PAKISTAN BUSINESS REVIEW

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CONTENTS

Unlocking Investment Potential in Agriculture: An ISM-Based Challenge Analysis

Kanwal Iqbal Khan* Ayesha Shehzad**

Abstract

Impact funds have become common in the past few years due to the urgent need to adopt sustainable practices. The practice of sustainable financial investment techniques is urgently required to efficiently control the aftereffects of environmental deregulation, climate change, emissions, nuclear attacks, and human harm. All these situations create global concerns and are directed towards generating hunger and food crises. The emerging concept of impact funds is significant but is hindered by many challenges in its adoption phase. Still, no study has identified and listed the challenges in adopting impact funds. The present study has identified and ranked the challenges faced by the individual investors of impact funds in a hierarchical model by adopting the ISM approach. An in-depth literature review was conducted, and knowledgeable comments from the panel of 15 experts were taken to explore the contextual relations among the listed challenges. R software performed the ISM and MICMAC analyses of the 17 final obstacles. The impediments were ranked in a hierarchical model according to their challenge-creating intensity. The findings revealed that political and economic uncertainty, poor governance and regulatory framework, inflationary pressures, low scalability and sustainability, etc., are the foremost factors that create challenging situations for investors of impact funds. The study findings can be helpful for future researchers and scholars, policymakers, active and potential investors, and the members of regulatory bodies accordingly.

Keywords: Impact funds; MICMAC analysis; R-software; agriculture sector; socio-economic returns; ISM.

JEL Classification: M14, Q10, M10

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1.   Introduction

The ongoing situation of industrialization and computerization directly impacts our natural environment, biodiversity, and sustainability. The rising levels of the earth's temperature, droughts, global warming, floods, and multiple other factors directly reduce agricultural growth and productivity (Brubacher et al., 2024). Further, the increasing usage of biological weapons, nuclear wars, energy crises, and deregulation are directed toward the unproductivity of land. The direct impact on agricultural productivity instills the world toward a food and hunger crisis, creating a challenging global situation that cannot be neglected. This situation emphasized an increasing need for sustainable investment practices (Magesa et al., 2023). Green investment techniques and practices usually generate fewer financial, social, and environmental returns (Shehzad & Khan, 2024b). In this situation, impact funds are a significant approach to reducing the adverse effects of globalization and traditional business practices. The promise to generate both kinds of returns, financial and positive social and environmental, makes it a significant and leading choice for individual investors (Jeffers et al., 2024).

The emerging concept of impact funds is novel, and investors are still unfamiliar with its significance and adoption. Impact fund investors face many challenges during the adoption and execution phases (Shehzad & Khan, 2024a). Although a few prior researchers have highlighted impact funds, they still have to analyze their proper conceptualization and complete mechanism (Bazi & Sanaa, 2024). Still, no study has highlighted investors' actual challenges in impact funds. Therefore, there is an urgent need to explore the challenges faced by individual investors in impact funds. The present study aims to bridge this gap by identifying the challenges that funds' active and potential investors face in adopting them. It adopted an Interpretive Structural Modeling (ISM) research approach and Matrix Multiplication Applied to Classification (MICMAC) analysis. The study was conducted in two phases. An in-depth literature review was done initially to enlist the impediments of impact funds, which the prior researchers had already highlighted.

The identified challenges were shared with the panel of experts to identify the irrelevant, overlapping, and vague factors. The panel of 15 experts highlighted the 17 most significant challenges of impact funds. These shortlisted challenges were further examined to identify their contextual relations. The findings raised the challenges of impact funds through an ISM hierarchical model based on their intensity levels.

The next sections of the present study are structured as follows: Section 2 sheds light on the literature highlighted by the prior researchers. The literature section comprises its conceptualization, theoretical relevance, and the challenges of impact funds, which previous researchers have already discussed. Section 3 of the study focuses on the materials and methods used for the data collection and analysis of the present study using the novel approach of ISM. Further, Section 4 is directed towards the results derived by developing contextual relations among the challenges of impact funds and by using R software. Section 4 presents the study's key

findings and the discussions related to impact funds. Section 6 of the present research conscientiously presents the concluding remarks, including the study implications, limitations, and future directions.

2.   Literature Review

2.1   *Conceptualization and theoretical relevance of impact funding*

The concept of impact funding is still novel and usually mixed up with impact investment, sustainable investment, social responsibility investment, green investment, etc., due to its positive social and environmental benefits and financial outcome-generating nature (Shehzad & Khan, 2024a). Scholars and practitioners sometimes face difficulty distinguishing between impact investment and funding (Agrawal & Hockerts, 2021; Penfield et al., 2014). Both contribute to sustainability and positive return. However, impact investing emphasizes investing in firms and organizations to earn measurable environmental and social impacts and monetary gains (Barber et al., 2021). In contrast, impact funding is an investment strategy with positive financial, social, and environmental return-generating objectives (Ubfal & Maffioli, 2011). It is a new and potentially growing market that manages investments for quantifiable impacts.

On the other hand, impact funds are crucial to addressing global challenges by generating tangible benefits by investing capital in enterprises and projects addressing global challenges, which makes it a significant investment technique that has implications in almost every sector. The concept of impact funding lacks theoretical intervention, which is why many theories are related to it. The stakeholder theory suggests that every organization should produce significant value for all stakeholders, not only shareholders (Friedman & Miles, 2002). Stakeholders' theory and impact funding focus on organizations' moral liability and obligation to work sustainably to improve society and the environment and maximize profitability (Ramoglou et al., 2023).

Furthermore, institutional theory discusses the institutional environment's role in the social choices of organizations. It is related to impact funding by emphasizing the positive impacts created for society and the environment that different organizations influence (Willmott, 2015). Ecological systems theory discusses the role and contribution of the environment on individuals (Darling, 2007). The addition of sustainable objectives in organizations' long-term and short-term goals encourages and motivates individual investors to invest in impact funding. According to Arachchi et al. (2022); everyone should be given proper and complete rights by meeting all ethical standards. Corporate citizenship theory emphasizes the firms' responsibility to work for the well-being and prosperity of society (Homer, 2022). Impact funding can significantly accomplish the corporate citizenship theory by generating measurable social and environmental returns.

