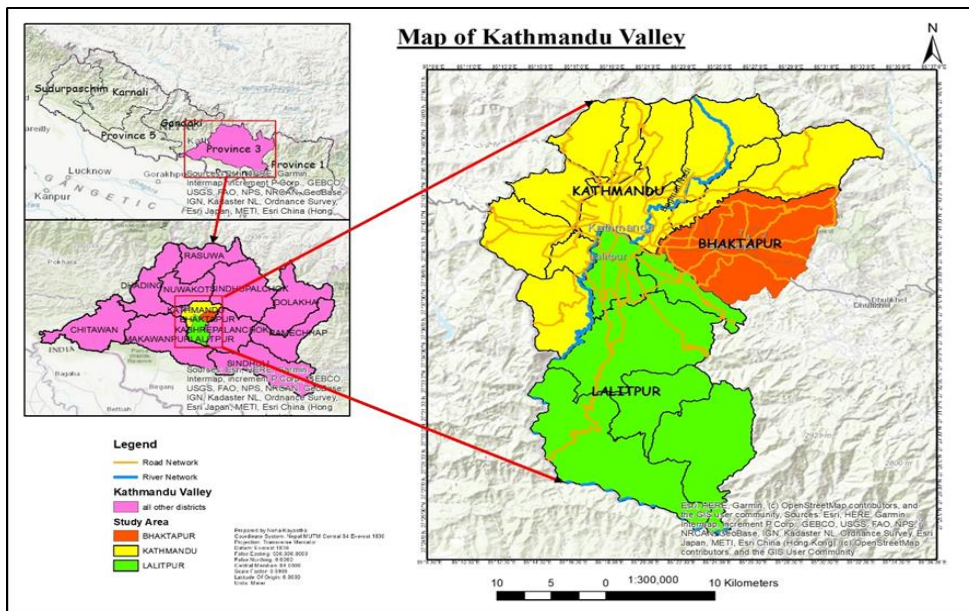
Research Instruments and Data Analysis

The research instrument used for the study was Self-Administered Questionnaires. Self-Administered Questionnaires have been prepared for the process of data collection. The data collection is based on structural questionnaires where the participants have provided their responses based on their preferences and assumptions. The questionnaires were in the form of a 5-point Likert scale, subjective questions, and multiple-choice questions. Questionnaires were distributed among the managers and senior-level employees of "A" grade banks and responses were collected with the help of a data collection tool, kobo collect.

Data Analysis is carried out based on descriptive analysis as well as the negotiation skill index. The data analysis includes the identification of the status of banking managers, constructing the negotiation skill index, identification of the determinants of managerial negotiation, and identification of challenges in the managerial negotiation for conflict resolution as well as the managerial solutions related to it.

4. Results and Discussions

Socio-Demographic Characteristics

Different socio-demographic characteristics such as age, sex, education level, and experience level were analyzed for the study where 267 managerial-level staff from commercial banks of Kathmandu valley were interviewed. Age is a socio-demographic variable that is a significant predictor for negotiation and conflict resolution (Son et al., 2008). In this study, most of the respondents are of age between 35-44. This means that, in the context of the commercial banking sector of Nepal, most (82%) of the negotiators are between the age of 35-44 which implies that in the Nepalese banking sector negotiation for conflict resolution generally takes place during mid-career and late career. However, in a similar study conducted in Turkey by Mamatoglu and Keskin (2019), the participants were working adults from different work settings and between the age group 26 -53. This shows that negotiation for resolving conflict at a workplace generally takes place at mid and higher positions.

The study comprised 64% male and 36% female respondents which shows that men are much higher in number in comparison to women in higher positions in the Nepalese Banking Sector. In a similar study conducted in Japan by Nakatsugawa and Takai (2013) the sex composition of the participants that negotiated for resolving conflicts was 68% men and 32% female. This shows that what men usually occupy, women put in a position of power, status, and visibility are much lower (Kray & Thompson, 2004). Education plays a very important part in negotiation in a similar context majority (92.9%) of managerial staff have completed their masters whereas only 7.1% of the total respondents have education till bachelor's degree. This shows that the majority of the managerial-level employee have masters level degrees and 62% of the bankers of commercial banks in Kathmandu Valley at the managerial level have work experience between 10-19 years.

Table 1: Socio-Demographic Characteristics

Variables	Number	Percentage
Age		
25-34	33	12.7
35-44	116	43.4
45-54	104	38.6
55-64	14	5.2
Sex		
Male	171	64
Female	96	36
Level of Education		
Bachelor's	19	7.1
Master's	248	92.9
Experience		
1 – 9 years	59	22
10 – 19 years	165	62
20 years and above	43	16

Determinants for Negotiation Strategies

Various factors are considered determinants for negotiation strategies (i.e. self-concern, concern for others, integrating, controlling/dominating, compromising, and avoiding). Self-Concern refers to protecting one's image in a situation of negotiation for conflict resolution (Zhang et al., 2014). If negotiators lean more toward self-concern, they will first place their interest, resulting in a situation of a fixed sum. Therefore, in such circumstances, negotiators will demonstrate competitive behavior to assert their value (Caputo et al., 2019). According to this study, it is seen that most of the respondents have low self-concern which means that the majority of respondents while resolving conflicts through negotiation do not pursue their interests first and do not defend themselves over others' interests. A comparatively low number of respondents focus on protecting their image. Negotiators with high self-concern will claim value for themselves through competitive behaviors while negotiating for conflict resolution.

Concern for others relates to promoting or sustaining a good relationship with the other parties (Caputo et al., 2019). As per the study findings, almost 67.16% of the respondents have high concerns for others which mean that majority of the managers in the banking sector focus on maintaining a good relationship with another party while trying to resolve conflict through negotiation. Most of the respondents have a high concern for others which refers to fostering or maintaining a positive relationship with other parties in a negotiating situation in the banking sector. However, 29.97% of the respondents have low concern for others, which refers that they do not try to maintain good relationships with the other party and do not try to focus on others' issues.

Figure 2: Determinants of Negotiation Strategies
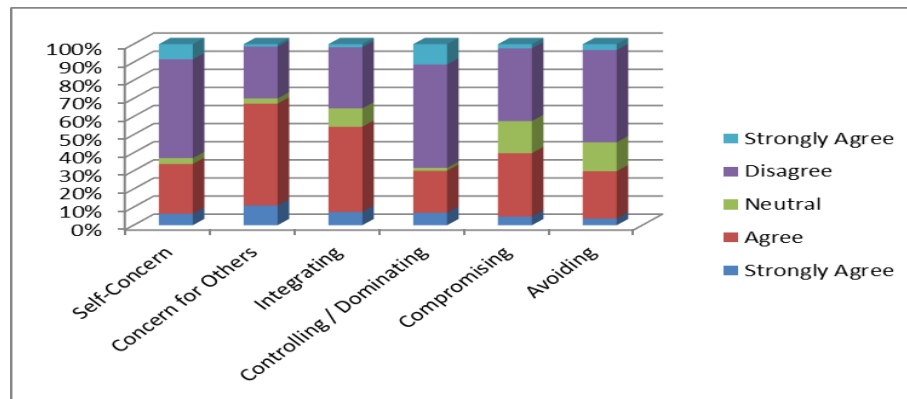
Integrating Strategy is associated with the principles of problem-solving, teamwork, partnership, solution-orientation, win-win, or positive-sum style (Henning, 2003). It is a problem-solving strategy that helps to overcome conflicts by designing strategies that integrate the criteria of both parties and is also known as integrating strategy. Here 54% of the respondents think that integrating strategy is appropriate for resolving conflict as it is a Win-Win Strategy of negotiation where both the parties' needs are tried to be met. However, 44% of the respondents do not think that integrating strategy is the best strategy for negotiation.

The dominant conflict resolution negotiating technique is focused on high self-interest and low regard for others (Ting-Toomey et al., 1991). This is an uncooperative and assertive approach. People who have a high concern for themselves and low concern for others prefer using this strategy for negotiation (Cardon & Okoro, 2010). The research conducted shows that the majority of the respondents do not prefer using the dominating strategy for conflict resolution. The

91

compromising strategy of negotiation for conflict resolution lies between cooperatively and assertively (Ganesan, 1993). The aim is to find a solution that is easy, appropriate to each other, and partially satisfies both parties (Ting-Toomey et al., 1991). It is seen that about 40% of the respondents prefer to use the idea of using the compromising strategy and about 42% of the respondents do not prefer using the strategy.

The avoiding strategy of conflict resolution through negotiation is the product of consideration for others (Ting-Toomey et al., 1991). The avoidance could take the form of a matter being diplomatically side-stepped, postponed to a better time, or simply omitted or withdrawn from a conflict situation (Zhang et al., 2014). From the study, it has been understood that only about 30% of the respondents prefer using the avoiding strategy and trying to avoid the conflict whereas about 54% of the respondents do not prefer using the avoiding strategy (Figure 2).

Negotiation Skill Index

This study measures the negotiation skill index with the help of 3 attributes for negotiation skills: Identity, Negotiation and Adaptation, and Decision Making. There is a total of 40 questions that contain yes and no as response options to respondents where 16 questions regarding identity, 13 questions regarding negotiation and adaptation, and 11 questions regarding decision-making are kept forward so that we can know the negotiation skills among the managers. Therefore, if a manager received more than 30 questions with yes or correct then they can be said as they are highly capable in conflict negotiation. Similarly, if managers receive less than 20 questions no or incorrect then they can be perceived as less aware of banking communication. The general form of identifying the negation skill index among managers is presented as:

$$y = \begin{cases} 1 \ if \ scale \ score < 50\% \\ 2 \ if \ scale \ score > 50\% \ to < 75\% \\ 3 \ if \ scale \ score > 75\% \ and \ above \end{cases}$$

From figure 3 it can be easily understood that the majority of the respondents (the managerial level at Commercial Banks in Kathmandu Valley) have high negotiation skills or high knowledge regarding negotiation skills, and a very small percentage of the respondents had moderate and low negotiation skills or knowledge regarding negotiation skills.

From the study, it was revealed that managerial levels at commercial banks in Kathmandu Valley have high (86.14%) negotiation skills or high knowledge regarding negotiation skills among which 64.78 are male and 35.21% are female. This revealed that males are good negotiators in banks compared to females. From this, we can also state that banks should initiate certain activities and training that would help in enhancing the negotiation skills of female employees at the managerial level.

Figure 3: Negotiation Skills Index
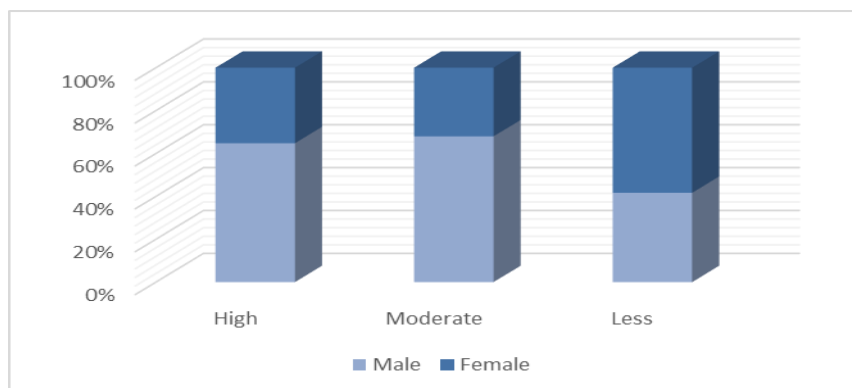
Challenges and Managerial Solutions for Conflict Resolution through Negotiation

Most of the respondents agreed that there are some challenges to resolving conflict by using negotiation strategies. The most common challenges that respondents mostly felt are lack of time, cultural differences, misuse of power, not ready to listen to other parties, threats, different nature of people, incompetence, criticisms, derogatory comments, lack of preparation and confidence, lack of timing, lack of patience, aggressive behavior, etc. The most common among these challenges was a lack of timing among the employees at commercial banks due to which proper negotiation rarely takes place.

Conflict resolution is seen as the management of conflicts positively and cooperatively, and achieves mutually beneficial results with a long-term commitment by the parties (Calistru & Jitareanu, 2016). According to Milhench (2004) conflict resolution is a means of resolving a dispute and negotiating a solution. Knowing what your outcome is and the interests behind a conflict situation would significantly assist you in conflict management and negotiating mutually satisfactory outcomes (Milhench, 2004).

Negotiation at the proper time and place plays a major role in resolving Conflicts in the banking sector. The banking sector usually involves a high level of stress (Paudel et al., 2021b). In such a stressed working environment, appropriate time and place, giving parties in conflict to prepare the negotiation helps in effective conflict resolution. Hearing each other's point of view and trying to be empathetic while taking decisions during negotiation will aid in conflict resolution which is good for the overall organization. Creating a healthy conflict based on the improvement of skill. Frequent meetings, Interest-based negotiations, considering each other values and interests; frequent team-building exercises and workshops help in reducing and resolving conflicts in the organization.

5. Conclusions and Policy Implications

This paper has performed an investigation of the identification of managerial awareness levels on negotiation and conflict resolution in Nepalese banking sectors. The analysis has been carried out among 267 managerial staff. Results have shown that managerial-level staff at commercial banks in Kathmandu Valley has high (86.14%) knowledge regarding negotiation skills. While self-concern, concern for others, integrating, controlling/dominating, compromising, and avoiding are considered major determinants of negotiation strategies, concern for others is widely (67.16%) adopted in negotiation. Likewise, it was revealed that various challenges are faced by managerial level employees in negotiation and conflict resolution therefore, frequent meetings, Interest-based negotiations, considering each other values and interests; frequent team building exercises, and workshops help in reducing and resolving conflicts in the organization.

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Annex 1

List of Commercial Banks in Nepal

Class "A" or Commercial Banks make up the largest share of assets in the banking sector. Because of the size, scale and importance of these banks, they are regulated more strictly than other class banks (Bank Supervision Report, 2017). Owing to liberalization in the banking sector, there was a dramatic increase in the number of private sectors owned commercial banks. However, the three public sector Commercial banks still have a considerable market share in the industry. Nevertheless, the share of private sector banks on total deposits, loans, and total assets has been increasing gradually. As on mid-January 2020, there are a total of 27 Commercial banks in Nepal (Nepal Rastra Bank, 2020).

Table 2: List of Commercial Banks in Nepal

S.No.	Name	Operation Date (A.D.)	Head Office	Paid up Capital
1	Nepal Bank Ltd.	1937/11/15	Dharmapath, Kathmandu	981.11
2	Agriculture Development Bank Ltd.	1968/01/21	Ramshahpath, Kathmandu	1444.82
3	Nabil Bank Ltd.	1984/07/12	Beena Marg, Kathmandu	1009.33
4	Nepal Investment Bank Ltd.	1986/03/09	Durbarmarg, Kathmandu	1422.11
5	Standard Chartered Bank Nepal Ltd.	1987/02/28	Nayabaneshwor, Kathmandu	801.14
6	Himalayan Bank Ltd.	1993/01/18	Kamaladi, Kathmandu	852.03
7	Nepal SBI Bank Ltd.	1993/07/07	Kesharmahal, Kathmandu	844.93
8	Nepal Bangladesh Bank Ltd.	1994/06/06	Kamaladi, Kathmandu	808.83
9	Everest Bank Ltd.	1994/10/18	Lazimpat, Kathmandu	810.69
10	Kumari Bank Ltd.	2001/04/03	Durbarmarg, Kathmandu	955.41
11	Laxmi Bank Ltd.	2002/04/03	Hattisar, Kathmandu	981.26
12	Citizens Bank International Ltd.	2007/04/20	Narayanhitipath, Kathmandu	862.22
13	Prime Commercial Bank Ltd.	2007/09/24	Kamalpokhari, Kathmandu	968.69
14	Sunrise Bank Ltd.	2007/10/12	Gairidhara, Kathmandu	896.78
15	Century Commercial Bank Ltd.	2011/03/10	Putalisadak, Kathmandu	841.55
16	Sanima Bank Ltd.	2012/02/15	Nagpokhari, Kathmandu	880.14
17	Machhapuchhre Bank Ltd.	2012/07/09*	Lazimpat, Kathmandu	845.85
18	NIC Asia Bank Ltd.	2013/06/30*	Thapathali, Kathmandu	971.77
19	Global IME Bank Ltd.	2019/09/04*	Kamaladi, Kathmandu	1897.59
20	NMB Bank Ltd.	2019/09/28*	Babarmahal, Kathmandu	1152.97
21	Prabhu Bank Ltd.	2016/2/12*	Babarmahal, Kathmandu	1031.55
22	Siddhartha Bank Ltd.	2016/7/21*	Hattisar, Kathmandu	978.78
23	Bank of Kathmandu Ltd.	2016/7/14*	Kamalpokhari, Kathmandu	854.69
24	Civil Bank Ltd.	2016/10/17*	Kamaladi, Kathmandu	800.34
25	Nepal Credit and Commerce Bank Ltd.	2017/01/01*	Bagbazar, Kathmandu	813.38
26	Rastriya Banijya Bank Ltd.	2018/05/02*	Singhadurbar plaza, Kathmandu	900.48
27	Mega Bank Nepal Ltd.	2018/05/13*	Kamaladi, Kathmandu	1038.86

*Joint operation date after merger.