2.2   *Challenges in the Agricultural Sector*

Impact funding has a noticeable significance for every individual sector, specifically agriculture. This sector is considered an essential element of every economy, contributing to economic growth, employment ratio, GDP, improved livelihood, and foreign earnings by exporting agricultural products and goods (Shehzad & Khan, 2024c). Multiple environmental and harmful social factors, including climate change, deforestation, nuclear incidents, biodiversity loss, and different natural hazards, directly impact the agricultural productivity of the land (Christiansen, 2021). Environmental deregulation and human hazards are directly limiting the growth ratios of the agriculture sector (Andres et al., 2023). The decline in overall global food production is leading to food scarcity at a rapid rate. The only solution to this potential concern is increasing global agricultural production to 90-100% by 2050. It is considered significant to meet the hunger needs of around 9-11 billion growing population (Ben Ayed & Hanana, 2021). A considerable portion of impact funding is required in agriculture to overcome this challenging situation. Unfortunately, individual investors in the agriculture sector face several challenges in making sustainable investment decisions that will positively and significantly impact on the industry and their financial returns.

Numerous challenges are hindering the execution of impact funding in the agriculture sector and are ultimately limiting the interest rates of potential individual investors (Thakur et al., 2023). The complexity of impact measurement is one of the foremost impediments faced by impact funding stakeholders. The accurate and exact measurement of the significant and impactful outcomes is difficult due to some factors, including many stakeholders of impact investments, socio-economic conditions, and the variations among qualitative and quantitative data (Hu et al., 2020). Impact funding strategies usually generate significant social and environmental returns with financial returns (Ali & Khan, 2022). Due to the imbalance between social and financial returns, the portion of financial returns is much less than that of social and environmental returns. As a result, the private sector's involvement is minimal (Tekula & Andersen, 2019). It creates a significant challenge for investors in terms of impact funding.

Impact funds are designed to overcome significant global challenges, including climate change, poverty, unemployment, biodiversity loss, etc. Furthermore, these funding instruments usually have long-term growth potentials related to environmental, social, and governance sectors, along with financial returns (Khan et al., 2024). The long-term output generation scope of impact funds has made them resistant to change and difficult liquidity exit, a major challenge for investors (Shehzad & Khan, 2024b). Economically developing countries have limited facilitators and social intermediaries with insufficient financial capabilities to support social bodies. It ultimately limits social enterprises that aim to generate social and financial returns (Khan et al., 2022). Systematic risk is one of the significant challenges hindering the application of impact fund practices. The risks associated with the agriculture sector are increasing due to the declining ratio of agricultural output (Feliciano, 2022).

The appropriate risk management is essential to assist and facilitate the investors of agricultural impact funding. Improper risk management due to the lack of awareness and decision-making skills creates a challenging situation for investors regarding the impact of funding (Khan et al., 2020). Emerging economies usually have poor governance systems. Furthermore, due to the absence of regulatory frameworks, there are no proper rules, regulations, or laws to forcefully bond impact fund investors and organizations to add impact objectives to their long- and short-term targets (Bäcklund, 2009). Improper and insignificant growth and development in the agriculture sector limit the gain of proper competitive advantage, productivity, and market development. It creates several challenges, including low scalability and sustainability for agriculture (Khan et al., 2024). In emerging economies, political and economic uncertainty creates multiple problems, including inflationary pressures, poor infrastructure development, policy instability, and less research for producing innovative financial products. Therefore, political and economic instability creates a challenging situation for impact fund investors (Abouarab et al., 2024).

3.   Materials and Methods

3.1   Research Approach and Design

The present study has selected an ISM approach to identify and rank the challenges investors face in impact funding through a hierarchical model. The respective methodological approach is chosen due to its significance and multiple benefits (Akram et al., 2023). The ISM approach is the foremost choice for researchers when resolving and transforming complex problems and concerns of stakeholders. According to Khan et al. (2022), ISM is a significant research technique for exploring the contextual relationships among different factors. ISM is an inclusive approach (Jain & Raj, 2014). Therefore, the present study is phased in two stages; initially, an in-depth literature review was conducted, and later, the challenges identified from the first step were analyzed and ranked into a hierarchical model using the ISM approach. The following procedural steps of ISM are presented in Figure 1.

Figure 1: Procedural Steps of Interpretive Structural Modeling Approach

An extensive literature review was conducted to initiate the analysis of this study. A comprehensive list presenting the challenges of impact funds was constructed. Based on the identified challenges, an interview protocol comprising the related questions was designed. After obtaining the proper consent of the panel of experts, the interview protocol was shared with them to record their valuable opinions regarding the challenges of impact funding. The panel of selected experts was bothered two times for this respective study. Firstly, the initially identified list of challenges was shared with a panel of five experts, and they were requested to shortlist the challenges for the second phase. Based on the expertise, experiences, availability, relevance, and

impact of funds dealing, a panel of 15 experts was again nominated for the last data collection phase.

The experts were briefed about the complete study objective, followed the procedure, and answered the reporting process. It helps researchers and experts respond decently, saving time and effort. The experts were requested to report on the contextual relationship of each variable with the other variables. The contextual relationships were presented in VAOX form through the Structural Self Interaction Matrix (SSIM). This initial step of the ISM process is the most important one, highlighting the relations the experts identified. Further, the subsequent phases of the ISM were followed step-by-step. Initial Reachability Matrix (IRM) and Final Reachability Matrix (FRM) were constructed by converting VAOX relations to "1" and "0". Similarly, transitivity removal and level partitioning were performed respectively to develop a conical matrix. Finally, an ISM hierarchal model was constructed to present the existing relations among the challenges of impact funds.

Table 1

Challenges Finalized by the Panel of Experts

Sr. No.	Challenges	Panel of Selected Experts															Total		Final Decision
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	✓	✗	
1	Involvement of the private sector	✗	✗	✓	✗	✗	✗	✓	✓	✓	✓	✗	✗	✓	✓	✓	8	7	Included
2	Shortage of Facilitators	✓	✗	✓	✓	✗	✓	✓	✗	✓	✓	✓	✓	✓	✗	✓	9	4	Included
3	Complexity of impact measurement	✓	✓	✗	✓	✓	✓	✓	✓	✗	✓	✓	✗	✓	✓	✓	10	3	Included
4	Balance between social and financial returns	✗	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11	2	Included
5	Increased systematic risk	✗	✓	✓	✓	✗	✓	✓	✗	✓	✓	✗	✓	✗	✗	✓	7	6	Included
6	High transition cost and small deal size	✓	✓	✗	✗	✓	✗	✓	✗	✗	✗	✗	✗	✓	✓	✗	4	9	Neglected
7	Low scalability and sustainability	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	12	1	Included
8	Political and economic uncertainty	✓	✗	✓	✓	✓	✓	✗	✗	✗	✓	✓	✗	✗	✗	✗	9	4	Included
9	Agricultural growth and development	✓	✓	✗	✓	✗	✗	✓	✓	✓	✓	✗	✓	✓	✓	✓	9	4	Included
10	Poor governance and regulatory framework	✓	✓	✓	✓	✓	✓	✓	✗	✗	✗	✓	✗	✓	✗	✓	8	5	Included

Table to be continued...