Paid-up capital (in' Crore) based on the financial statement of Mid Jan, 2020

Source: Nepal Rastra Bank (2020)

The Impact of Intangible Assets on Market Value of Firms: Evidence from Pakistan's Stock Exchange

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Abstract

This study estimates the economic value of intangible assets (IAs) on the market values (MVs) of firms. The IAs play an important role in the future development and success of firms. A firm having more IAs and Research and Development (R&D) expenditures can be more innovative and competitive in the production of goods and service delivery. Therefore, this study finds the impacts of IAs on the MVs by taking a sample of 66 firms listed on Pakistan's Stock Exchange (PSX) from the period 2007 to 2014. For empirical analysis, the conventional Fixed Effect, Random Effect and Generalized Method of Moment (GMM) models are applied on annual data. The results depict that IAs have increased the MVs of firms in Pakistan. Moreover, leverage ratio and managerial efficiency have also increased the MVs while the expenditures on marketing and advertising have decreased the MVs of firms. This study suggests that firms' managers can increase investment in the accumulation of IAs for maximization of the MVs. Moreover, the investors and other market participants should also look at the level of IAs before investing in stocks as well as other determinants, especially leverage and managerial efficiency. The value relevance of leverage has also been a worthy policy recommendation for Pakistani firms. So, there is a scope for increasing the debt ratio for the shareholders' value maximization.

1. Introduction

For the past more than three decades, intangible assets (IAs) and other related knowledge accounts have become key factors for the sustainability and growth of firms. In the era of the knowledge economy, the sources of wealth creation have changed from traditional production factors (land, labor and capital) to IAs (Komnenic et al., 2010). Therefore, the level of investment in Research and Development (R&D) and other IAs have exceeded tangible assets in the recent past. Firms invest in IAs to strengthen and maintain market competitiveness and increase future profitability (Ballester et al., 2003; Crass et al., 2014; Xu & Zhang, 2021). However, the accounting rules did not follow this tendency and still account only the internally generated IAs that are recorded at acquiring a company for fair valuation. This lack of registration of IAs in the financial statements of firms are partially responsible for the loss of relevance of accounting information in assessment and projections of firms' fair value. The investors and other stakeholders' demand for information changes according to evaluation of the economy, society, skills and knowledge of the workforce and emergence of new technology that must be incorporated in the financial statements of firms. Otherwise, they can't make sound investment decisions without knowing the factors that are responsible for the gap between MVs and book values (BVs) of firms (Kramer et al., 2011; Lev & Zarowin, 1999; Marzo, 2013).

According to the efficient market hypothesis, "the market price of a share immediately incorporates all relevant information regarding assets; therefore, the current share price is the best measure of MVs of an

asset" (Fama, 1970). It means that the BVs of an asset should be close to the current MVs (share price) on the same date. However, most firms' MVs are greater than the BVs. So, there is an, "accounting fallacy" in the gap between market and book values and it should be amended on the basis of the theory of firm's value (Lev & Zarowin 1999; Marzo, 2013). This gap is related to market expectation and missing of IAs from the balance sheet due to restrictions of accounting standards (Hulten et al., 2008; Marzo, 2013; Sveiby, 1997). The IAs are the past expenditures of firms on innovation and research activities, skill development of the work force and also the expenditures on the creation of good customer relations, purchase of patents, copyrights and brand equity. As accounting conventions, investment on accumulation of IAs are considered expenses rather than amortized, therefore they are not shown in the financial statements of firms. That is why, the BVs of almost all firms are undervalued as compared to the MVs (Falato et al., 2013; Stewart, 1997; Sveiby, 1997).

Mostly, the literature attributes the deviation between the MVs and BVs to the absence of IAs from the balance sheet (Andriessen, 2004; Stewart, 1997; Sveiby, 1997). The role of IAs on the firm's future development and success is paramount. An increasing body of literature studied the impact of R&D expenditures on MVs of firms in different countries (Ballester et al., 2003; Jinsu & Gee-Gung, 2011; Rahko, 2014). The findings indicated that R&D expenditures have positive consequences for the firms' MVs. The investment in R&D and advertising are positively associated with the profitability of firms, return on assets and MVs. Moreover, in the recent past, the revolution in technology due to R&D investment helped firms to be more innovative and competitive in the production of goods and service delivery (Bae & Kim, 2003; Xu & Zhang, 2021). Similarly, Rahko (2013) and Bosworth and Rogers (2001) showed that the intangible capital such as brand names, trademarks, software and patent rights have significantly positive consequences for the MVs. Some researches indicated that by disclosing relevant information regard to IAs in financial statements helped investors and other market participants to make right economic and investment decisions. Moreover, it also helped the top management and directors to take advantages from the changing economic and market scenarios. Empirical studies also indicated that recognizing IAs on the balance sheet have a positive impact on the return on equity, revenue, share value and other financial variables. A company having a lot of IAs has an edge over the competitors. As the returns on tangible assets are more or less equal for all actors in the market (Aboody & Lev, 1998; Bismuth & Tojo, 2008; Volkov & Garanina, 2004).

Similarly, advertising expenditures are carried out in expectation of increasing the firm's profit as well as developing long term customer relationships. It also increases the profit of a firm but we do not know exactly the revenue generation of the intended advertising campaign. Therefore, accountants of firms do not show this expenditure as assets in the balance sheet. However, advertising expenditures might increase the demand of the firm's products and services leading to increase the firms' market capitalization (Ding et al., 2007; Joshi & Hanssen, 2009; Nizik & Nissim, 2011). Similarly, Chemberlin (2010) showed that advertising and marketing campaigns changed the consumers' taste and created brand loyalty. Consumers get utility by consuming the advertised goods in the form of social status and prestige symbols (Hockman & Luski, 1988; Nichols, 1985).

Most of the empirical studies on IAs and advertising expenditures and their contribution for the market to book value have focused on the developed countries. There are dearth of empirical studies in developing countries, especially empirical researches relating to IAs are limited in Pakistan. Therefore, this empirical study contributes to the literature by quantifying the IAs not revealed in the firms' balance sheets and their contribution for the MVs by recognizing the actual business potential when they are considered. Therefore, this study finds the impact of IAs and other factors such as advertising expenditures, leverage ratio and managerial efficiency on the market valuation of Pakistani firms.

2. Review of Literature

There has been a great interest in IAs primarily focusing on R&D and its importance for the firm's productivity and economic growth in early 1960 (Griliches, 1981; Hall et al., 1984). However, R&D expenditures are the small part of IAs that involve marketing, workforce training, work environment and ethics and the whole surrounding process of a particular firm or industry. IAs are those identifiable non-

monetary assets that are not seen, touched and (or) physically calculated. These assets are created over time by investing in human capital, research activities and sound customer relations. These non-monetary assets without tangible substances are believed to be very important for future profitability of a firm and also give a competitive edge over the competitors. They include patents, goodwill, skilled workforce, good customer relationship, computer software, copyrights, trademarks, knowledge accounts, marketing rights etc. (Marzo, 2013; Stewart, 1997; Xu & Zhang, 2021).

In conventional economic growth theory and accounting standards, IAs are not assumed to be an investment in a company's future. Therefore, marketing, worker training and other innovation related expenditures are considered as current expenses. According to the International Accounting Standard (July 1, 2009), these expenditures cannot be recorded as IAs as they contribute to the goodwill derived from the expected future earnings. However, these IAs are recorded at the time of business combination (Castro & Benetti, 2017; Cañibano et al., 2000). In case of business combination, the acquiring firm calculates, and records all assets comprising recognizable IAs and liabilities at MVs. The IAs are different from tangible and financial assets (stocks, bonds, securities) due to its specific attributes of partial excludability (limited protection, property rights) and non-marketability. There is no active market for the valuation of these IAs. Therefore, such attributes of IAs have significant implication on the valuation, measurement and financial reporting (Pastor et al., 2017).

There are various approaches to measure the IAs. One is the approach of Corrado et al. (2009), that finds the relationship between market to book value ratio of a firm over the time. It indicates what a firm invested and what the market values that investment. The difference or the market to book value gap is the measure of IAs. Therefore, in early 2001, companies were asked to fill this gap by as much as possible with a specific line of items for fair valuation when acquiring the company. Another way to measure the IAs is the recommendations of the Financial Accounting Standard Board (FASB) for companies acquiring IAs. It involves forecasting the cash flows associated with various intangible capitals such as copyrights, brand names, trademarks and so forth (Kiley, 2007). The third approach to measure the IAs is the valuing the cost of inputs occurred like other tangible assets. When an asset or an automobile is acquired, the value of that investment is recorded on the basis of how much is paid on that transaction. Applying this logic, Nakamura (2010) has measured the intangible investment. However, due to conceptual differences between tangible and IAs such as they are not fixed cost but continuous inputs to production, no market transactions and difficult to measure the depreciation cost, present measurement implications. Therefore, accountants are generally reluctant to capitalize such kinds of expenditures (Corrado et al., 2009; Hulten, 2008).

R&D expenditures are considered investments in IAs that are beneficial for future earnings and growth of firms (Ocak & Findik, 2019). Earlier empirical studies of Collen and Morel (2005) and Johnson and Newman (1968) showed no significant effects of R&D investment on the profitability and market valuation of firms. Similarly, Abbody and Lev (1998) indicated that capitalization of expenditures on software development had negligible impacts on the MVs. Similarly, Berzkalne and Zelgalve (2013) empirically examined the effect of IAs on the MVs of Baltic States' firms. Latvia and Lithuanian firms indicated a positive relationship between MVs and IAs while in the rest of the countries, the results had shown insignificant effect of IAs on the MVs. These odd results are attributed to the poor research design, quality of R&D data and small sample sizes.

However, there is enough empirical evidence that supports the notion of increasing MVs of firms due to the accumulation of IAs through investment. According to Castro and Benniti (2013), the market price of stocks or equity incorporates all relevant information including IAs and financial plus non-financial information regarding to assets of firms, therefore it is considered a suitable measure of firms' MVs. This study also found a positive relationship between corporate MVs of Brazilian firms and the IAs shown in the financial statement. Similarly, Bubik and Susak (2015) studied the impact of IAs on the financial performance of Croatian firms. The results depicted that accumulation of IAs had positive consequences for the firm's financial performance such as return on equity, gross and net profit margin. Choi et al. (2000) estimated the effect of reporting IAs in the financial statements on the MVs of a firm's equity. The findings revealed that the financial market gave positive signals to recognizing the IAs in the financial statements.

Laitner and Stolyarov (2003), Soler et al. (2007), and Sveiby (1998) attributed the whole variation between corporate MVs and BVs to the absence of IAs from the balance sheets. The positive impact of the IAs on a firm's MVs supports the argument of amortization and capitalizations of R&D investment over the time rather than direct expense being a suitable accounting rule (Griliches, 1981; Herschey & Waygandt, 1985). Similarly, Ivanov and Mayorova (2015) also showed that accumulation and sound management of intangible capital help to increase competitiveness as compared to their counterpart firms in the Russian market. Sougiannis (1994) studied the impact of accumulation of IAs through R&D on MVs and profit of US firms. The results indicated that one percent increase in R&D investment leads to five percent increase in the MVs and two percent in the profit of the firms.

Similarly, Bae and Kim (2003) and Boswork and Rogers (2001) have studied the R&D investment carried out by the US, Germany, Japan and Australia firms. The findings indicated that expenditures on R&D had a positive impact on MVs of firms in all three countries. Chu and Chung (2001) also estimated the impact of R&D expenditures on the MVs of Korean firms. The results indicated that 1 won (Korean currency) of R&D expenditures generates on average 1.25 won earnings over the following two to four years. The results also indicated that the capitalized portion of the R&D has longer impacts on the earning as compared to the expense portion. So, the brief literature review indicated that investment in IAs in the form of R&D expenditure have a positive impact on the MVs of firms and also give a competitive edge over the competitors. Moreover, advancement in technology also helps firms to be more innovative and competitive in the production of goods and service delivery.

3. Data and Methodology

3.1 Theoretical Framework

The determinants of equity valuation is the core question in finance literature. The traditional method of valuation focuses on the historical figures such as balance sheet, income or cash flow or forecasting and weighted average cost of capital (Falthem & Ohlson, 1995; Fama & French 1985). However, some other studies employ the Tobin's q (1969) approaches for firm's valuation (Bae & Kim, 2003; Jin & Jorion, 2006). The Tobin's q is defined as the market capitalization of a firm divided by the replacement cost of its assets (Lewellen & Badrinath 1997; Wernerfelt & Montgomery, 1998). However, due to complexity of theoretical Tobin's q and unavailability of data on the replacement cost of Pakistani firms, we cannot calculate the conventional Tobin's q. Therefore, this study follows the methodology adopted by Bae and Kim (2003), Bhagat and Welch (1995) and Jin and Jorion (2006) for the measurement of MVs and BVs. So, the Tobin's q is equal to MVs of firms' equity divided by the BVs of firms' assets. Besides IAs, there are a host of other variables that also affect the MVs. The inclusion of control variables are based on the previous empirical research on determinants of MVs of firms. Advertising and marketing campaign, leverage ratio and managerial effectiveness are included as control variables that have also effects on MVs of firms (Al-Fayoumi & Abuzayed, 2009; Brealy et al., 2001; Dumay, 2012). So, the econometric model is developed as follows.

$$MBV_{it} = \alpha_0 + \alpha_1 IA_{it} + \alpha_2 AE_{it} + \alpha_3 LEV_{it} + \alpha_4 ME_{it} + \alpha_5 D_{it} + \mu_{it} \dots \dots \dots . (1)$$

In the above equation (1), MBV, IA, AE, LEV and ME show the ratio of market to book value, ratio of intangible assets (IAs) to book values (BVs), ratio of advertising expenditures to BVs, leverage ratio, and managerial efficiency calculated by net sale over the total assets respectively. While, D is a dummy variable introduced for the financial crisis of 2007-08. α_0 is the intercept while, $\alpha_1, \alpha_2, \alpha_3, \alpha_4,$ and α_5 are coefficients or slopes while μ_{it} is the error terms.

3.2 Data and Variable Construction

Ratio of market to book value (MBV) is our dependent variable. It measures firms' efficiency and future growth. A higher value of MBV shows that the market gives more value to the additional investment in the net assets as compared to the replacement cost (Chung & Pruitt, 1994; Wernerfelt & Mongomery, 1988). So, the MVs equal to the product of the price of common shares/stocks plus the BVs of preferred shares while the

BVs is the original costs of all the assets of a firm less the depreciation cost (Bae & Kim, 2003; Brealy et al., 2001).

IAs are our main independent variable. It is an accumulation of past expenditures on the R&D and human capital such as training and skill development of the workforce, patents, copyrights, trademarks, brand names, software etc. (Faleto et al., 2012; Stewart, 1997). The literature indicates that IAs help firms to be more innovative and competitive in the production of goods and service delivery leading to competitive edge over the competitors. Similarly, the advertising expenditure is our second independent variable. Due to unavailability of advertising data, selling, distribution and marketing expenditures are employed as a proxy for advertising expenditures. It is expected to spur demand for the firm's products by creating a sound relationship with customers. The expected impact of advertising on the MBV is dubious. Successful advertising campaign can increase the MBV and future earnings while ill perceived and unsuccessful advertising can have negative consequences for the profitability (Bublitz & Ettredge 1989; Han & Manry, 2004).

The leverage ratio (LEV) or debt to equity ratio measures the financial health of a firm. It shows the proportion of debt and equity in the firm's assets. It is the sum of total short term and long-term debts of the firm to the BVs of the firm. The leverage ratio has also an effect on the firm's MVs. But in theoretical and empirical literatures, there is no unanimity on the effect of leverage ratio on the MVs. Modigliani and Miller (1958) opine that the capital structures have no significant role on the market valuation. But in their 1963 study, they revised their original views by incorporating the tax advantages of leverage ratio on the market capitalization of firms. Most of the empirical studies show that there is an optimal level of debt and beyond that level, increase in the leverage ratio decreases the MVs of firms due to high risk of insolvency (Antwi & Zhao, 2012; Bhandhary, 1988; Krause & Litzenbergr, 1973).

Our last independent variable is the managerial efficiency (ME). The assets turnover ratio is used as a proxy of ME. This ratio gives a clue to investors and creditors that how a company utilizes its assets to produce products and sell. So, a higher ratio has a favorable effect on MVs of firms. The ME is expected to increase the firms' productivity and MVs by using the scarce sources efficiently and optimally (Al-Fayoumi & Abuzayed 2009; Fiordelisi & Molyneux, 2010).

The data on BVs, IAs, ME and LEV are acquired from the Balance Sheet Analysis of Non-Financial Firms by the State Bank of Pakistan (SBP) from 2007 to 2014. Moreover, the monthly data on the stock's prices are obtained from the PSX data portal. The monthly closing shares' prices are then converted into year by talking monthly average. We used the selling, distribution and advertising expenditures as a proxy variable, due to unavailability of data on the advertising and marketing expenditures. Our sample consists of 66 non-financial firms listed on Pakistan Stock Exchange (PSX). As most of the firms do not mention the investment on R&D and related IAs in their balance sheet, therefore, the sample includes those firms which have data on IAs during the sample period. The selected firms from various sectors are given in table 1. It shows that oil refinery, exploration and energy, textiles, auto assemblers, automobile parts, pharmaceuticals and chemicals are the major sectors in our sample that invest in research and innovation and other related knowledge accounts. While only 3% of cement, fertilizer and food and personal care sectors' firms in our sample invest in R&D and other related IAs. It shows that cement, fertilizer, food and personal care sectors are the least research-intensive sectors in Pakistan. The majority of these firms are in private ownership and the private sector is more reluctant to invest in R&D and other related IAs.