Sr. No.	Challenges	Panel of Selected Experts															Total		Final Decision
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	✓	✗	
11	Liquidity exit	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✗	11	2	Included
12	Market volatility risk	✗	✗	✓	✗	✓	✗	✓	✓	✗	✗	✓	✗	✓	✗	✓	5	8	Neglected
13	Resistance to change	✓	✓	✓	✓	✓	✓	✗	✗	✓	✗	✓	✓	✗	✓	✓	9	4	Included
14	Underdeveloped market	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	12	1	Included
15	Conservatism in investment strategies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	13	0	Included
16	Dependency on public or philanthropic capital	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11	2	Included
17	Inflationary pressures	✓	✗	✗	✓	✓	✗	✓	✓	✓	✓	✓	✗	✓	✓	✓	9	4	Included
18	Innovative financial products	✓	✓	✓	✓	✓	✓	✓	✗	✗	✓	✗	✓	✗	✓	✗	8	5	Included
19	Policy instability	✓	✓	✓	✓	✗	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	11	2	Included
20	Insufficient funding and grants	✗	✗	✗	✗	✓	✗	✓	✓	✗	✗	✗	✗	✗	✗	✓	4	9	Neglected

3.2 Data Collection and Analysis

The current study is conducted by following the procedural steps of the ISM approach, and R-software was used to perform the analysis. R is considered a significant approach for creating quality visualizations of data. Therefore, R was used as the analysis tool for the present study to get the desired and reliable results. The research methodology was completed in two phases to identify and rank the challenges the impact funds' investors faced during its adoption system. An in-depth literature review was conducted to highlight the challenges of impact funds, which were shared with the panel of experts in two phases. The initial list, comprising 35 challenges, was shared with the top 5 experts in the field, who identified and excluded the overlapping, irrelevant, and vague challenges. This panel of experts shortlisted the 20 challenges of impact funds (presented in Table 1). The initially shortlisted challenges were again shared with 15 experts with direct relevance with impact funds, well-past experience, field expertise, and high posts in reputed organizations. This panel of experts includes persons who have professionally dealt with impact funds for a couple of years. The prepared questionnaire protocol was shared with the second panel of experts. Based on their expertise, they again highlighted some irrelevant and overlapping challenges.

Table 2
Finalized Challenges

Code	Challenges
1	Involvement of the private sector
2	Shortage of Facilitators
3	Complexity of impact measurement
4	Balance between social and financial returns
5	Increased systematic risk
6	Low scalability and sustainability
7	Political and economic uncertainty
8	Agricultural growth and development
9	Poor governance and regulatory framework
10	Liquidity exit
11	Resistance to change
12	Underdeveloped market
13	Conservatism in investment strategies
14	Dependency on public or philanthropic capital
15	Inflationary pressures
16	Innovative financial products
17	Policy instability

The final list of the 17 most challenging factors faced by the investors of impact funds was identified and presented in Table 2 after assigning them the respective codes. These finalized challenges were used to conduct the following procedural ISM and MICMAC analysis steps. The panel of experts was asked to share the contextual relations present among the challenges of the impact funds, and these relationships are presented through SSIM (see Table 3). The contextual relationships were presented through "V", "A", "O", and "X" symbols by analyzing the effect of the row on the column. The relation is presented by x,y where the direct impact of "x" on "y" is presented by "V", and the inverse relation if "y" affects "x" is presented through the symbol "A". The condition in which both challenges "x" and "y" affect each other, this dual relation is presented by "X" and "O" presents no relation of the challenging factors on each other.

The presence of "V" in the first-row highlights that, according to the panel of experts, the "involvement of the private sector" affects the "complexity of impact measurement". The private sector usually does not reveal its data quickly, leading to problems and complexities of impact measurements (Bornmann, 2017). Furthermore, the presence of "A" in the fifth row presents that "low scalability and sustainability" leads to the "increase of systematic risks". "O" in the second row shows that the "shortage of facilitator" and "political and economic uncertainty" both do not have any effect or relation with each other. Similarly, the presence of "X" in the fifth row presents that "increase of systematic risk" and "policy instability" are both influenced by each other (Shehzad & Khan, 2024a).

Table 3
Structural Self-Interaction Matrix

Challenges	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	-	V	V	A	A	A	A	O	O	O	O	O	X	X	O	V	A
2		-	X	A	A	A	O	O	A	A	O	A	V	V	V	A	O
3			-	A	A	A	A	A	O	V	V	O	V	X	V	V	O
4				-	V	V	O	O	V	V	X	A	X	A	O	A	A
5					-	A	A	A	A	A	V	V	O	X	A	X	X
6						-	A	A	A	V	V	O	O	V	A	V	A
7							-	O	V	O	O	V	O	V	V	V	V
8								-	A	O	A	A	O	X	A	O	O
9									-	V	O	A	V	V	X	V	V
10										-	O	A	O	O	A	V	V
11											-	X	O	V	A	V	O
12												-	O	X	A	V	O
13													-	O	A	O	A
14														-	A	V	V
15															-	V	O
16																-	A
17																	-

4. Results

Similarly, after the construction of SSIM presenting the contextual relationships of the challenges of impact funds, IRM was structured to replace VAOX codes with binary codes "0" and "1". IRM is structured by the data representation of "x,y" and its' transpose as "y,x", presented through Table 4. Digit "1" is the input symbol for "V", and digit "0" is placed on its transpose position. Similarly, for "x,y", "A" is replaced with "0" and for "y,x" it is "1". The presence of no relation or "O" is presented as "0" in both the situations "x,y" and "y,x", and likewise, "X" is replaced with "1" in both actual and transpose relations present among the challenges of impact funds respectively.