Table 1: List of Selected Firms for each Sector

S/NO	Sector	No of Companies	% in Sample
1	Auto assemblers and Automobile Parts	8	12.1
2	Cables and electrical appliances	3	4.5

3	Cements	2	3
4	Engineering	6	9
5	Fertilizers	2	3
6	Food and Personal Care	2	3
7	Oil refinery, Gas exploration and energy	12	18.1
8	Paper and Board	3	4.5
9	Pharmaceutical and Chemicals	6	11
10	Sugar	6	8
11	Technology	4	5
12	Textiles	12	18.1
Total		**66**	**100**

Source: Balance Sheet Analysis of Non-Financial Firms by SBP

3.3 Econometric Techniques

This study finds the impacts of IAs on the MBV by taking a sample of 66 firms listed on PSX from the period 2007 to 2014. Due to micro- panel data (8 years), the fixed effect (FE) and random effect models are the suitable econometric techniques for empirical analysis (Arellano & Honoré, 2001). The FE model examines the relationship between the dependent variable and independent variables that change over the passage of time within a firm. While in the RE model, it is assumed that there is no correlation between the independent variables and the error terms (Arellano & Honoré, 2001). So, in the case of RE, we assume that the error terms (both the individual's time invariant effects and other remaining error terms) are independent and identically distributed within an entity or firm. However, the decision between RE and FE are decided on the basis of the Hausman (1978) Test. It examines whether firm's time invariant specific effects are correlated with the included independent variables or not? So in this case, the null hypothesis (H0) indicates that the entity or firm's specific effect is not correlated with the independent variables, while the alternative hypothesis (H1) shows that the entity specific effect is correlated with the included independent variables. The rejection of H0 is the acceptance of the FE model and vice versa.

Besides, many economic and financial variables are interdependent and dynamic in nature. In order to tackle this issue, the Generalized Method of Moment (GMM) model is also applied. Due to correlation between the exogenous variables and error terms, the estimated parameter obtained through conventional FE and RE models become biased and the variances are also underestimated. In such cases, the GMM model produces unbiased and efficient results (Baltagi, 2008; Ebbes et al., 2004; Kim & Frees, 2006). For the short dynamic panel data, Arellano and Bond (1991) and Blundell and Bond (1998) have developed a model that produces efficient and unbiased estimates. Moreover, it also controls the endogeneity of all independent variables and also the inclusion of lag dependent variables as an instrument account for unobserved firms' specific effects (Arellano & Honoré, 2001; Woolridge, 2010). Finally, in order to incorporate the global financial crisis of 2007-2008, we also introduced a dummy variable.

4. Results and Discussions

4.1 Descriptive Statistics

The table 2 indicates the descriptive statistics of all the variables involved in our sample. The mean values of MVB and IA are 2.72 and 0.20 respectively. It indicates that the MVs of the firms involved in our sample are

greater than the BVs. It means that Pakistani firms are investing in knowledge accounts and other intangible capital and knowledge accounts, but the variation in the investment on related IAs is not too high. That is, the Pakistani firms consistently invest in R&D and other related soft assets. Similarly, the average advertising expenditure is 1.05. It also indicates that Pakistani firms are also investing in advertising for value creation but the variation in advertising expenditures is very high. Similarly, the mean value of leverage and managerial efficiency are 3.29 and 1.34 respectively showing that on average the Pakistani firms are using more debt as compared to equity.

Table 2: Summary Statistics

Symbol	Mean	Minimum	Maximum	Standard deviation
MBV	2.72	-9.68	225	11.6
IA	0.20	-3.93	19.35	0.96
AE	1.05	-29.19	73.79	4.47
LEV	3.29	-292.32	795.7	49.9
ME	1.34	0	6.91	0.99

4.2 Main Results and Discussion

Table 3 shows the results of FE, RE and GMM models. It shows that the accumulation of IAs have significantly positive effects on the MBV revealing the value relevance of IAs for market valuation. This result indicates that 1% increase in investment on IAs leads to 3.51% increase in the MBV on average. Investors and other market participants consider R&D investment and other IAs as positive signals for market capitalization. The market participants regard investment in R&D and other IAs as positive net present- value investment suggesting that capitalization of R&D expenditure rather than expensing is an appropriate accounting procedure. This result is aligned to many empirical studies such as Berzkalne and Zelgalve (2013), Rehman et al. (2012) and Bae and Kim (2003).

Table 3: Results of FEM, REM and GMM

Variables	FE	RE	GMM
MVB_{it-1}			-0.02*
			(0.00)
IA	3.51*	3.17*	6.40*
	(0.49)	(0.58)	(0.00)
AE	-3.49*	-3.22	-5.73*
	(0.29)	(0.47)	(0.00)
LEV	0.45*	0.43	0.56*
	(0.02)	(0.04)	(0.00)
ME	0.55***	1.04	0.61*
	(0.32)	(0.52)	(0.00)
D	0.26	0.23	0.97*
	(0.38)	(0.39)	(0.01)
Constant	1.61*	0.92*	1.36*
	(0.38)	(0.50)	(0.12)
R Square	0.73	0.74	
Hausman Test (P value)	0.000		
Sargan Test			48.33
Observations	528	528	396

103

The advertising expenses (AE) are negatively associated with the MBV contrary to many empirical studies. The results indicate that 1% increase in AE leads to 3.49% reduction in the MBV on average. It means that market participants and investors perceive that the economic benefits of advertising expire in the current's years just like other expenses. This finding is consistent with some other empirical studies such as Han and Manry (2004) and Bublitz and Ettredge (1989). Secondly, the negative relationship between advertising expenditures and MBV may be due to poor proxy of selling, distribution and marketing expenses. The selling and distribution expenses include shipping, transportation and marketing expenses as well. If they dominate and advertising expenditures are only a small fraction of them, then their negative coefficient is not surprising. The leverage ratio (LEV) has also significantly positive impacts on the MBV. The results show that 1% increase in the LEV ratio leads to 0.49% increase in the MBV on average. So, this finding shows that increasing the debt widens the gap between market and book value. It suggests that Pakistani firms can increase the leverage ratio to take benefits from the tax benefit of debt financing and there is a possibility of increasing the debt ratio in order to increase the market valuation. These findings support the Modigliani and Miller's (1963) view of capital structure for increasing the MVs of firms. This result is supported by many empirical studies such as Antwi and Zhoa (2012) Bhandari (1988) and Chowdhury and Chowdhury (2010) in other countries.

Managerial efficiency (ME) too has significantly positive impacts on the MBV. The results show that 1% improvement in ME leads to 0.55% increase in the MBV on average. If the firm's manager uses the scarce resources efficiently, then it enhances the firms 'productivity and profitability. Moreover, it also gives a positive signal to the investors and other agents leading to increase the MVs of firms (Al-Fayoumi & Abuzayed 2009; Fiordelisi & Molyneux, 2010).

Table 3 also shows the results of GMM by the Arrelano and Bond (1991) technique. Qualitatively the results of FE, RE and GMM models are same i.e., the sign of the parameters are same for all three models, but the magnitude of the coefficients are greater than the formers. However, in the case of GMM, the dummy variable introduced for the financial crisis of 2007-08 becomes significant. It shows the global financial crisis has positive consequences for the MBV. So, the financial crisis has also increased the MVs of the firms of Pakistan.

5. Conclusions and Policy Implications

This study investigates the value relevance of IAs disclosure by the Pakistani firms listed on the PSX from 2007-2014. The absence of IAs and other knowledge accounts in the balance sheet of firms are the major contributors for the wedge between market and book values. The investors take the information on the IAs and other knowledge accounts for investment decisions. Using the FE, RE and GMM models, we find that IAs are in general positive associated with MBV. It indicates that investors and other market participants consider R&D investment and other IAs as positive signals for market capitalization. Similarly, the advertising and marketing expenditures have negative consequences for the MBV of firms. It shows that investors believe that the economic benefit of advertising expenditure expires in the current period like other expenditures. This finding reveals that advertising expenditures, like other expenses, are not believed to represent future economic benefit.

Moreover, the leverage has also a significantly positive impact on the MBV. It suggests that Pakistani firms can increase the leverage ratio to take benefits from the tax benefit of debt financing and there is a possibility of increasing the debt ratio in order to increase the MBV. Similarly, Managerial efficiency too has a positive impact on the MBV. If the firm's manager uses the scarce resources efficiently, then it can enhance the firms 'productivity leading to increase the firms' profitability and market capitalization.

This study has some policy implications. As IAs are in general positively associated with the MBV. Therefore, firms' managers can increase investment on the accumulation of IAs for maximization of the MVs. Moreover, the investors and other market participants should also look at the level of IAs before investing in stocks as well as other determinants, especially leverage and managerial efficiency. Moreover, the value relevance of leverage has also a worthy policy recommendation for the Pakistani firms. There is a scope of increasing the debt ratio for the shareholders' value maximization.

This study has some limitations. Firstly, the data on IAs is too old and recent data on firms' IAs and other knowledge accounts will give more policy-oriented results. Secondly, due to unavailability of advertising data, we employ, selling, distribution and marketing expenditures as a proxy for advertising expenditures. Future study can be done by employing firm's level advertising data for estimating the impact of advertising expenditures on the firms' MVs.

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Impact of Remittances on Social Behavior towards Higher Education in District Poonch AJK

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Abstract
The primary objective of the study is to check the impact of remittances on enrollment, the performance of the students of higher education, and the attitude of the households. For this study, primary data were collected through a questionnaire. Randomly 75 migrants and 75 non-migrants were selected. The Binary Logistic model is used to check the impact of remittances on the enrollment of the students and the ordinary least square is used to check the impact of remittances on students' performance. The study concludes that remittances have a significant impact on the enrollment of the students and the impact of remittances on the performance of the students is not significant. Concerned authorities should focus on improving the performance of the students by providing different incentives through the higher education department of AJK.

1. Introduction

National immigration means that natives shift with in a country for jobs or other purpose and international migration means when people migrate across the boundary of the country (Peterson, 1978). Globalization has opened up the work market, enabling people to move for the short term across boundaries in search of better opportunities outside their home country. Age, employment and returns to migration were the factors behind the migration decision (Todero, 1969). Some studies explained that people moved one place to another place when their returns to migration more than the cost of living in home country. This migration has started from all over the world from developing to developed countries because developed countries have low population growth rate, high per capita income and high wages. Then migrated workers send remittances to their home countries for many purposes. Remittances mean people send money to their households when they leave their home country.

Many skilled and unskilled workers from all over the Pakistan migrated in 1970 to Middle East countries for job purpose. Now these Pakistani peoples work aboard very efficiently in many countries of the world. Each year billions of remittances are sending by migrant's worker to their home countries. These remittances are playing micro and macro level impact on the economy of Pakistan. Macro level impact of remittances in Pakistan on employment, Gross National Product and balance of payments and micro level effect of foreign income on poverty, consumption, investment, health and education. (Shah, 1995).

Azad Kashmir is consisting on three divisions. There are ten districts of Azad Kashmir Bhimber, Mirpur, Poonch, Kotli, Bagh, Muzaffarabad, Sudhnooti, Hatian bala, Neelum and Haveli. Azad Jammu and Kashmir is the beautiful region due to its greenery and mountains. The economy of Azad Kashmir is agricultural which means that the main source of production is land, which included crops, vegetables and fruits etc. According to socio-economic survey 2007, fifty-one percent Kashmiri people were migrated to different countries and send money to their households.

In 1950s and 1960s significant group of people from AJK   migrated aboard. When Azad Jammu and Kashmir people migrated to different countries their living standard improved, their poverty burden reduced, their health and education level improved. Due to remittances private consumption, private investment of the AJK peoples increased. All activities of the AJK peoples improved due to remittances (Socioeconomic survey 2007).

Mirpur district is at the first number receiving remittances from aboard. When Mangla dam was under construction mostly people left their home country. One significant group of migrants belonged to Poonch district of Azad Jammu and Kashmir. In district Poonch many people belong to migrant's families and they send remittances to their families. Foreign income has significant impact on the socioeconomic condition of the district Poonch. Due to remittances education and health of the people improved (Khan et al., 2011). This research was conducted in Hajira which is the tehsil of district Poonch to see the impact of foreign remittances on social behavior towards higher education. So the different elements of higher education are enrollment and performance of the students, and also see the impact of remittances on attitude of the people towards higher education. Objectives of the study are found out the relationship between remittances and enrollment of the students in higher education in study area. Found out the relationship between remittances and performance of the students in higher education in study area. And also found out the impact of remittances on the attitude of the people towards higher education in study area.

2. Review of Literature

Research on remittances is getting more important since last three decades. Many researchers (Dorantes *et al,* 2008; Mansour *et al,* 2011; Kollner, 2013) showed positive and negative effects of remittance for recipient countries. A significant positive portion of remittances is mostly explored after the 1970s until 1980s. Remittances are increasing day by day in Pakistan. The literature review showed that there was a strong relationship between remittances and education. The relationship between foreign income and education is positive and also negative. The literature is divided into different subsection to see the relationship between remittances and education i.e. (1) Macro and Micro level impact of remittances (2) Relationship between remittances and education expenditure (3) Relationship between remittances and enrollment (4) Relationship between remittances and attendance (5) Relationship between remittances and academic performance.

2.1 Macro and micro level impact of remittances

Khan and Khan (2016) explained the macro (balance of payments) and micro (consumption, investment, health, and education) level impact of remittances in Pakistan. They showed that there was positive effect of foreign income on balance of payments, consumption, health, investment, and education. Latif *et al*., (2013) found the impact of foreign remittances on rural economy in Pakistan. The descriptive statistics and a regression model were used for analysis and showed that all variables were highly significant. Remittances have a positive impact on the migrant's household. When there was micro and macro level impact of remittances on migrant's families their behavior changed when their poverty burden reduced.

Bui *et al*., (2015) and Ang et al., (2009) found micro level impact of foreign income on migrant's families behavior in Philippine. Behavior of migrant's families changed and their consumption pattern changed due to remittances. Both studies used logistic Regression model and showed that when their poverty burden reduced there was the positive effect of foreign income on the behavior of the households. Logistic results showed that due to remittances poverty burden reduced but in the long run growth was not rebalanced. Iqbal *et al.,* (2014) investigated the effect of foreign income on the migrant's families whose fathers were abroad and send money to their families in Pakistan. Remittances have effect on children's education and their wife's behavior. The study found that remittance has the positive effect on children's education because when families received remittances their poverty burden reduced and they invest in children's education. When father of the family was not present at the home boys were involved in bad activities and due to this their education effect. This study investigated that mothers of the migrant's families were disturbed due to the absence of their husbands.

2.2. Relationships between remittances and education expenditure

Abdellatif et al., (2013); Vogel and Korinek, (2012); and Zhu, (2016) analyzed the effect of remittances on educational expenditure and investment on growth. They found the relationship between remittances and educational expenditure and Economic growth. They used Auto Regressive Distribute Lag (ARDL) model and Tobit model for estimation and showed different results first study showed that foreign income has significant effect for expenditure on education, economic growth and second study showed that foreign income has greater effect on boy's education than girls and there was gender discrimination due to remittances and the third study showed the negative impact of remittances on education expenditure.

Kholi, (2013) and Amokom and Iheoma, (2014) analyzed effect of foreign income on fertility, education in India, and in Sub -Sahara Africa. Probit model and 2SLS technique used for estimation to see the effect of foreign income on education and fertility and results showed the positive effect of foreign income on education and fertility. Due to remittances, people invest more for their children's schooling and also fertility increased. Both primary and secondary education increased due to remittances. When people invested in children's education there was the positive and also negative impact on children enrollment, attendance, and attainment.

2.3. Relationship between remittances and enrollment

Jakob, (2015) and Zhu, (2016) found the impact of remittances on enrollment in El Salvador and in China. They used Probit model and 2SLS technique for estimation and showed that foreign income has a significant impact on enrollment of the students. Brempong and Asiedy, (2015) examined the impact of foreign income on enrollment of the students in Ghana. They used Probit model and showed that due to remittances enrollment in primary and secondary education increased. But due to remittances girl's education increased more than boys. Khan, (2016) found the impact of remittances on enrollment of the school students in Rural Gujarat, Pakistan. Primary data were used for estimation and showed that at primary level the impact of remittances was positive for both girls and boys. The results of remittances were similar for girls at the secondary level and changed for boys. Carlero *et al*., (2008) and Jamil, (2013) found the effect of foreign income on education and child labor in Ecuador and Rural Punjab. IV-Probit model used for estimation and results showed that there was the positivet effect of remittances on school enrollment due to remittances child labor reduced particularly for girls in Ecuador and in Rural Punjab child labor for girls increased due to the absence of parents.

Nguyen *et al.*, (2013) found the effect of internal and international income on health and education care exploitation of children in Vietnam. The study showed no significant impact of remittances on children enrolment at school and also no significant results for child labor. Due to international remittances grades of the students increased. Both internal and international remittances improved the health of the children. It means that in this study remittances have a positive effect on health of the children and also grades of the students improved.

Roy *et al.*, (2015) found the effect of rural-urban migration on the children's education in India. They used qualitative and quantitative techniques to check the impact of foreign income on enrollment of the students and gender gap. Estimation result showed that due to remittances enrollment of the students increased and students drop out from school due to some reasons when families received remittances, drop out of the students decrease and gender gap also reduced. So remittances have a positive impact on education.

Arif and Chaudhry (2012) worked on the effect of migration on school enrollment and outcomes and drop out from school in Punjab. They used Probit model and ordinary least square for estimation. Results showed that there was a positive effect of remittances on enrollment and performance of the students. Due to remittances students have more years of schooling and dropout rate of the students from school decreased. Khan and Khan, (2016) examined the effect of foreign income on enrolment and educational performance in Pakistan. They used Probit model for enrollment and instrumental variable technique used for students' grades.