Table 4
Initial Reachability Matrix

Challenges	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	0	1	0
2	0	1	1	0	0	0	0	0	0	0	0	0	1	1	1	0	0
3	0	1	1	0	0	0	0	0	0	1	1	0	1	1	1	1	0
4	1	1	1	1	1	1	0	0	1	1	1	0	1	0	0	0	0
5	1	1	1	0	1	0	0	0	0	0	1	1	0	1	0	1	1
6	1	1	1	0	1	1	0	0	0	1	1	0	0	1	0	1	0
7	1	0	1	0	1	1	1	0	1	0	0	1	0	1	1	1	1
8	0	0	1	0	1	1	0	1	0	0	0	0	0	1	0	0	0
9	0	1	0	0	1	1	0	1	1	1	0	0	1	1	1	1	1
10	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	1	1
11	0	0	0	1	0	0	0	1	0	0	1	1	0	1	0	1	0
12	0	1	0	1	0	0	0	1	1	1	1	1	0	1	0	1	0
13	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0
14	1	0	1	1	1	0	0	1	0	0	0	1	0	1	0	1	1
15	0	0	0	0	1	1	0	1	1	1	1	1	1	1	1	1	0
16	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0
17	1	0	0	1	1	1	0	0	0	0	0	0	1	0	0	1	1

The final form of IRM was used to formulate FRM. The transitivity relations among the variables were checked and presented by "*". If the challenge "x" of the impact fund is related to challenge "y" and challenge "y" is related to "z". The challenge "x" is mechanically associated with "z". "*" shows all the transitivity relations presented in Table 5. Once the transitivity effects were identified using R software, the driving and dependence powers of each row and column were calculated by adding them together.

Table 5
Final Reachability Matrix

Challenges	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Driving
1	1	1	1	1*	1*	0	0	1*	0	1*	1*	1*	1	1	1*	1	1*	14
2	1*	1	1	1*	1*	1*	0	1*	1*	1*	1*	1*	1	1	1	1*	1*	16
3	1*	1	1	1*	1*	1*	0	1*	1*	1	1	1*	1	1	1	1	1*	16
4	1	1	1	1	1	1	0	1*	1	1	1	1*	1	1*	1*	1*	1*	16
5	1	1	1	1*	1	1*	0	1*	1*	1*	1	1	1*	1	1*	1	1	16
6	1	1	1	1*	1	1	0	1*	0	1	1	1*	1*	1	1*	1	1*	15
7	1	1*	1	1*	1	1	1	1*	1	1*	1*	1	1*	1	1	1	1	17
8	1*	1*	1	1*	1	1	0	1	0	1*	1*	1*	1*	1	1*	1*	1*	15
9	1*	1	1*	1*	1	1	0	1	1	1	1*	1*	1	1	1	1	1	16
10	1*	1	1*	1*	1	1*	0	0	0	1	1*	1*	1*	1*	1*	1	1	14
11	1*	1*	1*	1	1*	1*	0	1	1*	1*	1	1	1*	1	0	1	1*	15
12	1*	1	1*	1	1*	1*	0	1	1	1	1	1	1*	1	1*	1	1*	16
13	1	1*	1*	1	1*	1*	0	0	1*	1*	1*	0	1	1*	0	1*	0	12
14	1	1*	1	1	1	1*	0	1	1*	1*	1*	1	1*	1	1*	1	1	16
15	1*	1*	1*	1*	1	1	0	1	1	1	1	1	1	1	1	1	1*	16
16	1*	1	1*	1	1	1*	0	0	1*	1*	1*	1*	1*	1*	1*	1	1*	15
17	1	1*	1*	1	1	1	0	0	1*	1*	1*	1*	1	1*	0	1	1	14
Dependence	17	17	17	17	17	16	1	13	13	17	17	16	17	17	14	17	16	

       The driving and dependence powers calculated by the sum of rows and columns were used to perform the MICMAC analysis presented in Figure 2. MICMAC analysis includes four basic quadrants. Based on the calculated driving and dependence power, each challenge of impact fund is placed in its respective quadrant. The quadrants are independent, linkage, autonomous, and dependent, respectively. Figure 2 presents all the challenges of impact funds in the linkage quadrant. It shows that the variation or change in the challenge can affect all other challenges in the linkage quadrant.

Driving Power	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
17																	
16													9	15		12	2,3,4,5, 14
15													8				6,11,16
14																17	1,10
13																	
12			**Independent**								**Linkage**						13
11																	
10																	
9																	
8																	
7																	
6																	
5																	
4			**Autonomous**								**Dependent**						
3																	
2																	
1																	

Dependence Power

Figure 2: MICMAC Analysis

The challenges of impact funds were arranged and classified at multiple levels based on reachability, antecedent, and intersection sets. Each respective challenge and all other challenges affecting it are grouped in the reachability set. All challenges influencing the base challenge are grouped under the antecedent set. Finally, the common challenges on both the initial set's reachability and antecedent are presented in the intersection set. The challenges with similar reachability and intersection sets are positioned at each level of the ISM model.

Table 6

Summary of Interactions

Challenges	Reachability	Antecedent	Intersection	Levels
		Iteration I		
1	1,2,3,4,5,8,10,11,12,13,14,15,16,17	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17	1,2,3,4,5,8,10,11,12,13,14,15,16,17	I
2	1,2,3,4,5,6,8,9,10,11,12,13,14,15,16,17	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17	1,2,3,4,5,6,8,9,10,11,12,13,14,15,16,17	I
3	1,2,3,4,5,6,8,9,10,11,12,13,14,15,16,17	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17	1,2,3,4,5,6,8,9,10,11,12,13,14,15,16,17	I
4	1,2,3,4,5,6,8,9,10,11,12,13,14,15,16,17	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17	1,2,3,4,5,6,8,9,10,11,12,13,14,15,16,17	I
5	1,2,3,4,5,6,8,9,10,11,12,13,14,15,16,17	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17	1,2,3,4,5,6,8,9,10,11,12,13,14,15,16,17	I
6	1,2,3,4,5,6,8,10,11,12,13,14,15,16,17	2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17	2,3,4,5,6,8,10,11,12,13,14,15,16,17	
7	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17	7	7	
8	1,2,3,4,5,6,8,10,11,12,13,14,15,16,17	1,2,3,4,5,6,7,8,9,11,12,14,15	1,2,3,4,5,6,8,11,12,14,15	
9	1,2,3,4,5,6,8,9,10,11,12,13,14,15,16,17	2,3,4,5,7,9,11,12,13,14,15,16,17	2,3,4,5,9,11,12,13,14,15,16,17	
10	1,2,3,4,5,6,10,11,12,13,14,15,16,17	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17	1,2,3,4,5,6,10,11,12,13,14,15,16,17	I
11	1,2,3,4,5,6,8,9,10,11,12,13,14,16,17	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17	1,2,3,4,5,6,8,9,10,11,12,13,14,16,17	I
12	1,2,3,4,5,6,8,9,10,11,12,13,14,15,16,17	1,2,3,4,5,6,7,8,9,10,11,12,14,15,16,17	1,2,3,4,5,6,8,9,10,11,12,14,15,16,17	
13	1,2,3,4,5,6,9,10,11,13,14,16	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17	1,2,3,4,5,6,9,10,11,13,14,16	I
14	1,2,3,4,5,6,8,9,10,11,12,13,14,15,16,17	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17	1,2,3,4,5,6,8,9,10,11,12,13,14,15,16,17	I
15	1,2,3,4,5,6,8,9,10,11,12,13,14,15,16,17	1,2,3,4,5,6,7,8,9,10,12,14,15,16	1,2,3,4,5,6,8,9,10,12,14,15,16	
16	1,2,3,4,5,6,9,10,11,12,13,14,15,16,17	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17	1,2,3,4,5,6,9,10,11,12,13,14,15,16,17	I
17	1,2,3,4,5,6,9,10,11,12,13,14,16,17	1,2,3,4,5,6,7,8,9,10,11,12,14,15,16,17	1,2,3,4,5,6,9,10,11,12,14,16,17	
		Iteration II		
6	6	6,7,8,9,12,15,17	6	II
7	6,7,8,9,12,15,17	7	7	
8	6,8	7,8,9,12,15	8	
9	6,8,9,12,15,17	7,9,12,15	9,12,15	
12	6,8,9,12,15,17	7,9,12,15	9,12,15	
15	6,8,9,12,15,17	7,9,12,15	9,12,15	
17	6,17	7,9,12,15,17	17	
		Iteration III		
7	7,8,9,12,15,17	7	7	
8	8	7,8,9,12,15	8	III
9	8,9,12,15,17	7,9,12,15	9,12,15	
12	8,9,12,15,17	7,9,12,15	9,12,15	
15	8,9,12,15,17	7,9,12,15	9,12,15	
17	17	7,9,12,15,17	17	III
		Iteration IV		
7	7,9,12,15	7	7	
9	9,12,15	7,9,12,15	9,12,15	IV
12	9,12,15	7,9,12,15	9,12,15	IV
15	9,12,15	7,9,12,15	9,12,15	IV
		Iteration V		
7	7	7	7	V

The summary of the interactions is presented in Table 6. The recapitulation clearly shows that level I is the most comprehensive level with the maximum number of challenges, including 1, 2, 3, 4, 5, 10, 11, 13, 14, and 16. Level II only includes challenge 6, "low scalability and sustainability". Further, challenges 8 and 17 "agricultural growth and development" and "policy instability," are part of level III. Challenge numbers 9, 12, and 15 are included in level IV. Finally,

Challenge 7, "political and economic uncertainty," is located at level V, the base level and the foremost challenge for impact fund investors.

Table 7
Conical Matrix

Challenges	1	2	3	4	5	10	11	13	14	16	6	8	17	9	12	15	7
1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	0
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
10	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	0
11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
13	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
16	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0
6	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0
8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
17	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

The initially constructed FRM was further used to develop a conical matrix, as presented in Table 7. Each row's driving and dependence powers helped rank the challenges based on their occurrence of "1". The order identified by summarizing the interactions was followed to construct the conical matrix, which was further used to formulate a diagraph. This digraph is the graphical representation of the challenges of impact funds, including their transitivity links, presented in Figure 3.
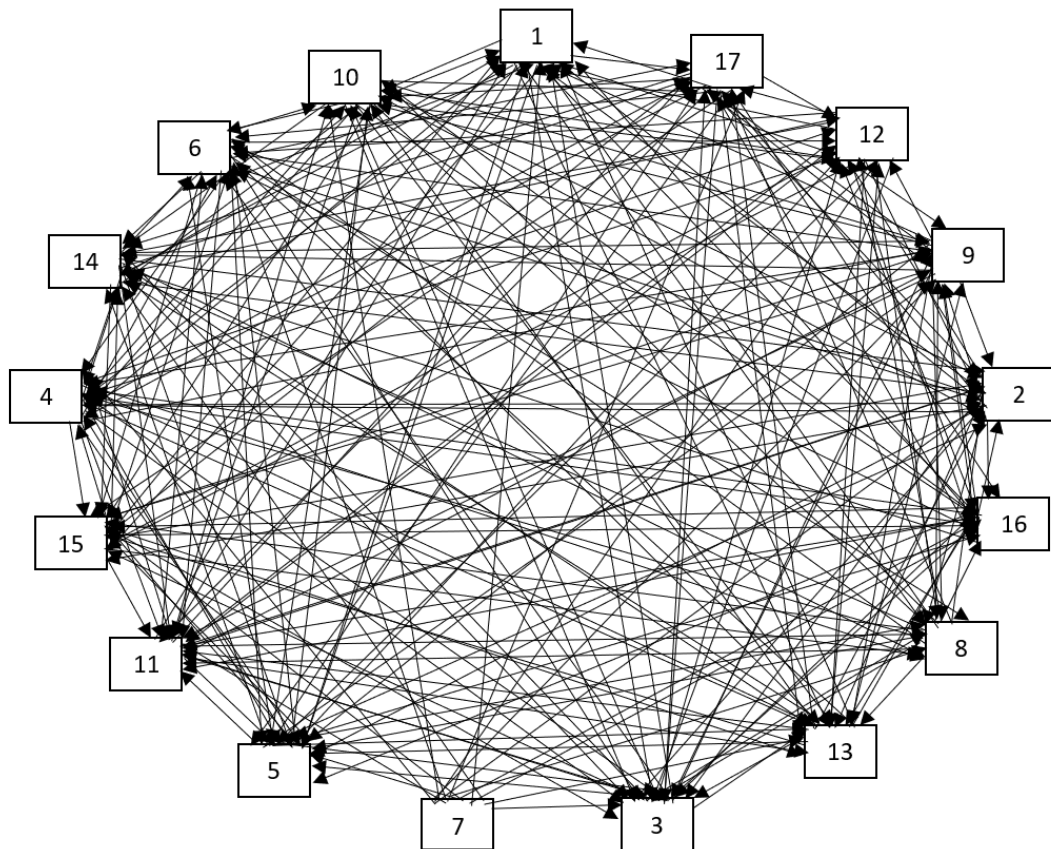
Figure 3: Diagraph of the Relations of the Challenges of Impact Funds