The effect of remittances on enrolment and grade of the students was positive and significant and foreign income has a negative effect on urban children. Morooka and Liang, (2001) worked on the impact of emigration and the education in China. The Logistic model used for enrollment and results showed that there was the positive impact of remittances on enrollment of the students and also gender gap between children reduced. They also found that enrollment of the girls from non- migrants was still less than those girls who were belongs to the migrant's households.

2.4. Relationship between remittances and attendance

Matano *et al.*, (2013) found that the role of remittances in Moldova and showed that due to remittances human capital was increased. The findings were showed that the foreign income has a significant effect on higher education. They used Probit and Iv Probit techniques for estimation. Families received remittances and their behavior changed and showed a significant impact on education and increased the chance of attending high level of education by thirty-three percent. So the migrant's education level has a strong positive and significant impact on family member's education.

Cox *et al.*, (2003) investigated the impact of foreign income on schooling in El Salvador. Remittances played very important role for education in El Salvador. Remittances became an important source of household income. This study found the relationship between foreign income and school attendance has significant. International remittances have an impact on both rural and urban areas of leaving school but the more significant effect of remittances in rural areas. Family income, parental schooling, sex, residence and family size were played a very important role for the performance of the school students.

Dorantes *et al.*, (2008) explored the effect of foreign income on school children in Haiti. Finding of the study showed that the remittances raised school attendance for all children in all families as they belonged to migrants' household or not. There were opposite impacts of remittances on nonmigrant's families and migrants' families of children's schooling. Chaaban and Mansour, (2012) found the effect of foreign income in Jordon, Lebanon and Syria on education. They divided students into two groups according to age 15-17 and 18-24. They used Probit and Censored Probit model for attendance and attainment of the students. Results showed that there was the positive effect of

remittances on enrollment in Syria and Jordan so significant results for boys than girls whose age were 15-17 in two countries. In Lebanon students of eighteen to twenty-four ages have less impact of foreign income on their education.

Mansour *et al*., (2011) found the effect of migration, foreign income on attendance and educational performance of the students in Jordan. The findings of the study were school attendance and education attainment. This paper showed that there was significant impact or remittances on school attendance. The results showed that the remittances have effect on both enrolment and education outcomes of the students and impact of remittances was greater for men than women. Khan, (2016) investigated the effect of remittances on attendance of the students at primary level so there was significant impact of remittances on the attendance of the students at primary level.

2.5. Relationship between remittances and academic performance

Remittances played a significant role for the performance of the student who received remittances. Remittances have positive and also negative impact on students' performance. Abbasi *et al*., (2000) found the impact of remittances on migrants' families so there was a significant impact of remittances income of the migrants' families. Educational attainment and the age of the migrant were very important. They used chi-square and regression analysis to check the variation and showed that there were positive and significant impacts of remittances on the migrants' families.

Arguillas and Williams, (2010) investigated the effect of parent's migration on school attainment of the children. Results showed that there was a negative impact on children school outcome when parents were abroad. Kollner, (2013) found that the effect of foreign on educational attainment in Tajikistan. There was a problem of endogeneity so the coefficients of the remittances variables became insignificant. Probit model used for estimation. Results showed that there was negative impact or remittances on educational outcomes.

Mansuri, (2006) showed the effect of migration on performance of the students and child labor in rural Pakistan. Author used instrumental variable (IV) technique to see the effect of migration on child education and child labor in rural Pakistan and data taken from Pakistan Rural Household Survey 2001-02. Estimation result showed that short-term migration has a significant effect on child school attainment. Those children who were from the migrant's families they have more year of schooling; their dropout rate were lower than non-migrant's families. Impact of migration was greater for girls than boys. Hu, (2013) worked on migration and schooling of children left behind in rural china. Ordinary Least Square used for the performance of the children left behind. Results showed that when a family adult or their parents are absent so boys' educational performance effect but not too much than girls' education due to the absence of parents effects girls education negatively. So the education of boys effects less than girls.

Borromeo, (2012) investigated the effect of remittances on the educational success of students in Philippines. Probit-model used for estimation and showed that there was the positive effect of remittances on high school students and negative for elementary school and college students. So parent's education is essential for the children. Bouoiyour and Miftah, (2015) analyzed the effect of migration and foreign income on the education. They examined the impact of migration and remittance on the determinant of education savings for the male and female in the rural Morocco. Probit model used for estimation and results showed a significant effect of foreign income on male students whose age was 18 to 20 and negative effect for older students and for females. Mchenzie *et al.,* (2011) found the effect of migration on schooling attainment in Mexico. They used Ordinary Least Square (OLS) and Two Stage Least Square (2SLS) for estimation and showed positive effect of migration on schooling attainment.

Nasir *et al.,* (2011) investigated that the impact of foreign remittances on the educational attainment has a significant impact. When people received remittances poverty burden reduced, consumption

113

increased and the behavior of household families changed. The finding of the study was the impact of remittances on educational performance. They used OLS and results were significant for the performance of the students. Remittances have a significant effect on children's performance if without considering parents' education. But if we consider parents' education then the results became insignificant. when Parents were uneducated, current income of the family was low so then the education of the children was affected. Family type and family size played a significant role in the educational performance of children. Zaho and Glewwe, (2009) investigated the school attainment in china. Censored Probit model used for estimation and results showed that positive impact on school attainment. They also explained that mother education played significant role in the education of the children.

The literature showed that remittances have positive and also a negative impact on school enrollment, attendance, performance and behavior of the people at national and international level. Some studies showed that foreign income has negative impact on education so there no relationship between remittances and education. It means that there were also other factors that affect student's education. Some studies conducted in Pakistan and showed that remittances have positive impact on education. When families received foreign income their poverty burden reduced and they invest in their children education. Enrollment of the migrant's children increased their education attainment improved due to foreign income. So there was a direct relationship between education and remittances.

3. Data and Methodology

3.1. Study area and data

Primary data was collected through questionnaires. Study area was Hajira that is the tehsil of district Poonch of Azad Jammu and Kashmir. Hajira is nearest to Indian occupied Kashmir. Hajira is sub-divisional headquarter of district Poonch. Tehsil Hajira has eight union council and four union councils were selected for data. Four union councils were Dara Ser Khan, Mandhole, Phagwati and Shar.

3.2. Target population

The total population of tehsil Hajira is almost 80 thousand. The target population was migrants and non- migrants from four union council of tehsil Hajira.

3.3. Sampling framework

The sample size was 150, which was collected from eight villages of tehsil Hajira. From each village 18 households were randomly selected with the help of each village residents.

3.4. Analytical framework

Logistic regression model is used when dependent variable is binary in nature. When dependent variable takes value (0, 1) when can apply logistic regression model for estimation. Logistic model is usually used for small sample size.

3.5. Logistic Regression Model for Enrolment

Variables which illustrates binary nature (0,1) we highly prefer logistic model (Maddala, 2007 and Gujrati, 2005). Logit(Pk) =Log-odd ratio, in a logistic distribution as p is 0 then logit p is –infinty and as p is one logit p is +infinity. The association among response and predictor is usually notlinear in logistic estimation that is why logistic model have no assumption for predictor (Abdelraman, 2010).

3.6. The Odd Ratio

Odd ratios are sort of probability that some outcomes will occur. If the odd ratio is greater then one then there is probablity of success and if odd ratio is less than one then there is probablty of failure. Odd ratio is useful for interptation when variables are categorical.

3.7. Goodness of Fit Test of the Logit Model

The goodness of fit test for logistc regression model by binary response was introduced by the Hosmer and Lemonshow(1989). The value of hosmer lemonshow test lies between (0-1). If the value of hosmer lemonshoe test is zero the predictors are unless at preidicting the outcome varaibles and if value is 1 the outcomes variable is predictly perfactly.

$$\text{EHEpi} = \beta_1 + \beta_2\, EduM_i + \beta_3\, EduFi + \beta_4\, Ge_i + \beta_5\, Inci + \beta_6 MO_i + B_6\, Head_i + B_7 Rem_i + \ Ui$$

i = 1, 2, 3.............., 150

Where

EHEpi= Enrolment higher education (enroll=1, otherwise=0)

$EduM_i$= Education of the mother in years

$EduF_i$ = Education of the father in years

Ge_i= Gender of the student (Female=1, Male=0)

Incomei= Annual income of the family

MO_i= Mother occupation

$Head_i$ = Head of the household

Rem_i= Remittances of the famil

Model for the Performance of the Students

Nasir *et al.,* (2011) used Ordinary Least Square for the educational performance of the students. So in this analysis author use OLS to check the performance of the students in higher education. Data of the performance was collected in percentage form. So performance is quantitative variable we can apply OLS.

PE= $B_1 + B_2 Mi + B_3 ME + B_4 FE + B_5 He + B_6 Me + u$

M_i= Migrants or non-migrants (0, 1)

 ME= Mother education

 FE= Father Education

 He= Head of the household

 Me= Member of the family

4. Results and Discussions

4.1 Multivariate analysis

In this section multivariate analysis of the single equation model has been done. Multivariate analysis is used when regression equation contains more than two variables and in which independent variables have causes and effects on the dependent variable. Independent variables are causing variables and the dependent variable is effect variables. Here independent variable is enrollment which is binary or dichotomous have value (yes=1, No=0). And independent variables are mother's education, father's education, the gender of the student and family type of the households. The Author applies the binary logistic model in multivariate analysis.

4.2 Logistic Regression Analysis

The maximum likelihood estimates for logistic regression are in the table. Some correlates are highly significant at 5 percent level of significance. The result indicates that households in which mothers are working in either private of the public sector have better and statistically significant chance that their children enrolled in higher education. Because if mothers are educated they do job and mother's education is necessary for the children's education.

The results also indicate that if the head of the household is a father there is more chance that children enroll in higher education because if the father is abroad it effects children education mostly boys education. When the father is abroad male children have many responsibilities at home, and also evolve many bad activities. The results also indicate that enrollment of the girls are more than boys from the households and table also showed the significant results. Some variables have not significant results for the enrollment of the students.

4.3 Odd Ratios

Odd ratios a bit more intuitively appealing way of lending suitable explanation to the results found for logistic regression. This table also showed the odd-ratio value for each correlate. Ennin et al., 2011 state that if value of odd ratio is greater than it means that "success" and less than one it means that "failure" for a unit change in X and in a case less than one, this implies that event is less likely to occur for a unit change in X. Consequently, as the dependent variable in this study assumes 0 for not enrolled and 1 for enrolled.

In this table, all odd ratios are greater than one which showed that if the mothers were working 32 percent chance of students to enrolled in higher education than non-working. Mother education showed that 5 percent more students enroll in higher education than those mothers who were not educated. Odd ratio of gender showed that 20 percent females more enrolled than males. Odd ratio of income showed that 9 percent students enrolled in higher education than who are not enrolled. When father was head of the household 12 percent more children's enrolled in higher education than those household head was a mother. When fathers are educated 11 percent more children enrolled in higher education than those not enrolled. Remittances have significant impact on the enrollment of the students because significance value was 0.002 and odd ratio was 2.905 which showed that odd ratio was greater than 1 so here is chance of success.

4.4 Goodness of Fit of the Model

The goodness of the fit model was assessed by applying the Hosmer-Lemeshow test. Hosmer- Lemon show test lies between 0-1, if the value is close to 1 the model is good fit and if the value is close to zero the is unless to explain the outcome variable. In this study value of Hosmer- Lemon shoe test is 0.751, this value is close to one so the model is good fit.

Table 1: Results of Logistic Regression

Variables	B	S.E	SIG	EXP(B)
Mother occupation	2.120	.824	.010	8.329
Mother education	.053	.166	.748	1.055
Gender	.791	.380	.038	2.205
Income	.092	.221	.677	1.096
Head of the households	1.141	.386	.003	3.129
Father education	.108	.186	.563	1.114
Remittances	1.066	.344	.002	2.905
Constant	-2.852	1.066	.005	.058

4.5 Results of performance of the students

Dependent variable was performance of the student in higher education in the analysis. Independent variables were income of the family, father education, mother education, migrants and non-migrants and members of the family. Most of the variables were significant it means that these variables were positively related with performance of the students. Mother education was positively related with the performance of the students because significance value was 0.002. Income of the family was positively related to the performance of the students at the significance level of 0.022.

Father education was negatively related to the performance of the students because significance value was greater than 0.05. Member of the family was also negatively related with the performance of the students; significance value was greater than 0.05. D1 (Migrant) was negatively related with to performance of the students and also cross tabulation results support these results

Table 2: OLS Results

Variables	B	Std. Error	T-statistics	Sig
(Constant)	39.785	7.220	5.510	.000
D=1(Migrant)	-10.557	2.636	-4.004	.000
Father education	1.179	1.178	1.001	.320
Mother education	3.064	1.023	2.995	.004
Income of the family	4.356	1.869	2.330	.022
Member of the family	-.695	2.133	-.326	.745
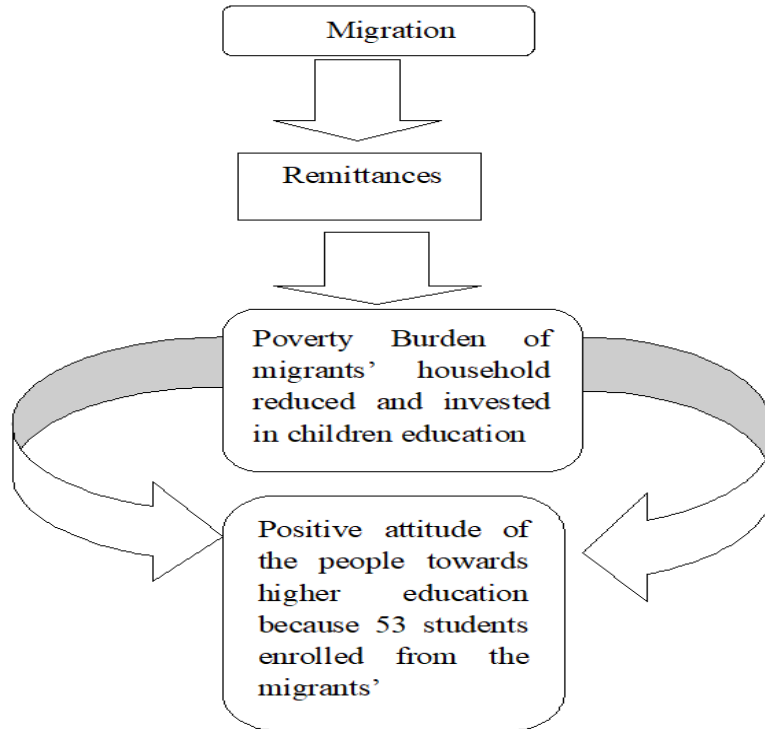
Figure 1: Positive Attitude of the Migrant's Households towards Higher education

This figure showed positive attitude of households towards higher education when they received remittances. When people received remittances their poverty burden reduced and they invest in children education. When households received remittances 53 children were enrolled in higher education. So enrollment of 53 children showed positive attitude of the households because people spend foreign money on the education of their children.

Table 4.19: Negative Attitude of the Migrant's Households towards Higher Education

Less benefit in future	10	6.7
Earnings from business more than job	6	4.0
Education is expensive	2	1.3
Total	18	100.0

This table showed the negative attitude of the households towards higher education when they received remittances. From the migrant's households 6.7 percent think that less benefit in education 4.0 percent think that earnings from business more than job and 1.3 percent think that education is expensive.
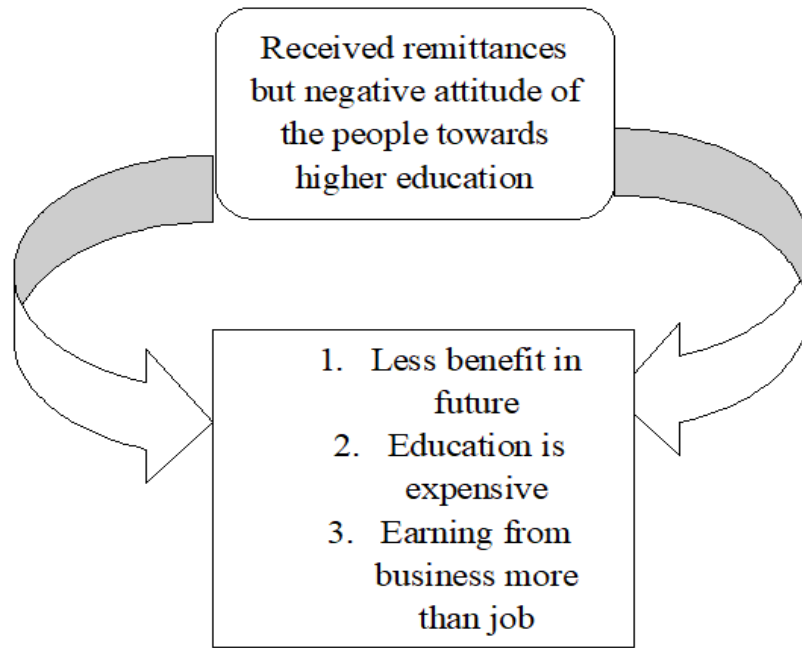
Figure 2: Negative Attitude of Migrant's Households towards Higher

This figure showed the negative attitude of the people towards higher education. Because they think that from education less benefit in future education is expensive and earning from business more than job.

Table 3: Weightage to Education and Migrants

Weight to education	Migrants	Total
Good citizen	30	58
Better living standard	17	33
Earning purpose	13	25
Better decision	15	34

This table showed weight to education and migrant attitude. 30 parents out of 58 households give education to their children to be good citizen, 17 parents out of 33 give education to their children to better living standard. 13 parents out of 25 households give education to their children for earning purpose, 15 parents out 34 households give education to their children for the better decision in future. So these results show that due to remittances attitude of the people change they send their children for education and tells that why they send their children to college or university.