5.   Key Findings and Discussion

The current environmental deregulation is directly impacting agricultural land and reducing its productivity at an alarming rate (Shehzad & Khan, 2024c). The decline in crop productivity leads to the global food crisis and global hunger issues. Every developed and underdeveloped economy is going through this phase. It takes precautionary measures to deal with the problems, including climate change, biodiversity loss, pollution, and natural resource depletion (Khan et al., 2022). Therefore, to control these situations, there is an urgent need to adopt and practice sustainable practices physically and financially (Camilleri, 2020). Impact funding is one of the most optimal investment techniques in this situation. This funding approach generates financial and positive social and environmental impacts (Medina & Scales, 2023). Impact funds are still considered a novel approach and are still being adopted.
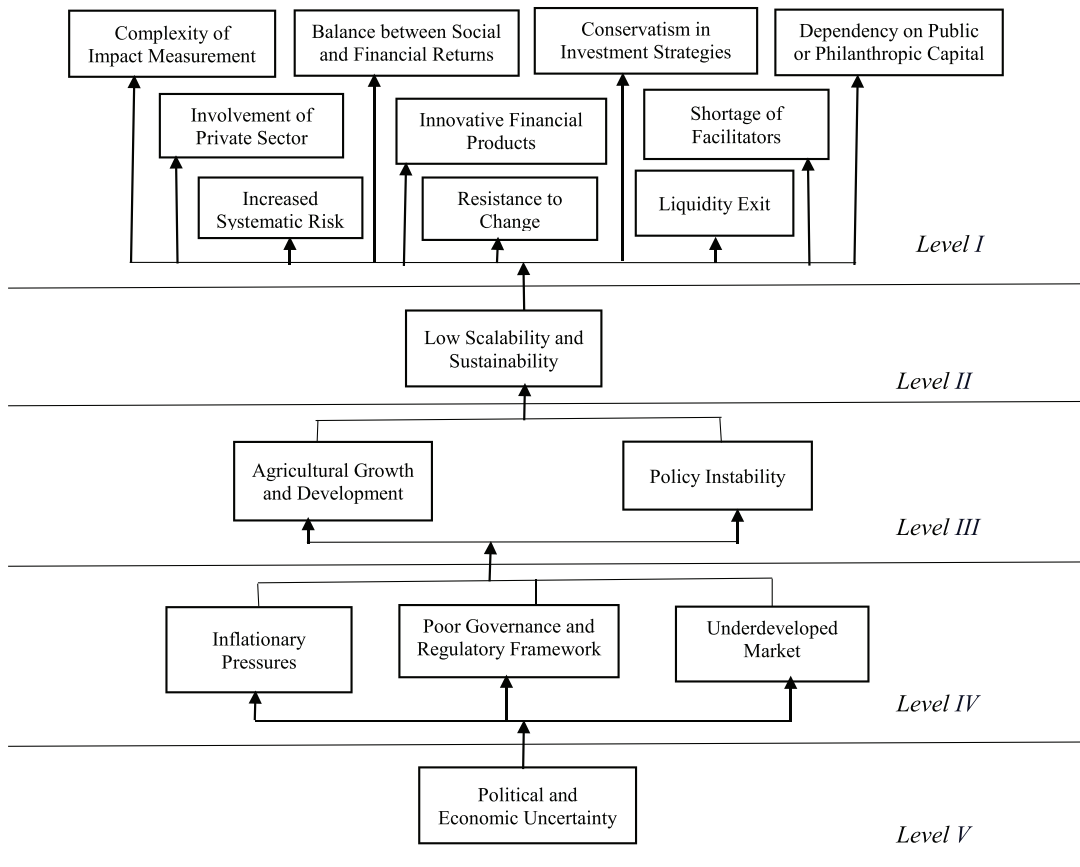
Figure 4: Hierarchical Representation of the Challenges of Impact Funds

The investors of impact funds are facing several challenges in its execution. Therefore, the present study aims to highlight and present the challenges of impact funds in an ISM hierarchical model. Furthermore, this study conducted an in-depth literature review to identify the challenges of impact funds, which the prior researchers had already highlighted. In the study's second phase, the list of explored challenges was shared sequentially with the two panels of experts. Each panel of experts identified the overlapping, irrelevant, and vague challenges and helped finalize the 17 most significant challenges of impact funds. The list of identified challenges was shared with the panel of experts, who were asked to rank them according to their significance level. Multiple steps of the ISM approach were followed to explore the contextual relationships among the challenges of impact funds. After constructing the SSIM, the IRM and FRM were formulated. The FRM was then used to conduct a MICMAC analysis based on the driving and dependence powers of the rows and columns, respectively. Similarly, a conical matrix and a digraph were designed. Finally, an ISM hierarchical model was constructed, presenting the challenges at different levels. The 17 shortlisted challenges were ranked in a model explaining the significance level of the respective

challenges faced by the investors of impact funds (see Figure 4).

The primary challenge of impact funds is "political and economic uncertainty," which is located in level V. Developing and under-developed economies are not stable politically and economically; this situation generates "inflationary pressures" and "underdeveloped market" situations (Girdzijauskas et al., 2022). Moreover, unstable political and economic conditions are considered the primary cause of "poor governance and regulatory framework", presented through level IV. Level III is the next level of this hierarchical model, including "agricultural growth and development" and "policy instability". Both these situations are the instability of markets and increasing inflationary pressures. It leads towards "low scalability and sustainability" presented through level II. The presence of policy directly impacts the growth potential and profitability maintenance of the funds (Khan et al., 2017). The lack of scalability and sustainability is one of the foremost concerns of individual investors in impact funds (Baloch et al., 2022).

The extensive challenges of impact funds are ranked in level I, which includes the maximum number of challenges. This level comprises of "involvement of private sector", "shortage of facilitators", "complexity of impact measurement", "balance between social and financial returns", "increased systematic risk", "liquidity exit", "resistance to change", "conservatism in investment strategies", "dependency of public or philanthropic capital", and "innovative financial products" respectively. The accurate estimation of financial and social returns is a major concern of every investor (Shehzad & Khan, 2024a). Tough exits and high market risks are the foremost challenge-creating factors from the perspective of individual investors. Therefore, these challenging situations can be avoided by potential investors while making their investment decisions in impact funds to generate a positive social and environmental impact along with financial gains.