5. Conclusion and summary

International remittances are playing significant role in the development of recipient households in developing economies. In Pakistan mostly people migrate with the motive of increasing living standards of their families. Remittances are also contributing in growth of Pakistan. Remittances are also playing important role in Azad Jammu and Kashmir. Major group of Kashmiri people migrate to improve their living standards of their families.

Present study is conducted in Hajira which is the tehsil of district District Poonch. In Azad Kashmir district Poonch is at the second number receiving remittances from aboard. Motive of the study was to check the effect of foreign income on higher education. In order to achieve the objectives of the study 150 households were surveyed for data collection by using questionnaire.

The collected data was then analyzes using SPSS. Univariate, bivariate and multivariate analysis calculated and discussed. Foreign income has significant impact on enrollment and performance of the students. But al last category of performance of the student mostly non migrants' families' students fall. It means that absence of father also affects the education of the children. Foreign income has significant effect on the attitude of the people their behavior change and people enroll their children in higher education. Remittances have also positive impact on the performance of the students of the migrants than non-migrants at two categories and in last category non-migrants' children's fall. Parents' education has also positive impact on children enrollment in higher education Logistic regression model was applied to check the enrollment of the Students in higher education. Mother's education, father's education, and head of the family, mother occupation, Gender of the student and income of the family are independent variables in the model. Mostly variables are significant it means that foreign income has positive impact on higher education.

This study investigates the effect of foreign income on enrolment of the students, performance of the students in higher education and attitude of the people toward higer education in district Poonch. Data were collected from four union council of tehsil Hajira and sample size was 150. This analysis used univariate, bivariate and multivariate analysis to fulfill the objectives of the study. univariate analysis, shows mean and standard deviation of all quantitative variables and frequency table shows the percentages of all qualitative variables. In bivariate analysis, the author does the cross-tabulation of the two, two categorical variables and in multivariate analysis logistic regression run for the enrollment of the students.

The effect of foreign income on the attitude of the household is significant because when household receive remittances their behavior changed and they enroll their children in higher education. The results show that foreign income has significant effect on enrollment of the students because enrollment of the migrants' households' children more than non-migrants.

5.1. Policy recommendation

Migration has advantages as well disadvantages, the major advantage of migration is increase in remittances causing high income, increase consumption, saving and in this way has a positive effect on the economy. The basic reason of migration is lack of employment opportunities in our country so there is need to enhance the job opportunities in our country so that brain drain can be minimized and our talent can be utilized in our own country and leads our country to development. Remittances have positive effect on children education but performance of the student's effect due to the absence of father, so there is need to provide better job opportunities in home country. Government should introduce special program for the children of non-migrants to improve their enrollment in higher education.

5.2. Limitations

Primary data was collected from selected areas of District Poonch(AJK). This study can be extended to all ten districts included in state Azad Jammu and Kashmir (AJK).

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121

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The Statistical Association between Macroeconomic Indicators and the Performance of Commercial Banks in Pakistan

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Abstract

The banking industry of Pakistan is growing over years and it is playing a dynamic role in enabling the business environment in the country. The idea is Constructed on the fact, that there is a substantial impact of commercial banks (CB) on the economic advancement of the country. in response, the macro dynamics of an economy also influence the very existence of Banking and its footprints on the economy. Banks are operating to smooth out the transaction process in the economy to cause ease for doing daily life business. It is important to investigate that the changes in the macroeconomic factors of a country can have serious implications for the profitability dynamics of these banks. This paper examines the cost-effectiveness of CBs in Pakistan for the duration of (2006 to 2018), against the variations in the macroeconomy. The study is based on Panel data assessment methods, to examine the effects of foremost external factors i.e. Exchange rate, GDP, Interest rate, and Money supply on the profitability of CBS in Pakistan. This study uses Return on Assets (ROA) and Return on Equity (ROE) to measure the profitability of banks in Pakistan. The study uses a random effect model and the outcomes of this study demonstrate that, in the case of Pakistani CBS, the impact of selected macroeconomic factors is almost negligible to determine a bank's profitability except for only one factor, that is the money supply, which expresses a progressive influence on banks' profitability in Pakistan.

Keywords: Exchange rate, ROA, Interest rate, ROE, Inflation rate, and Money supply

JEL Classification: B26, G21, G32

1. Introduction

Every organized economy has a financial system, that is comprised of Financial institutions, banks, and regulatory authorities, which under certain conditions allows the interchange and transfer of funds concerning lenders, borrowers, and investors to assist the process of business and individual transactions. The financial system can be also described as an organizational setup that exchanges and transfers, and facilitate the excess funds from individual to individual and from individual to organization with surpluses to those with deficits or for investment purposes. It is consisting of legal structure, financial instruments, and institutions and individuals dealing with the flow of funds. It operates at the domestic level and global levels. Moreover, it comprises closely related goods and services, complex markets, and financial institutions that intend to facilitate and provide proper, efficient, and regular relationships between depositors and investors. In the system, the functions of financial institutions such as banks are very important to manage to generate positive returns. Their basic role is to assist and channel the funds from surplus into deficit economic entities.

The essential and critical instrument in fulfilling the pioneer function is to guide the flow of scarce essential financial resources to invest for higher interest rates and to gain the highest return. According to Akard (1992) a well-organized monetary structure is not only critical for the local mobilization of capital, but it also serves as a source for the acquisition of viable leads for capital. It is significantly supportive of the utilization of resources through proper channels that can be counted in the national income. The financial system is there to improve the efficiency of intermediation by exploring and expanding the information and reducing the monitoring cost and transaction costs which increases the margin of profits for all the stakeholders.

The modern financial system creates investment opportunities and promotes the investment cycle. It also provides good business opportunities, enables trading, monitors the performance of authorized managers, accumulates savings, and provides the opportunity to effectively interchange goods and services. The most efficient functions are the allocation of capital resources, channelizing human capital efficiencies, and accumulating physical capital with fast technological progress for the development of sustained economic growth Al-Malkawi et al. (2012). After its independence, Pakistan has attempted notable efforts for the development of commercial banking sectors in the country, to increase the efficiency of monetary policy.

The Pakistani financial system is measured as an essential part of macroeconomic policy. From time to time policymakers have done financial reforms for the effective mobilization of funds and to increase domestic savings. From 1947 up to the 1980s, Pakistan focused on necessary infrastructure and introduced new reforms to support different macroeconomic factors policy. In the early period of independence, the financial sector remained seriously controlled under certain government interventions. The monetary policy was introduced for the direct allocation of credit. At the initial stage equity market and bond market were virtually nonexistent and the money market was underdeveloped. The new commercial banks of Pakistan often have to offer loans to priority sectors and were concerned with the borrowing firm's profitability. From the 1970s to the 1980s the macroeconomic condition of the country was unstable due to economic crises conditions as well as political conditions. The government of Pakistan introduced policies to overcome the financial system difficulties and increased the country's economic growth.

The key purpose of these policy reforms was better allocations of financial resources, exploring the level playing field for financial institutions and financial markets for introducing a competitive environment, exchange rates and credit risk management, etc. The reforms suggest that the main goal is to shrink the additional cost associated with borrowing on domestic debts. The other objective was to boost the private sector credit expansion. The policies of SBP are very much adjustable to other registered commercial banks in Pakistan. Anwar (2011) found that banking structure reforms in Pakistan were introduced to address the issues like interest rate fluctuations, privatization of government sector banks, and decline of profits in commercial banks. In 2002 Islamic banking system was introduced in Pakistan and registered with the Karachi Stock exchange (Pakistan Stock Exchange). Economy of Pakistan (2012) report points out that large-size banks are relatively robust to macroeconomic factors fluctuations as compared to small banks. The reason for this is the bounce-back capacity of large banks due to high reserves. Cost-effectiveness is demarcated by Flood & Rose (1999). which is measured by the deduction of tax on the return on assets and equity. The study further debated that multiple peripheral dynamics can disturb the cost-effectiveness fractions of the banking industry.

The studies of Staikouras & Wood (2004) found that there exists a considerable association between macroeconomic indicators and the banking sector. However, as per the available literature and established knowledge, only a few studies including the studies of [Ali, et al. (2011); (Gul, et al. (2011)] papers have covered a short time, which if expanded to a large time, can reveal some new outcomes for policy suggestions. On the other hand, in the case of Pakistan, the utmost of the preceding readings has checked the impact of fundamental/internal/banks specific factors on its profitability. This paper intends to identify the key external fundamentals that have control over the enactment of banks directly or indirectly. The study attempts to explore the statistical association

between bank-specific performance indicators and Macroeconomy, which can help policymakers to comprehend the dynamics of the microeconomic agents and the influencing macro components.

This paper is an extension of the work, which has already explored this area of research but with a small sample, as per the knowledge of the authors, authors of this study have not yet found a paper in the case of Pakistan, with a large sample size that has studied and reviewed the relationship between CBS and these important components of the economy with large data set and comprehended it for easy understanding of readers and policy thinkers. The extension of the sample size will help us to validate the results found by the previous studies. Most of the studies have debated this issue in short time dynamics and the current study is striking up a debate over a longer time to see if the findings of previous studies hold up to Pakistan's financial system or if it reveals a new insight into the existing debate on banking economics. To see whether the finding of these studies holds, this paper attempts the hypothesis tests with a large data set.

The current paper puts hypotheses on board to test, which theoretically can be stated as; there is no statistical association between Return on assets and macroeconomic indicators, including GDP, Inflation, Interest Rate, Exchange Rate, and Money Supply. This is the broader version of our hypothesis but specifically, each of the variables will take its direction suggested by the economic theory. However, econometrically the hypothesis of the current study can cover all the variables in a single line with the specification and it is based on the assumption selected econometric model. the individual unobserved heterogeneity is uncorrelated with the independent variables. This study is interested to reject this hypothesis and thus attempts to investigate the statistical association between return on assets and GDP, Inflation, Interest Rate, Exchange Rate, and Money Supply. This study attempts to explore answers to the question. Is there exist a statistical association between Micro indicators and Macro Indicators, in the case of the banking sector of Pakistan?

This study is organized as follows: section one covers the introduction, the objectives of the paper, and the significance of the paper; section two focuses on the literature review; section three is about the research methodology; section four covers data analysis, results, and discussion. Finally, section five presents the conclusion and policy debate.

2. Review of Literature

There are tons of studies are available on this specific area of research, that have explored the association between the banking industry and its association with the macroeconomy. Based on the argument that this research is carried out in Pakistan, starting from the evidence of Pakistan. During the worldwide financial crisis, a study published by Aburime (2009) examined the link between macroeconomic dynamics on banks' performance, and at the same time Pasiouras & Kosmrdou (2007) and Sufian (2009) conducted studies found there is a statistically significant correlation between interest, inflation, and bank profitability.

In the context of Pakistan story was not different, for instance, the study of Kanwal & Nadeem (2013) investigated the relationship between banks, profit (using Return on assets and Return on Equity as profit proxies), and macroeconomic determinants factors (i.e. GDP, Inflation, Interest rate). The study used a data set of CBs over multiple time points for Pakistan. As per the findings of the paper, the inflation rate has a significant and adverse association with ROA. Another highlight from this study is that the GDP has a positive but inconsequential power to cause variation in ROA, which points to some other important reasons that may affect the cost-effectiveness of CBs in Pakistan.

To dig out for further influencing reasons, the review adds the study of Gul et al. (2011) to the debate, which stated the relationship between banks' performance and macroeconomic external factors exists. The study used panel data from 2002 to 2012 for the effects of the financial performance of CBs in Kenya. The study explored that GDP, inflation rate, broad money supply, and interest rate have a positive and significant effect while the exchange rate has a negative but statistically insignificant influence on ROA.

The same results have been found by Gul et al. (2011) for the GDP and Inflation. Both macroeconomic factors have a direct and significant relationship with ROA. If the expected general inflation rate is high in the future, they consider that they will increase their interest rate. Then

125

anticipated inflation will be equivalent to the real inflation rate and results show a positive effect on banks' performance with no decline in business activities Solovjova (2011). Furthermore, Riaz & Mehar (2014) used panel data for a time period of 2006 to 2010. The study analyzed the profitability of listed CBs in the context of changing macro dynamics in Pakistan. The study established that there is a positive and significant association between GDP and ROA and ROE, however, the interest rate is negative but insignificantly associated with the effectiveness of CBS. On contrary.

The study of Sharma & Mani (2012) investigated the relationship between banks' profitability and macroeconomic external factors, using panel data from 2006 to 2012 and the study found an insignificant connection between external factors and ROA. Additionally, the study by Zeitun (2012) found that macroeconomic external factors influence banks' performance. This cross-sectional data found that the inflation rate has a negative and significant association with banks' performance ratios. Bashir (2003) examined the results of anticipated inflation and unanticipated inflation for the performance of banks'. The impact of anticipated inflation is mostly positive while the unanticipated inflation effect is negative toward the profitability of banks. The output of anticipated inflation is positive because the banks' have an opportunity to adjust the inflation rate and gain profit on the base of the adjusted inflation rate. As a result, the revenue trends improve (increase) as compared to the total cost.

Adding up to the debate a study by Kipngetich (2011) conducted in Kenya, found a positive and significant relationship between interest rates and banking performance. CBS has the authority to fix and adjust the interest rate according to the bank's policy under the guidelines of the central bank for the financial year. A recent study before COVID19, conducted by Pacini et al (2017) examined the association between macroeconomic factors and the performance of financial firms in the United Kingdom. A significant sample of data was collected top hundred firms' data from 2000 to 2014. The results show that GDP has a positive impact on financial firm performance. Concerning methods, if the literature is explored, it can be seen that back in the 90s a study by Demirguc & Huizinga (1999) applied a linear regression model for the data analysis to come up with empirical results for CBS. The data is collected data of different (eighty) countries from the different regions for various banks' The results found that macroeconomic variables have a positive but insignificant relationship with banks' profitability because some countries are stable and some are economically weak with lower capacity to absorb economic shocks.

Another study by Naceur & Goaied (2008) used panel data for the top stable deposit banks in Tunisia. The study found that there is an insignificant impact of external determinants (GDP and Interest) on the performance of Tunisia banks. Moving across the Globe, an additional study by Saad & Moussawi (2012) from Lebanon investigated the association between inflation rates and the profitability of CBS with the backup of Panel data for the period of 2000-2010. The results show that inflation rates do not affect profitability while credit risk affects the profitability of commercial banks earning in Lebanon.

Many studies like Alper & Anber (2011) examined the significant relationship between GDP and ROE. GDP shows a negative and insignificant influence on ROA. The same result was found by Kanwal & Nadeem (2013) GDP and ROE are negatively significant to each other due to customer choice and profit. Customers lack information about the loan and investments which is why it leads to negative and insignificant relationships with each other. The results of macroeconomic determinants are inverse to banks' profitability in the case of Pakistan due to fluctuations in the inflation rate and the insignificant amount of saving ratio. Furthermore, the studies by Ali et al (2011) and Gul et al (2011) explored the association between banks' performance factors and macroeconomic factors. These papers have used short panel data for listed CBS in Pakistan from 2000 to 2009. A positive and significant affiliation between external factors and the performance of CBS was established by these both studies.

Demetriades & Hussein (1996) investigated that financial fund is the main and leading macroeconomic in the progression of economic growth in the country or other financial performance firms. Thus they have further explored the causality for bi-directional in the majority of the countries but in some areas, the development of the financial system follows the strong economic growth in

the country. Luintal & Khan (1999) collected data from ten different developing countries from different regions and found the causality effect between the development of the financial system and output growth is bi-directed in the sample selected countries.

Rajan & Zingalas (1996) found the results for the importance of financial development process growth. The paper's results show that it needs to focus on the financial structure and sources of company finance. They have concluded the financial sector facilitates and provide an opportunity to improve the growth of the corporate sector. Masood & Ashraf (2012) investigated the association between banks specific and macroeconomic factors. They have used panel data for twenty-five Islamic banks of twelve different Islamic countries for the paper duration of 2006-2010. They found that Real Gross Domestic Products (RGDP) harms ROA and a positive significant impact on ROE. The other bank-specific variables (operating efficiency, deposits, and liquidity) have a negative insignificant impact on Islamic banks' profitability for the 12 different Islamic banks. Moore & Craigwell (2000) explored the relationship between CBS 'determinants over the financial spread for 1990. They have found that GDP, market power, and provision for loan losses have a significant influence on banks' spread (i.e. bank's performance ratios).

Mwanza (2007) explored the association between bank profit and exchange rate and found that exchange rate and banks profitability are negatively related to each other because a higher level of exchange rate leads to lower performance in CBS. Ali et al. (2011) found a relationship between the factors affecting the profitability of Islamic banks in Jordan. Authors have used a multiple linear regression model for panel data from 2005 to 2009. The result shows that GDP, Inflation rates, exchange rates, and other internal factors have a positive and significant association with ROE. The study by Amidu & Wolfe (2008) explored the relationship between money supply and economic support factors in Ghana for the period of 1998-2004. The monetary policy affects the money supply. They have found that money supply and the country's economic support significantly affect the banks' lending rate (i.e. bank's behavior). Moreover, the results show that the inflation rate negatively and insignificantly affects the banks' lending rates in Ghana.

Zaheer & Farooq (2014) explored the affiliation between seven macroeconomic risk factors and the return of textile and banking sectors. They applied Generalized Autoregressive Conditional Heteroskedasticity (GARCH) method for the period of 1998 to 2008. The results show that money supply, exchange rate, and other macroeconomic factors have a positive and statistically significant impact on the returns of the textile and banking sectors. Siaw & Lawer (2015) used a co-integrated approach for the determinants of bank deposits in the short run and long run in Ghana. They have found that in the short run, inflation rate and money supply show a positive effect while inflation shows a negative effect in long run.