6.   Study Conclusion

This study aims to identify and rank the challenges investors face in impact funds during their adoption phase. An extensive literature review was conducted initially to determine the actual and real-time challenges of impact funds, and a comprehensive list of the obstacles was made. The expert panel shredded the established list to get valuable insights. After careful analysis done by the participant experts, the list of the 17 most significant challenges of impact funds was finalized. These final challenges were arranged in a hierarchical model according to their relevance levels. Therefore, to start the ISM approach, SSIM was constructed, presenting the contextual relations existing among the challenges of impact funds.

The contextual relations were presented symbolically using VAOX, which was further converted to 0 and 1 forms. Later, R software was used to identify the transitivity relations present among the challenges of impact funds. Similarly, the MICMAC analysis was performed according to the calculated driving and dependence powers, respectively. Finally, an ISM hierarchical model

was constructed to rank the challenges at different levels according to their relevance. The findings revealed that political and economic uncertainty is the root cause of the challenging situation for investors in impact funds. It increases inflation rates, causes poor governance, and results in a lack of a regulatory framework. Lack of agricultural growth and development, policy instability, and low scalability and sustainability are the foremost challenging factors for the individual investors of impact funds specified for the agriculture sector.

6.1   Study Implications

The current study has several implications for its multiple stakeholders. Initially, the study content will be beneficial for researchers and academicians. The first phase of the study is comprised of an extensive literature review. Therefore, the conceptualization, theoretical relevance, and identified impediments can help potential researchers further analyze the concept by adopting different methodological approaches. The identified and discussed contextual relationships present among the challenges of impact funds can assist scholars and investors accordingly. The constructed hierarchical model placing the challenges at different levels can be beneficial in clearly understanding the relation and challenging intensity level of each factor.

The list of the highlighted challenges can be used by the active and potential investors of impact funds to make their investment decisions accordingly by avoiding them. Policymakers and regulators can use some significant highlighted challenges, including policy instability, poor governance and regulatory framework, uncertain political and economic conditions, etc., to make new policies and change their existing ones accordingly. Law enforcement agencies and other national and international organizations can take assistance from the identified impediments to create ease for the practitioners of impact funds accordingly.

6.2   Study Limitations and Future Directions

Some limitations in this study are creating opportunities for future researchers and scholars. Due to time constraints, the present study has highlighted some sustainable investment techniques, including biodiversity finance, green finance, and SRI. The present study is limited to explaining these sustainable investment techniques in detail. Therefore, future scholars can invest their time and research skills to analyze these concepts in detail by adopting multiple research tools and techniques, including quantitative, qualitative, and mixed-method approaches.

The present study has only been assisted by 15 experts who have finalized the 17 challenges of impact funds. In the future, the number of experts and challenges can be increased according to the comprehensive nature of the impact funds. The present study has adopted the ISM approach along with MICMAC analysis. Other analyses, including descriptive, regression, predictive, and cluster analysis, can be performed in different ways in the future. The present study has conceptually developed the hierarchical model. In the future, the available financial data on these identified challenges can be analyzed to support the ranking levels numerically.

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Interactional Injustice, Stress, and the Rise of Coworker Incivility: A Time-Lagged Study in the Banking Sector of Pakistan

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Abstract

The study aims to examine the relationship between interactional injustice and perceived coworker incivility directly and through stress, building on stress-appraisal theory. The theory provides the framework for how individuals interpret and respond to stressors. The time-lagged study design was used to collect data from 192 bank employees, and data was analyzed by developing and testing a structural model in AMOS. The finding reveals that interactional injustice and stress are positively related to perceived coworker incivility. Moreover, the stress significantly mediated the relationship between interactional injustice and perceived coworker incivility. The primary novelty of the current study lies in developing a framework that identifies the antecedent of coworker incivility and the mechanism that breeds incivility at work. In this way, the current study offers actionable insights for managers to foster fair interpersonal treatment in the workplace that can reduce stress and perceived coworker incivility. Moreover, the current study was conducted in Pakistan's banking sector. Future research may be conducted in other sectors to generalize the findings.

Keywords: Interactional injustice; stress; perceived coworker incivility; organizational behavior.

JEL Classification: D23

1.   Introduction

Incivility is increasing in a contemporary work environment, undermining interpersonal relationships and overall organizational effectiveness (Vasconcelos, 2020). Like any country in the world, incivility and toxicity are on the rise in Pakistan as well

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(Zehra, 2024). It is defined as low-intensity work behaviour with ambiguous intent to harm and is shown as rude or discourteous actions that violate workplace norms of mutual respect (Cortina et al., 2017). Contrary to overt aggression, incivility leans towards covert and unnoticeable, which are more challenging to address (Hecker, 2024). Nevertheless, incivility is a mild form of mistreatment, but it spreads like a contagious virus and heightens the perception of incivility among coworkers (Andersson & Pearson, 1999). The researchers have reported that incivility is the main reason for undesirable work behaviours such as anger, frustration, hostility, counterproductive work behaviour, production deviance, high turnover intention, work withdrawal, and low engagement (Bibi et al., 2013; Porath & Pearson, 2012; Rahim & Cosby, 2016). However, much of the existing research has focused on the consequences of coworkers' incivility, and there is a growing need to examine its antecedents. Understanding the factors contributing to coworker incivility can provide valuable insights into preventing it and fostering a more harmonious work environment.

The Stress-Appraisal theory developed by Lazarus and Folkman (1984) reveals how individuals respond to and evaluate situations they perceive as threatening or harmful. They noted that individuals use their subjective cognitive process to determine whether the perceived stressor is threatening or dangerous. Then, the stress response is activated and shown in their behaviour. Building on the stress appraisal theory, it is probable that employees perceive interactional injustice as a stressor. According to Elovainio et al. (2004), employees' perception of poor organizational justice is an environmental stressor and leads to negative work behaviour. Organizational justice is how an organization treats its employees fairly (Greenberg, 1990). It is divided into distributive, procedural, and interactional justice categories. Distributive justice is concerned with the fair distribution of rewards among members based on an individual's effort (Alexander & Ruderman, 1987). Procedural justice concerns employees' perception of fairness of procedure leading to the outcome (Blader & Tyler, 2003). Interactional justice refers to fairness in the interpersonal treatment in decision implementation (Colquitt, 2001). The interactional justice climate is further divided into two components_ informational and interpersonal. The informational component of interactional justice is the perception of employees that the organization provides adequate information for performing tasks and provides detailed explanations regarding the allocation of the reward and choice of procedure in determining the reward. The interpersonal component refers to employees' perception of maintaining dignity and respect in interpersonal treatment.