Khrawish (2011) examined the association between external determinants and internal determinants of commercial banks. They found that the exchange rate has a positive and statistically significant connection with commercial banks but a negative and insignificant association with growth rate and inflation rate towards ROA. Goddard et al (2004) examined that the relationship of GDP is positive and significant with bank's profits and stable GDP gives the profitable opportunity to banks

Bourke (1989) indicated that inflation has a negative and significant association with bank profitability because if anticipated inflation occurred then banks will deal with proper strategy according to the situation and will adjust to the anticipated inflation rate. Wong & Joshi (2015) explored the relationship between GDP and inflation, they show a positive and significant effect on Return on Assets (ROA), and the same results were shown by Alper & Anber (2011) for the external factors toward the profitability of banks.

Saksovona & Solovjova (2011) explored the relationship between internal determinants toward external determinants during the period of economic crises. GDP has a positive but inflation harm ROA. Bilal et al (2013) investigated the association between banks' specific factors in the listed CBS of Pakistan. They used panel data from 2007 to 2011. They found that the external determinant i.e. inflation rate has a positive and significant impact on ROA and ROE. The results show that there is a positive influence on new business and industry production growth rate. It indicates the rise in production increases the productivity of banks in a country.

127

Ally (2014) explored the relationship between banks' profitability and external macroeconomic factors (e.g. GDP, inflation, interest rate). The GDP coefficient is positive and statistically significant. There is a direct association between GDP and banks' profitability. When the GDP growth trend is positive then the effect on banks is positive and when the GDP growth trend is negative the effect on banks' profitability is negative in Tanzania. Furthermore, the results show that the economy in Tanzania has a higher level of fluctuations but tends to achieve the improvement targets in some macroeconomic factors. The positive impact of GDP on banks' profitability has been supported by the studies of [Athanaoglou & Staikauras (2006); Ally (2014); Naceur, & Goaied (2008); Flamini, et al (2009); Khan et al. (2022)].

Ally (2014) found that inflation has a negative but insignificant impact on the return of Tanzania banks. The main reason is to point out that it occurred due to an unanticipated inflation rate and so not able to the hidden part of changes occurring in the economic factors. These results are also acknowledged by Khrawish (2011), Saksonova & Salovjove (2011), Naceur, & Goaied (2008) and Kunt & Huizinga (1999) that the inflation rate has a negative and insignificant impact on the returns of banks.

Saeed & Akhter (2012) explore the relationship between macroeconomic determinants on the returns of banks in Pakistan. A minor influence of macroeconomic factors on the performance of listed CBS in Pakistan is evident. Money supply has a negative and insignificant influence on banks' profitability. Interest rates and exchange rates have positive but insignificant associations with the return of banks.

Muwanza (2007) supported the studies and they found that a higher level of exchange rate leads to lower performance of CBS. Maigua & Mauni (2016) examined the relationship between exchange rates and the performance of banks in Kenya. The results show that the exchange rate has an inverse relationship with CBS performance and so there exists a negative and insignificant relationship between exchange rates and banks' returns. A study by Iftikhar et al. (2022) investigates the same problem in the context of the business cycle. The diverse findings of studies all across the world at different points in time have motivated authors to reproduce this paper on the same issue with a large data set.

3. Data and Methodology

In Pakistan, there are in total of 30 conventional banks CBS which include 22 privatized local banks, 5 public specialized banks, and 4 foreign banks. This paper takes a sample of 16 banks out of 22 with a total of 31 banks, especially excluding the foreign and specialized public banks. The data on macroeconomic variables including the rate of Inflation, Current Exchange rate, Gross Domestic Product (GDP), and Money supply are in use commencing the State Bank of Pakistan and the World Development Indicator (WDI). Furthermore, the data on internal factors of bank-specific variables are taken from consolidated annual reports of the bank (Balance sheets and Income statements) of the respective banks included in this research work. The bank-specific variables used here are ROA & ROE.

3.1. Important Variables of the Study

The construction of variables has been explained in Table 3.1

Table 3.1: Construction of Variables

Variables	Definition	Source

Return on Asset (ROA)	For considering the marginal efficiency and financial performance of banks, ROA is considered a good indicator. It shows how efficient and competent the management of banks is in allocating assets to generate profit $ROAi, t = \dfrac{Net\ Income}{Total\ Assets}$	Annual Report
Return on Equity (ROE)	ROE measures the return rate on common stockholders' equity. It measures the efficiency of banks at making profits from each unit of equity holders. It is calculated as; $ROEi, t = \dfrac{Net\ Income}{Total\ equity}$	Annual Report
Inflation rate	The data on the Inflation rate is cast-off to detect the overall increase in Consumer Price Index (CPI) for all services and goods. It is calculated as; $INF_i = \dfrac{CPI_2 - CPI_1}{CPI_1} * 100$	WDI
Real Effective Exchange Rate (REER)	REER is the ratio of the nominal effective exchange rate and the index of cost or price deflator.	SBP
Real Gross Domestic Product (GDP) growth	It is used as a broad measure of the Business cycle	SBP
Real Interest Rate	A real interest rate is a lending interest rate adjusted to inflation	SBP
Broad Money Supply	It is money in the form of notes or the form of coins or deposits in banks or other institutions	WDI

3.2. Model Specification

The following models are used in this research work

Model 1

$$ROA_{i,t} = \alpha_1 + \beta_1 MS_{i,t-1} + \beta_2 GDPG_t + \beta_3 INF_t + \beta_4 INT_t + \beta_5 REER_t + e_{i,t} \quad ....(Eq.1)$$

Model 2

$$ROE_{i,t} = \alpha_1 + \beta_1 MS_{i,t-1} + \beta_2 GDPG_t + \beta_3 INF_t + \beta_4 INT_t + \beta_5 REER_t + e_{i,t} \quad ..... (Eq.2)$$

Where,

ROA: Return on assets respectively to banks

ROE: Return on equity respectively to banks

MS_t: Broad money supply for the bank at a time (t).

$GDPG_t$: Annual growth of real gross domestic product at a time (t).

INF_t: Annual inflation rate (i.e. CPI proxy) at a time (t).

$REER_t$: Real effective exchange rate at a time (t).

INT_t : Real Interest rate for a bank at a time (t)

$e_{i,t}$: the composite error $\left(e_{i,t} = a_i + u_{i,t} \right)$

The unobserved bank-specific effect and the idiosyncratic error are represented by a_i and $u_{i,t}$ respectively.

The nature of the data used in this paper is panel data. The panel data is also termed longitudinal data. It is two-dimensional and involves measurement over a period that has multiple observations spreading over a wide range of phenomena over multiple periods for the same organizations. Panel data are used because it removes the problem of recognition/identification. Presently it is widely used

across economic fields solely because of its growing popularity in different spheres of research work. The reason panel data is more accepted is that it escalates the observation number and helps in controlling factors that cannot be calculated or observed like different types of practices in different firms or banks, or variables that tend to alter over periods but not across individual units. Further, this type of data allows a degree of freedom which minimizes the issue of multicollinearity and thus increases the efficiency of estimates (Hsiao, 2007). There are two kinds of panel data sets which are named "Balanced" and "Un-Balanced". The former contains each observation across each period, which means no observations are missed during the process while the latter contains some missing values for some factor variables across different periods.

3.3. Estimation Technique

Based on data characteristics, the correct model is specified to avoid the econometric limitations of the regression model, which does not fit the data. While dealing with panel data, the first step is to decide whether to run a regression with fixed effects or random effects. To opt for the appropriate effect, the Hausman test has been run which favors the random effect model for the estimation of final results on given data. The random effect Model is used in econometrics for panel data analysis when one supposes that there are no fixed effects. It is also termed a special case of a fixed effect model.

In this kind of model, the intercept is sometimes denoted as is supposed to be drawn randomly from a population with a single constant mean. The meaning of this statement is that the researchers use Random Effect Model when the sample taken from the population is large and we take the data values randomly to represent our regression analysis. As this research work uses some fixed amount of total banks so it was preferred to choose Random Effect Model as a representative model. The study has explained the meanings of the results in the following section.

4. Results and Discussions

This section of the study is to visualize the results with meaningful interpretations, which starts from the description of important statistics for selected variables to understand the data and present the status of data in aggregations and classifications.

4.1. Descriptive Statistics of Variables

The below table (Table 4.1) shows the important descriptive statistics including the mean maximum and minimum values of the macroeconomic variables included in this paper. The last row of the table shows that 208 observations are taken for each variable. The first column indicates the names of included variables. The second column indicates the average values of the variables where the variable with the largest mean value is the Real Effective Exchange rate (105.37) followed by the second large mean value of the exchange rate (104.22) and the value shown in the table as a mean of return on asset is (83.87).

Table 4.1: Descriptive Summary of Macroeconomic Variable for Full Sample

Variables	Mean	Std.Dev	Min	Max
GDP Growth	4.163077	1.484302	1.61	6.18
Inflation	8.868462	4.803153	2.53	20.29
Interest rate	2.347692	4.719237	-6.77	8.32
Money Supply	15.34385	8.573171	6.52	42.91
Real Effective Exchange rate	105.3715	8.227453	95.27	121.49
Return on Asset (ROA)	83.87981	45.98719	1	167
Return on Equity (ROE)	104.226	59.84385	1	207
N	208			

Source: Author's computation

The variables with the lowest average values are money supply (15.34) followed by inflation (8.86) and GDP (4.16). The variable having a minimum mean value is the interest rate (2.34). The third column of the table discusses the standard deviation. The lowest standard deviation is GDP (1.48) followed by the interest rate (4.71) and then the inflation rate (4.80). The other two variables exchange rate (8.22) and money supply (8.57). In the dependent variables, the highest standard deviation is ROE (59.84) and followed by ROA (45.98).

4.2. Random Effect Model Results

Table 4.2: Random Effect Model with ROA as the Dependent Variable

Variables	Coefficient	Std Err	P value
GDP	-2.544936	2.932191	0.385
Inflation	-1.08328	1.140355	0.342
Interest Rate	-0.017585	0.6177149	0.981
Exchange Rate	0.2193202	0.4205067	0.602
Money Supply	0.8026256	0.3378234	0.018
Cons	68.69078	56.7985	0.227
Sigma_u	38.298826		
Sigma_e	26.506867		
Rho	0.67612729		
No of Observation	208		
R-sq	0.0224		

Source: Author's computation

The above table shows that ROA is a dependent variable on which the independent variables are regressed over the random effect model. The first independent variable is GDP and the value of the coefficient shows that a single unit variation in GDP will lead to a change in the dependent variable by 2.54 units. But with a negative sign, which implies an inverse relationship. However, the coefficient and p-value indicate that there is no established statistical relationship between GDP and ROA. Inflation and interest rate also have a negative but insignificant relationship with the dependent variable ROA.

The former with a coefficient of -1.08 and the latter with a coefficient of -0.01. The p-values of inflation and interest rate are 0.34 and 0.98 respectively. Whereas the exchange rate has a positive and insignificant relationship with ROA. The measurement value of the exchange rate is exactly 0.21 and the p-value is greater than 0.05, which is also not a significant case. Only the variable that is important and statistically significant. As it shows that Money supply has a positive and significant relationship with ROA with a coefficient of 0.80 and p-value of 0.01. this means variation in money supply leads to variation in banking profitability, especially Return on assets increase with the increase in the money supply.

Table 4.3 shows a relationship between the return on equity and Gross domestic product, inflation, interest rate, and exchange rate. A negative relationship exists between return on equity and previously mentioned independent variables. Only the money supply has a positive relationship with ROE which means that an increase in the money supply in the economy will increase the ROE of the banking sectors of Pakistan. Gross domestic product has a coefficient of -1.02 and a p-value of 0.87 which shows a negative and insignificant relationship with ROE. Inflation has a coefficient of -2.15 and a p-value of 0.39 which is a negative and insignificant relationship with ROE.

Return on equity also has a negative and insignificant relationship with interest rate and exchange rate with coefficients of -0.80 and -0.62 and p values of 0.55 and 0.50 respectively. Money supply has a positive but insignificant relationship with ROE with a coefficient of 0.03 and a p-value acceding 0.05. These results line up with previously published work of researchers such as [Demirguc et al. (1999); Sufian, et al. (2008) Mayer, et al. (2021); Sufian (2009); Alper & Anber (2011); Sharma & Mani

(2012)] which indicates that not always, the money supply has significant implications for banking profitability. It can be also because indicators like Return on assets are isolated from the influence of monetary policy.

The results of this study in terms of the variable-specific association are supported by many papers, where Inflation rate, interest rate, and exchange rate results are supported by Kanwal & Nadeem (2012) and Gul et al. (2011) and money supply results are supported by Saeed & Akhter (2012). These studies' results are aligned with the findings of this paper.

Table 4.3: Random Effect Model with ROE as the Dependent Variable

Variables	Coefficient	Std Err	P value
GDP	-1.020454	6.490088	0.875
Inflation	-2.154097	2.524052	0.393
Interest Rate	-0.8057558	1.367245	0.556
Exchange Rate	-0.6211628	0.9307463	0.505
Money Supply	0.037771	0.7477357	0.962
Cons	194.3733	123.9685	0.117
Sigma_u	14.120779		
Sigma_e	58.670094		
Rho	0.05475552		
No of Observation	208		
R-sq	0.096		

Source: Author's computation

Money supply has a positive and significant relationship with ROA because if banks engage in loans to corporations, it will have an increasing impact on money supply as liquidity is injected into the economy and generate positive cash flows. Then in times of positive economic activity, these cash flows can rise and therefore the bank's income. Therefore, we see a positive significant impact of money supply on banks' ROA. Exchange rates have a positive and insignificant relationship because most commercial banks in the economy do not hold foreign assets or deal in foreign currency reserves. Therefore, income is not dependent on exchange rate fluctuations.

Money supply positive but insignificant relationship with banks' performance. Banks live in the same expectations climate as firms and households so all their decision is dependent on each other's actions. In the normal course of business, banks are looking to finance corporations to get control of capital assets to generate output to pay back the commitments on loans. This increases the corporations' well as banks' credibility in the market. In modern capitalist finance banks and corporations are listed on the stock exchange. Corporations' performance is directly tied to the state of confidence and the state of the credit determined by the banks if those are good banks engage in more and more financing and earns back more, they will increase the number of loans and also increase the money supply. This improves the bank's share prices on the exchange and is an alternative to net income that is earned from its operations.

5. Conclusions and Policy Implications

The banking industry is associated with the economic growth of a country. Different internal and external determinants influence the success of listed CBS in Pakistan. In this paper, only external determinants were considered. There are five external macroeconomic factors are used i.e. GDP, Inflation, interest rate, and exchange these variables aim of these variables is to investigate their impact on the profitability of CBS in Pakistan. ROA and ROE are internal factors used as proxies for the profitability of listed commercial banks. After analyzing thirteen years (2006 to 2018)

panel data of sixteen listed commercial banks with a total number of 208 observations. As per the findings of this paper, the selected five macroeconomic factors have not contributed noticeably toward the performance of listed CBS. Mostly, the performance variables are negatively and insignificantly correlated with the selected macroeconomic variables which means that banks' profitability mostly depends on other influencing factors, most likely internal or bank-specific factors as indicated by the low value of R square.

This paper is limited to the financial performance measured through the ROA and ROE. This paper covers thirteen years of sixteen commercial banks. The future paper may cover the long-term period and other internal and external variables of commercial, Islamic banks, and microfinance banks. This is will add up to the existing debate.

As per the finding of this paper, macroeconomic factors are not the main contributors towards the profit of Pakistani commercial banks, therefore the stakeholders (financial managers, individual investors, regulators, etc.) should focus more on bank-specific factors such as corporate governance, number of branches, female directors, taxation, auditing, etc. However, the money supply exhibits an influencing impression on the banking sector which should be considered for policy outcomes. It is can be incorporated into policy debates during the money supply meetings in the finance division.

6. Limitations of the Study

The end date of the data is 2018 because of certain limitations on the consistency of data for selected banks and abnormality caused by a global Covid 19 shock. The model specification could be explained more through theory but due to space issues, we confined it to the general forms of panel regression analysis. This study can be extended by solving the issues of endogeneity, by using the GMM approach to the same data sets.

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135

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Nexuses between economic growth and health indicators: Evidence from Pakistan

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Abstract
The goal of this article is to look at how various health indices affect Pakistan's economic growth. To achieve this goal, error correction and co-integration methods were used by using time series data from 1990 to 2022. The goal of this research is to examine the short-run and long-term temporal connections between health and per capita GDP growth. In the long-run, there is a significant relationship between per capita GDP and economic health indicators, which are significantly affecting per-capita GDP. According to the results of short run, health indicators have no meaningful influence on per-capita GDP. While indicators of health have a considerable long-run influence in economic growth. It implies that the influence of health indicators can only impact economic growth in the long run. The study's main result suggests financial gain, through growing and raising the stock of healthy human capital, particularly if present stocks are at a low level. Improved health has a two-way interaction with the economic process. This research is to examine the short-run and long-term temporal connections between health and per capita GDP growth, using mistreatment Co-integration and Error Correction. Long-term health and economic process studies would be extremely valuable in determining the achievable magnitudes of the entire cumulative effects of health on economic process. Two key hypotheses would be examined; the first would be that 'health influences economic growth' might be a long-standing temporal development. Second, what role do health output and input factors play in per capita GDP growth?

Keywords: Health Indicators, Economic Growth, Co-integration.

JEL Classification: I10, I15, H51

1. Introduction

The health sector plays a vital role in any country's economy. Population is incredibly difficult issue for developing countries however on the opposite facet a healthy population raises human capital that is absolutely tributary in economic process and social development. If a country's labor is healthy, its productivity and economic process can mechanically improve so investment in health sector will have a protracted lasting result on its prosperity. The health services, regulation and coordination help the Pakistani health officials to enhance and maintain their health through universal access to low-cost, high-quality essential health services and a responsive health system, the country will be able to meet the Millennium Development Goals and fulfil its other global health commitments. The ministry of health service, rules and coordination dead for serving to the folks of Islamic Republic of Pakistan to keep up and perk up their health and create the population healthier (Ministry of National Health Services, 2016). The National Health Ministry has established the goals in order to improve the health of Pakistani society. The ministry provides provincial autonomy and diversity to improve

the Islamic Republic of Pakistan's health system and promote synchronization for commonality throughout worldwide news (United Nations, 2021). Facilitate cooperation for regulation, data collection, police investigation, and analysis for improved health systems provide a solid framework for charting and implementing SDGs in collaboration with other sectors (Ministry of National Health Services, 2016).

Pakistan, being a developing country, has struggled in various areas, including the health system, which ranks 122 out of 190 countries in a World Health Organization performance assessment (United Nations, 2021; WHO, 2020). Total no of hospitals virtually 1096 in Pakistan that square measure serving over 182 million of population. there's little doubt in spoken language that 7 million individuals are literally addicted to one hospital for his or her regular treatment per Ministry of health (2017) there square measure about one hundred seventy-five 300 registered doctors in Pakistan thus as per population one doctor must facilitate virtually one thousand individuals. Overall, the proportion spent on Health sector is barely a pair of the total GDP that is incredibly low. per the quality of World Health Organization (WHO), the quantitative relation of nurses and doctors ought to be 1:3, however it's reserved is that the case of Pakistan.

The study aims at investigating the issues of health sector in Pakistan and highlights the important link between heath indicator and economic growth. The number of hospitals is increasing. The overall achievement of health sector of Pakistan in last 16 years includes 1167 hospitals and 5695 dispensaries (Shabbir et al., 2022). It can improve the health sector and can have positive impact one economic growth. In Pakistan more than 70 million of the population is living below poverty line and people also don't have access to basic facilities such as clean drinking water and food in addition if they are sick then they do not get proper facilities of health care (Forman et al., 2022).

Health sector plays a vital role for any economy because healthy labor force is a key of development. Pakistan spends 3% of GDP on healthcare which is very low government needs to increase the percentage of GDP to improve healthcare as well as provide clean drinking water because unhygienic water is the main issue in Pakistan caused many water borne diseases, second main area which need improvement is poverty due to lack of resources, people especially in rural areas did not able to afford proper treatment of health care. We need more hospitals and doctors in order to improve health sector and economic growth. Growth economists that included human capital in their research were rewarded for paying close attention to the influence of education on economic growth, but were negligent in the case of human capital. It is not just in recent times that studies have begun to look at health and attempted to evaluate the link between health and economic growth. Thus, we summarize the objectives of study as:

- To determine the relationship of economic growth and health.
- To find out the particular problems of the lady doctors in carrying on their profession and their family interfering with job decision.

Pakistan has made great strides in its fight to eliminate polio. The national polio eradication campaign has made significant progress in immunizing youngsters across the country. The current polio epidemiology is encouraging. Cases decreased from 306 in 2014 to 54 in 2015, 20 in 2016, 8 in 2017, and 12 in 2018 (Sultan, 2022). In 2019, fifteen instances have been documented thus far. In figure 1 polio cases are shown which has decreasing trend because the population increases arithmetically, and resources (facilities) increases geometrically.

There were two new polio cases reported in 2018. In October 2018, about 1.6 million children were immunized at 402 prominent transit points (PTPs). Currently, four new instances of poliovirus have been detected, and 2 million children were vaccinated in March 2019 at 403 Permanent Transit Points (PTPs) located around the country. Oral polio vaccine was administered to 20.5 million children.

Abbreviations: cVDPV2 = circulating vaccine-derived poliovirus type 2; WPV1 = wild poliovirus type 1.

An increase in life expectancy is a positive signal that the health sector is improving day by day. As per figure 1, the life expectancy rate starts to increase in 2001 and so on. A health policy was announced "health for all" in 2001 which aimed to protecting the nationals from harmful diseases. Then Government took serious steps to improve the health sector in order to look after the public's health. In 2015 under the guidance of Prime minister a National Health Program was launched by ministry of National Health Services, Regulations and Coordination. The program helps millions of poor to access quality health care services for example free vaccination facilities for children. The life expectancy or average age of Pakistan's population was 63.5 in 2015-16 and now it is 66.5. After viewing all above scenario life expectancy has increasing trend, this trend has positive impact on economic growth. Whenever life expectancy increases, it has direct and positive impact on human's capital productivity. Individual can work for longer hours because a healthy body has a healthy brain and thus gives more productivity by helping the individual's mind and body to work for longer time thus a healthy nation leads to wealthy nation.

**Figure 1: Average life expectancy in different time periods**
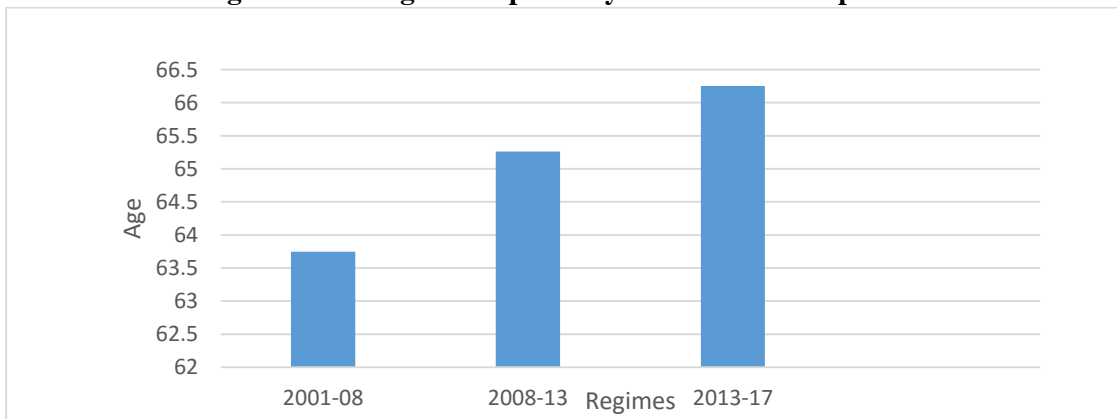
There is an increase in life expectancy throughout the previous three regimes. In Military era (2001-08) the Government implemented and worked on two programs. First with the name of National Health Survey and second was Health for all. By implementing these programs life expectancy increased from 62.9 to 64.5 in Military era. In Democratic era (2008-09) the ministry of health conducted a second National Health Survey, due to this the health management and information system uplift the health status of public. There is an increase in life expectancy throughout the regime of these three governments. In the results of these programs health sector a facility improves, that cause an increase in life expectancy in previous regimes.

Figure 2 shows, all expenditures for health-related preventive, development, treatment, nutrition, and emergency response initiatives. Sustainable development goals cannot be met while there is a high prevalence of debilitating sickness and poverty, and population health cannot be sustained without a responsive health system. Expenditure on health has progressively increased during previous regimes and is likely to rise more in future regimes. Public expenditure is more preferable expenses to any sector of economy so the public expenses on health sector are also very important to improve the health sector in country. As we see in above graph the expenses in 2000-01 is too low which is less than 50 billion because the previous governments did not complete their tenure so it was difficult for military government to focus on all sectors of economy. The next government did not pay any attention toward health sector. In 2013 the government started focusing on health sector and increased the expenses on public health sector. At the end of last government, the expenses were made of approximately 400 billion of rupees as per 2018 (Sultan, 2022). During 2001-08, Global

Alliance provided grant assistance of 33 million dollars for the improvement of expanded program immunization and also provides 11 million dollars for injections safety.

As compared to previous three eras' the time period of 2008-13 was better than the other two. During 2008-13 aid is spent more on public health because it was the part of their motto to give people quality health services. In the other two regimes the acquired budget for health sector was low and the expenses were more than the budget.

Figure 2: Public Expenditure on Average
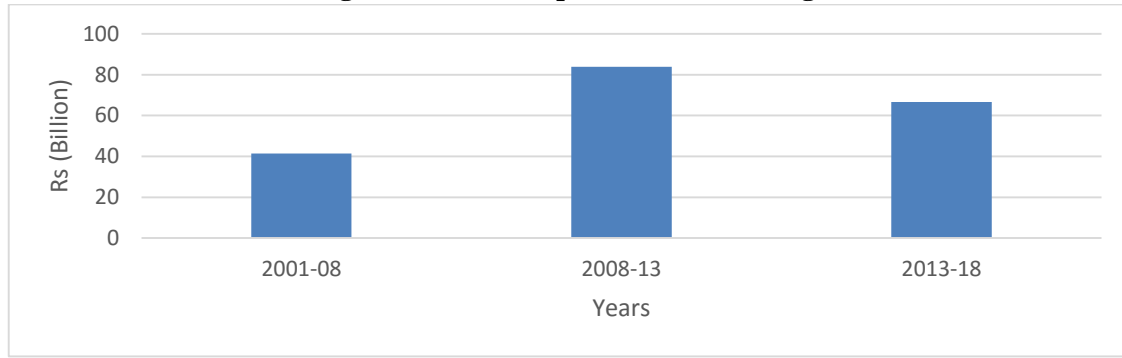
In terms of physical infrastructure and staff, public health activities have steadily risen. The number of physicians, dentists, and nurses has grown, as has the availability of one doctor, dentist, nurse, and one hospital bed per population. There are now 208,007 registered physicians, 20,463 registered dentists, and 103,777 registered nurses, for a total of 957 doctors per population, 9,730 dentists per population, and 1,580 patients per bed. Pakistan has 1201 hospitals, 5802 clinics, 731 maternity and child health facilities, and 347 TB treatment centers. There are 14 private hospitals in the federal government and 7 government hospitals in total. So, this study assesses the influence of health on Pakistan's economic growth.

2. Review of Literature

A lot of scholars undertook several studies to investigate the relationship between economic advancement and health. The following is a quick assessment of some recent research on the impact of health on economic growth. Shabbir et al. (2022) investigated the impact of sustainable health practices especially sustainable production and sustainable supplier management on supply chain performance. A survey of hundred firms was collected. Structure Equation Modelling and Exploratory Factor Analysis had been employed through AMOS. The findings of the study provided valuable and thought-provoking insights for use of sustainability.

As many other developing countries, Pakistan is also facing the problems in their health sector since the time of partition. Mir et al. (2015), in his paper he presents a clear view of the healthcare system of Pakistan. The healthcare system of our country is mixed system of public, private, formal, non-formal and modern with traditional medicines. Having all these objects in a healthcare system is itself a major issue, and he also highlighted the main issue of public and private sectors of health. Keeping in mind that the state is the custodian of health of the people of Pakistan, is unable to facilitate the public, private sector has filled this gap very efficiently. It is a big drawback of our economy as well as having many problems in it, for example, the high cost, untrained staff etc. However, the relation between public and private health sector has become indispensable.

Ahmed & Shaikh (2008), in their paper highlighted the issue of low budgeting on healthcare sector of Pakistan. Our neighbour countries are spending more of their GDP on health sector than the Pakistan. Pakistan spends 80% of its little health expenditure on tertiary care services, which are used

by just 15% of the population, and 5% on basic healthcare, which is used by 80% of the population. Policymakers must comprehend the public's need as well as their capacity and desire to pay for healthcare. For population, several methods of finance may be employed, such as earmarking, approaching external donors, taxing, user fees, and so on. Universal coverage can be accomplished by charging all users based on their capacity and desire to pay. Discussing health-related concerns in poor nations as well as in Pakistan. Health sector has always been a major concern of developing countries. Kruk et al. (2018), in their paper they discussed about the betterment of the health sector of developing economies, that how can they improve their public health sector. The facilities in the public sector hospitals are less than private hospitals.

Gilson & Mills (1995), in their study they considered the unequal distribution of resources between different health interventions and technical efficiency as the downfall of health sector in developing economies, and number of structural changes have been proposed to improve the efficiency, the most common is the decentralization of planning and management usually to the district level. As many other developing countries, Pakistan is also facing the problems in their health sector since the time of partition.

Mir et al. (2015), in his paper he presents a clear view of the healthcare system of Pakistan. Having all these objects in a healthcare system is itself a major issue, and he also highlighted the main issue of public and private sectors of health. Keeping in mind that the state is the custodian of health of the people of Pakistan, is unable to facilitate the public, private sector has filled this gap very efficiently. It is a big drawback of our economy as well as having many problems in it, for example, the high cost, untrained staff etc. However, the relation between public and private health sector has become indispensable. Ahmed & Shaikh (2008), in their paper highlighted the issue of low budgeting on healthcare sector of Pakistan. Our neighbor countries are spending more of their GDP on health sector than Pakistan. Pakistan spends 80% of its small health expenditure on tertiary care services, which are used by just 15% of the population, and 5% on primary care, which is used by 80% of the population. Policymakers must comprehend the public's need as well as their capacity and desire to pay for healthcare. For population, several methods of finance may be employed, such as earmarking, approaching external donors, taxing, user fees, and so on. Universal coverage can be accomplished by charging all users based on their capacity and desire to pay. Many health issues have effective intermediaries.

The major worry in low-income nations is health concerns; prices are rising and budgets are dwindling; nevertheless, Travis et al. (2004) state that part of the difficulty is to incorporate current and new information about more effective tactics into training. There is increased intervention to ensure that the best health systems are successful in producing improved health outcomes. Progress toward agreed-upon health targets continues to be bad. There are few consensuses on how to help them. The next Official Talks on Health Research aim to contribute to the development of a learning agenda for health systems. Because health-systems research has an image issue, the evidence foundation remains disproportionately poor. Significant progress will have been made in terms of eliminating system controls in order to achieve the MDGs. Leadership, vision, priority, and actions needed to achieve best goals in health sector. Still have time to change the health course of the country, and even meet the MDGs.

According to Beaglehole & Dal Poz (2003), the public health workforce is heterogeneous and comprises all people whose primary role is to provide essential public health activities, regardless of their organizational foundation. Pakistan is unprepared to deal with the diseases that have infiltrated its population. Some of the government officials believed that prime accountability is the facility of main public health activities, irrespective of their organizational base changes. When Jamison (2003) examines the contribution of health to economic growth. According to a study, developing countries frequently lack investment resources 490. On the other side, poor health condition hampers economic

141

growth for (Akram et al., 2008; Sheikh et al., 2022). Pakistan's federal structure has experienced significant modifications as a result of the 18th Constitutional Amendment. Although there have been some gains in health-system performance over the last 65 years, important health metrics continue to trail below those of comparable nations. Progress has been impeded by complex governance difficulties and underinvestment in health. With the devolution of the health mandate, an opportunity for health reform has arisen.

In this literature we conclude that how health sector is important for a country's economic development and growth where approximately 9% of the total employment is directly working in health sector. And the sustainable healthcare system has direct impact on labor force if workers are healthy then their efficiency has positive impact on every industry's production and profits, they reinvest their profits and ultimate impact on the growth of a country. Literature also highlights the issues Pakistan is facing in healthcare sector e.g., mixed system of healthcare, the discrimination of public and private sector, unequal distribution of resources etc. Different policies can be used to overcome these issues like contracting with non-government bodies, imposing fee, approaching external donors etc. Literature provides number of solutions to overcome the issues in health sector. Keeping in view the issues and possible reforms in the health sector discussed in literature, this study analyzes the policy and a reform in the health sector suggested by the current regime and also attempts to bring in the light the challenges that Pakistan has to face. The fertility rate, on the other hand, has a negative link with economic growth. Because infant mortality has a significant impact on life expectancy.

Workforce growth is generally slower than population increase. As a result, a high birth rate inhibits economic growth by placing an additional load on scarce resources. According to van Zon & Muysken (2001), excellent health is an essential requirement for people to be able to give labour services. According to the study, a rise in demand for health care due to an ageing population will have a detrimental impact on economic development. In this literature we conclude that how health sector is important for a country's economic development and growth where approximately 9% of the total employment is directly working in health sector. And the sustainable healthcare system has direct impact on labour force if workers are healthy then their efficiency has positive impact on every industry's production and profits, they reinvest their profits and ultimate impact on the growth of a country. According to the study, health human capital improves economic growth at a diminishing pace.

Osler (1991) worked on vocationally trained Doctor's employment experience. She tried to find out relationship between gender-based employments decisions of doctors and their career goals. She used questionnaires of 233 respondents who had practiced during 1981-87 and showed that more of women than men had changed their profession. One third of them were no longer in this profession while some of them left their career mainly due to marriage or childbearing/young child. Some of the women tried to work if they were allowed to have reduced work hours or if they were allowed to work in the daytime. Gender played a stereotype role, women as homemaker and men as breadwinners.

A vast majority of respondents in a survey by Izumi et al. (2013) showed the behavior that women should continue to work even after having a child or during her childbearing stage, but they found further having that mentality even though more than one half of respondent had resigned previously from their career on full time basis due to childbearing. It was also explored that once female have resigned fully only one third of them joined again on full time basis. A small fraction of female doctors who did not resign from their career were seen to have faced too much difficulty in balancing family life and career effectively. Two reasons were found most prominent for resigning from full time employment i.e., child bearing and the poor working conditions i.e. inability to take paid holidays, long working hours and physical problems. An M-shape relationship has been found for

female labor force participation between age 20-40 (late 40s). Nomura et al. (2008) and Izumi et al. (2013)showed that working conditions such as frequent overnights and long working hours specially for physicians has seriously deteriorated over the years.

Table 1: Past data of life expectancy and infant mortality

Years	Life Expectancy at Birth, Total (Years)	Infant Mortality Rate (Per 1,000 Live Births)
1960	44	139
1970	49	120
1980	55	110
1985	57	105
1990	59	100
1995	61	93
2000	63	85
2005	65	79
2006	65	78

Source: Khan et al. (2021)

3. Data and Methodology

This data is collected by Economic survey, Ministry of Health, and World Development Indicator (WDI). The model's independent variable is GDP per-capita, an economic growth proxy. A summary of all the variables utilised in the study. The data for all variables is utilised from 1990 to 2022. Various health indicators are utilised to determine the association between health and economic growth. Health indicators are classified into two types: health input indicators and health output indicators. Health input indicators include expenditure on health services, the availability and quality of health care facilities, and so forth. While indices of health output include life expectancy, infant mortality rate, adult survival rate, fertility rate, and so on. Life expectancy and infant mortality are employed as health indicators depending on the availability of time series data. The most important output variable is health spending as a proportion of GDP. The model's independent variable is per capita GDP, which is used as a proxy for economic growth. There is one more explanatory variable. Data of per-capita GDP, age dependency, trade openness, life expectancy, infant mortality and investment is taken from World Bank while data of population per bed, secondary enrolment and expenditure on health are taken from State Bank of Pakistan's annual reports.

3.1 Theoretical Model:

A plethora of models have been created to account for the influence of human capital on economic growth. Human capital, according to Romer (1990) and Barro (1991), is the most essential component in determining economic progress. It is thought that the ability to convert health expenditure into health stock is reliant on the stock of health human capital. The health technology equation is as follows: = (H). The income growth equation is formed by substituting into the H equation and then into the production function.

This study investigates the hurdles faced by the female doctors in the context of their labor force participation (FLFP) decisions, while considering the role of family and their children. The analytical framework of this research study regarding the female labor force participation involves one of the responses for each respondent. That is, whether they are employed or not employed. Therefore, the dependent variable here (employment status) is a binary variable and take two values. The binary variable takes the value '1' if the female is employed, and '0' if the female is not participating in the labor force. Here the dependent variable is a binary variable, in such situation, analysis through the linear regression equation or model leads to inappropriate estimations. Because of which, two non-

143

linear models, that is logistic probability model (Logit model), and the normal probability model (Probit model) are preferred for further estimations as discussed in the study of Ahmad & Hafeez (2007).

The dependent variable (employment status) is determined by the current status of participation in the labor force. Currently, if the female doctor is employed or on service, the binary variable determined the value of 1, and 0 otherwise. The explanatory variables here we utilized for estimating are the age of the respondents, their residence, family type and size satisfaction with profession, gender equality in home, marital status, institute from which the responded studied, number of children, household income and finally the job challenge. These explanatory variables include, dummy variables or categorical variables, and also continuous variables, which are already discussed above. Hence, the equation in general form is given as follow.

$$Y = f(fam\_typ, satis, ms, inst, child, hhi,) \qquad (1)$$

Where the variables are listed and defined as under.

Y	=	Employment status	=	1 if employed and = 0 otherwise
fam_typ	=	Family type	=	1 if joint and = 0 otherwise
$satis$	=	Satisfaction with profession = 1 if satisfied and =0 otherwise		
ms	=	Marital status	=	1 if married and =0 otherwise
$inst$	=	Type of institute	=	1 if public-sector/government and = 0 otherwise)
$child$	=	Number of children		
hhi	=	Household income		

Y" denotes the dependent variable (employment status of the respondent), "resid" represent the residence of the respondent, "fam_typ" denote family type, "satis" denotes satisfaction of the respondent from his/her profession, "ms" represent marital status of the respondent, "inst" denotes the institute from which the respondent completed degree, "child" denote the number of children of the female respondent, and lastly "hhi" denotes the household's income.

From the equation 1, our linear model for estimation is given as:

$$Empl_i = \beta_0 + \beta_1 fam_{type_i} + \beta_2 satis_i + \beta_3 ms_i + \beta_4 inst_i + \beta_5 child_i + \beta_6 hhi_i + \varepsilon i \qquad (3)$$

Here, 'i' in the subscript represent the cross-sections. For brevity of the expression, we can write equation 2 into simpler form as $Empl_i = BX + \mu_i$.

3.2 Empirical Model

Linear Probability Model:

$$(p/1-p) _{Empl(i)} = BX + \mu_i$$

Probit model (Normal Probability model):

$$\left(\frac{p}{1} - p\right) Empl(i) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{BX} e^{\frac{-z^2}{2}} dz$$

Logit model (logistic probability model):

$$\left(\frac{p}{1} - p\right) Empl(i) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{BX} e^{\frac{-z^2}{2}} dz = \frac{1}{1+e^{-BX}} + \mu_i$$

The results are further estimated and discussed in section 5: results of empirical analysis.

4. Results and Discussions

The results of the study are given here. The overall form of the ADF exam is as follows in level and first difference form. As confirmed by ADF test, starting with Primary enrolment, Per Capita GDP, Health Expenditure, Investment, Life Expectancy, Mortality Rate and Primary enrolment are integrating at order one and Age Dependency and Population per bed are integrating of order zero.

This stationary test of variables is also satisfying the situation that there is no variable that is integrating of order two [I (2)] before applying the approach ARDL.

Table 2: Results of ADF Test

Variables	At Level		At 1st Difference		Conclusion
	T-statistics	Probability	T-statistics	Probability	
Per Capita GDP	-2.2493	0.1931	-10.173***	0.0000	I(1)
Age Dependency	-4.9390	0.0002	-7.5349***	0.0000	I(0)
Health Expenditure	-2.0018	0.28487	-5.8416***	0.0000	I(1)
Investment	-2.3273	0.1688	-6.5874***	0.0000	I(1)
Life Expectancy	-1.3168	0.6121	-5.8305***	0.0000	I(1)
Mortality Rate	0.3808	0.9790	-4.7280***	0.0006	I(1)
Openness	-2.2493	0.1931	-10.173***	0.0000	I(1)
Population per bed	-4.9390	0.0002	-7.5349***	0.0000	I(0)
Primary enrolment	-2.0018	0.28487	-5.8416***	0.0000	I(1)

Note: *** are given to 1 %, ** for 5 % and * for 10% ideally.
Source: Authors' own calculations

The result shows that some of the variables are non-stationary at the level, and some of the variables at first difference.

Co-integration:

The relationship between variables co-integration approach is used to determine the long run. There are two basic strategies for testing co-integration among variables: the Engle & Granger (2015) approach and the Johansen (1988) approach. The approach proposed by Johansen (1988) is used to assess co-integration among variables. This method is based on an in-depth examination of co-integration in the vector autoregressive (VAR) model. However, if the co-integrating vector is not unique, the condition is not addressed. Furthermore, it only looks at the dominating co-integrating vector between series.

Table 3: Rank Test Unrestricted co-integration (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None*	0.95	107.77	58.44	0.00
At Most 1*	0.87	71.37	52.37	0.00
At Most 2*	0.85	65.25	46.24	0.00
At Most 3*	0.86	55.87	40.08	0.00
At Most 4*	0.76	44.16	33.88	0.00
At Most 5*	0.55	28.67	27.59	0.03
At Most 6	0.46	19.75	21.14	0.07
At Most 7	0.36	13.47	14.25	0.06
At Most 8	0.07	1.38	3.85	0.24

Max-eigen value test indicates 6 co-integrating equations @ 5 % level.
*Denotes rejection of the hypothesis @ 5% level.

The results of trace static show that there are seven co-integrating vectors, however the results of highest Eigenvalue value show that there are six co-integrating vectors.

Table 4: Normalized Co-integrating Coefficients

Variable	Coefficient	Std. Error	t-Statistic
AGE_DEPENDENCY	–18494.47	5501.205	–3.361895*
OPENESS	118.7778	46.34173	2.563086*
HEALTH EXPENDITURE	2209.714	1324.95	1.667769
POPULATION_PER_BED	–12.98682	2.976037	–4.363799*
SECONDARY_ ENROLMENT	0.004666	0.001038	4.493965*
INVESTMENT	81.81509	77.32077	1.058126
LIFE_EXPECTANCY	526.8660	68.63043	7.676856*
MORTALITY_RATE	153.2179	74.95079	2.044246**
R-squared	0.989909		
Adjusted R-squared	0.987292		
S.E. of Regression	623.8845		
Sum Squared Reside	10509261		
Log Likelihood	–270.3802		

* and ** indicated significance @ 5 % level and a@ 10 % level respectively.

Table 5 shows empirical evidence that, over time, age reliance has a negative and significant impact on per capita GDP. More people becoming idle due to age or other situations will surely have a detrimental influence on economic growth. Public health spending has a positive but minor impact on per capita GDP. This discovery reveals poor allocation and utilization of public health funding. It also shows that public health expenditures are so little that they have no influence on economic growth. Other health status variables, such as life expectancy, mortality rate, and population per bed, have a substantial influence.

Table 5: Error Correction Model

	Coefficient	Std. Error	t-Statistic	Probability
D(AGE_DEPENDENCY)	112965.4	43997.96	2.567515	0.0214
D(HELATH_EXPENDITURE)	960.1742	990.0141	0.969859	0.3475
D(OPENESS)	49.40765	31.80442	1.553484	0.1411
D(POPULATION_PER_BED)	–4.265212	2.434431	–1.752036	0.1002
D(SECONDARY_ ENROLMENT)	0.002938	0.001161	2.530879	0.0231
D(INVESTMENT)	–24.64672	73.67595	–0.334529	0.7426
D(LIFE_EXPECTANCY)	–41.1806	344.7947	–0.119435	0.9065
D(MORTALITY_RATE)	–389.4584	445.1464	–0.8749	0.3954
D(GDP_PER_CAPITA(–1))	0.277605	0.212884	1.304016	0.2119
D(AGE_DEPENDENCY(–1))	–115873.5	42775.77	–2.708858	0.0162
D(HELATH_EXPENDITURE(–1))	–387.314	1069.411	–0.362175	0.7223
D(OPENESS(–1))	–34.21279	36.27845	–0.943061	0.3606
D(POPULATION_PER_BED(–1))	1.093438	2.658591	0.411285	0.6867
D(SECONDARY_ ENROLMENT (–1))	0.000625	0.001467	0.426117	0.6761
D(INVESTMENT(–1))	–19.73265	77.5046	–0.2546	0.8025
D(LIFE_EXPECTANCY(–1))	–182.8239	455.2101	–0.401625	0.6936
D(MORTALITY_RATE(–1))	115.7301	435.1011	0.265984	0.7939
ECT(-1)	–0.684606	0.238475	–2.87077	0.0117
R-squared	0.736754	Mean dependent var		553.7899
Adjusted R-squared	0.438409	S.D. dependent var		475.5985
S.E. of Regression	356.4104	Durbin-Watson stat		2.352009
Sum Squared Reside	1905426	Log likelihood		–227.7262

It indicates that improvements in health status are the product of private sector investment, whereas governmental health spending is little and used in ways that have little impact on economic growth. These findings indicate the private sector's critical and considerable role in improving health outcomes. Because the governmental sector does not contribute to the provision of health facilities, it is the private sector that makes significant contributions to improving health status. Trade openness has a beneficial and considerable influence on economic growth. The population per bed has a detrimental impact on economic growth.

Table 6: Final Regression Results for Final Logit, Probit and Linear Models

Variable	Logistic Model	Probit Model	Linear Model
Intercept	-0.4133 (-1.09)	-0.2242 (-0.99)	0.4742175 (7.48*)
Family type	0.5064 (1.31)	0.30543 (1.39)	0.0943195 (1.57)
Satisfaction with profession	1.2311 (3.42*)	0.7271107 (3.57*)	0.2037027 (3.70*)
Marital status	-.8134 (-1.57)	-.474635 (-1.60)	-.133066 (-1.59)
Type of medical college/institute attended	1.12357 (3.30*)	.663126 (3.32*)	.2026607 (3.53*)
Number of children	.664907 (2.04**)	0.40112 (2.15**)	.081047 (2.08**)
Household income	2.10e-06 (1.08)	1.09e-06 (1.01)	2.32e-07 (0.98)
Pseudo R^2 (R^2 for Linear model)	0.1229	0.1244	0.1288
Chi-square statistics (F-Statistics for Linear model)	32.06 (0.00*)	32.46 (0.00*)	5.55

Notes: The t-statistics are presented in parentheses. The statistics significant at 1%, 5% and 10% levels of significance are indicated by *, ** and *** respectively. The values of R^2 reported for Logit and Prohibit models are the pseudo R^2 values.

When the population per bed grows, individuals have fewer health-care options, which has a long-term impact on economic growth. Secondary education is extremely important, suggesting that more educated people are more likely to adapt to current technology and contribute to economic progress. Contrary to theory, gross capital formation has not had a major influence on economic growth in the long run, but the link is favorable. The findings show that in the long run, indices of human capital, such as health and education, have a major influence on economic growth. As a result, we may state that governments should try to increase health and education levels in order to achieve long-term economic growth. Because public health spending has no substantial influence on economic development, health policies should be oriented in such a manner that they provide more incentives to the private sector to invest in health facilities. If a long-run connection exists between multiple parameters, an error correcting process is also going place. The speed of adjustment towards the long run equilibrium following a short run shock is shown by the error correction model. To test the error correlation.

The estimated lagged error correction component is negative and significant, showing that the model is correcting errors. The feedback coefficient (Error Correction term) is -0.68, meaning that around 68 percent of the disequilibrium from the previous year is corrected in the current year. Other calculated components show that only age dependency and secondary education have a significant impact on per capita GDP in the short run. There are no health indicators that have a significant impact on economic growth. It illustrates that the effect of health is only a long-run phenomenon, with no relevant relationship between health characteristics and short-term economic growth. We present the marginal effects or rate of reaction in the likelihood of getting employed to explanatory factors for a better understanding because non-linear regression parameters are not given the same obvious interpretation as linear regression parameters. These effects, also known as probability derivatives, do not have fixed values as parameters and instead depend on all of the model's explanatory components. As is customary, we will investigate the marginal effects of various explanatory variables on labor force participation as assessed at the sample statistics. This would be done to acquire a better understanding of the relationships since we will be able to determine the impact of changes of explanatory factors just on chance of hiring a lady doctor. When all independent variables are assigned, values equal to the corresponding sample averages, the marginal impact of a continuous variable (such as household income) tells how much the likelihood of being employed fluctuates in response to a unit change in the independent variable. The marginal impact of a dummy variable tells how much the likelihood of employment is increased or decreased (that whether marginal effect was either positive or negative) in families where the dummy variable is equal to one compared to households where the dummy variable is set to zero.

Since the table estimated marginal effects are quite similar, we will interpret the results of Logit model only. The most significant variable satisfaction with profession. The marginal effect of this variable is about 0.21, which shows that on average the lady doctors who are satisfied with their profession are 21 percent more likely to be employed as compared to those who are not satisfied. In other words, the proportion of lady doctors who are currently employed are 21 percentage points higher among those who are satisfied with their jobs. The next similarly significant variable is the type of educational institute of the respondent and its effect is also positive. The marginal effect of this variable is also quite high, somewhere close to 0.19. This estimate shows that the lady doctors who have acquired their professional degree from a public-sector institute are 19% more likely to be employed. This is a substantial difference and there could be various reasons to explain it. Public sector students are generally fond to be more focused on their profession and are keen to start working immediately after completing their education. They are also preferred by employers because their expectations about earning are pragmatic, while the doctors completing their education from private institutes have spent a lot of money on education and expect to get similarly high wages in the market. The number of children is another significant variable, and its marginal effect is quite large. The result show that each additional child is associated with about 11%. So, if a typical lady doctor has two children, she will on average be 22% more likely to be employed as compared to someone having no children.

5. Conclusions and Policy Implications

The primary goal of this research is to examine the short- and long-range effects of health on economic growth. The achievement of the goal of co-integration. While Error Correction approaches is used in conjunction. Findings demonstrate that dependence of age, openness of trade, per bed population, enrollment in secondary schools, life expectancy, and death rate all have an impact in per capita GDP, but health spending has no effect.

The findings show that health is a crucial factor in predicting economic growth in the long run. Because all indicators of health had a substantial influence in the long-term growth. However, the

Error Correction model results show that the indicator of health has little effect on economic growth for the near run. While it implies that the influence of health indicators is only a phenomenon of long-run, and that there was no meaningful association of health factors with economic growth in the short term. The study's policy implications include those countries like Pakistan may reach high levels of income per capita if expanded and strengthened the stock of capital of healthy human, especially if existing stocks were at the low end. Furthermore, analysis shows that public health expenditure plays a relatively minor effect in influencing per capita GDP. According to study's findings, healthy human capital can be incorporated in equation of growth since it was a significant component of healthy human capital. Furthermore, there was an urgent need for research that examines the dynamics for health throughout Pakistan, as such research has been neglected for many years. Similarly, comparative research on the function of private and public health care facilities in strengthening health human capital is required. Lady physicians are primarily determined by three factors: job happiness, type of medical college/institute attended, and number of children. The findings indicate that the chance of employment is much greater among female doctors who are content with their professions, have finished their professional education at a public sector institute, and have fewer children.

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