Furthermore, studies have reported that employees' perception of fairness impacts their attitudes and behaviour (Moorman, 1991; Reknes et al., 2020). Among the three categories of organizational justice, interactional justice is more aligned with coworker incivility (Aljawarneh et al., 2022), as it mainly addresses fairness of interpersonal treatment within the organization. As discussed earlier, interactional justice evaluates that organizational authority and coworkers treat employees with respect, dignity, and fairness. When employees perceive interactional injustice as disrespected and excluded, they feel undervalued and are

more likely to be involved in uncivil behaviour. Furthermore, incivility often arises when mutual norms of respect are violated (Nguyen-Viet & Nguyen, 2024), which aligns closely with the concept of interactional injustice. Hence, the present study aims to explain employees' perceptions of unfair treatment in interpersonal treatment and information provision, which leads to coworker incivility at work.

The study also aims to explain the mechanism between interactional injustice and coworker-perceived incivility by applying stress-appraisal theory. The theory provides a framework for how the employees' perception of interactional injustice(stressor) triggers psychological stress, resulting in uncivil behaviour towards coworkers. For example, the employees' perception of unfair and disrespectful treatment from supervisors and coworkers acts as a perceived stressor, triggering negative emotions (psychological stress). The psychological stress due to perceived injustice depletes the emotional and cognitive resources, likely leading to uncivil behaviour towards coworkers. Previous studies have stated that providing insufficient information triggers psychological stress as employees struggle to navigate uncertain situations (Wu et al., 2007). The stress level is further exaggerated when employees do not find an explanation of organizational decisions (Kim, 2009). In related lines, employees experience more stress when they see limited information about the change introduced in the immediate work environment (Bouckenooghe, 2010). Other studies reported that psychological stress changes employees' behaviour (Schweda et al., 2019). Employees initiate negative behaviour under stressful conditions (Chen, 2023). In a related line, Rawlins (2017) reported that stressed employees are more inclined to be uncivil toward their coworkers.

In sum, the present study aims to add to the literature by examining the impact of interactional injustice on perceived coworker incivility in Pakistan's banking sector. The study also analyses psychological stress as an underlying mechanism between interactional injustice and perceived coworker incivility.

2.   Context of the Study

The banking sector plays a catalytic role in the economic development of developed and developing countries, providing financial services to facilitate trade and investment (Berkowitz et al., 2014; Guiso et al., 2004; Kumar, 2018; Zeeshan et al., 2021). In the case of Pakistan, the banking sector also plays a vital role in the healthy functioning of economic activities (Xu et al., 2018). Pakistan's banking sector undergoes various transformations due to privatization, technological advancement, and market liberalization (Kausar et al., 2014; Sabir & Qayyum, 2018). It enhances the competition among banks to attract and retain customers by offering superior services. The massive competition increases the work pressures, making the job more demanding and challenging (Arshad et al., 2020; Giorgi et al., 2019). In this scenario, employees' perception of unfair interpersonal treatment contributes

to psychological stress and coworker incivility. Given the vital role of employees in banking operations, it is essential to identify the factors that drive coworker incivility to foster a healthy work environment.

2.1   Theory and Hypothesis Development

2.1.1   Stress-Appraisal Theory

The stress-appraisal theory provides the framework for understanding how individuals interpret and respond to stressors in their immediate environment (Lazarus & Folkman, 1984). They noted that individuals appraise the situation in primary and secondary ways. In primary appraisal, the individual analyses the event. If the event is threatening or harmful, then it will cause stress. Next, individuals come into the second appraisal phase; if the stress lasts for a long time and they can't change the situation, then stress changes the behaviour and attitude of individuals. The theory explains how interactional injustice (perceived unfairness in information sharing and interpersonal interactions) triggers stress, leading to perceived coworker incivility.

A person perceives a stressor as threatening or harmful (Spector & Fox, 2005). It can range from minor fuss to life-threatening events (Delcourt et al., 2025). In this regard, interactional injustice is a stressor because employees feel unfair interpersonal treatment, such as a lack of respect and dignity, feelings of exclusion, no information sharing, and lack of transparency. The employees enter the primary appraisal phase; they perceive the stressor (interactional injustice) as harmful because it undermines the basic psychological need of humans for respect, dignity, and inclusion (Gilabert, 2024). This appraisal leads employees towards stress. Afterward, the employees enter the secondary appraisal and evaluate the available resources, such as organizational support and social networks, to cope with the stress. If employees have limited resources, stress impacts their interpersonal relationships (Khliefat et al., 2021). The stress can cause employees to perceive coworker incivility for two reasons. Firstly, stress distorts their perceptions, making them perceive coworker actions negatively. Secondly, stress drains their cognitive and emotional abilities and causes them to behave more uncivilly toward coworkers.

2.2   Interactional Injustice and Perceived Coworker Incivility

The issue of justice and fairness in daily interaction is essential to individuals in the workplace (Bies, 2001). The individual sees how supervisors and coworkers maintain and foster fair interpersonal treatment; often, they are sensitive to unequal treatment (Van den Bos & Lind, 2001). Additionally, employees observe the manager's treatment to determine whether or not the employees are valued (Saks, 2022). Castaños-Cervantes (2024) noted that the perception of justice and fairness fosters a sense of social inclusion, respect, and dignity.

Contrary to this, the perception of injustice promotes the feeling of social exclusion, disregard, humiliation, disrespect, and rudeness (Miner & Cortina, 2016). Employees' perception of unfair treatment at work reduced organizational performance and commitment (Bilal et al., 2017). Moreover, the perception of organizational injustice fosters the knowledge-hiding behaviours of employees (Lee & Shin, 2025)

Organizational justice is divided into three dimensions: distributive, procedural, and interactional (Colquitt, 2001). Distributive justice is concerned with the fair distribution of rewards among members based on an individual's effort (Alexander & Ruderman, 1987). Procedural justice concerns employees' perception of fairness of procedure leading to the outcome (Blader & Tyler, 2003). Interactional justice refers to fairness in the interpersonal treatment in decision implementation (Colquitt, 2001). The perception of interactional justice fosters the contextual performance of employees, which motivates them to perform their jobs enthusiastically (Saboor et al., 2018). The interactional justice climate is further divided into informational and interpersonal components. The informational component is more explanatory in decision, and interpersonal is more sensitive to personal treatment. Researchers have a consensus that interactional justice plays a vital role in shaping employees' attitudes and behaviour (Judge et al., 2006; Khattak et al., 2019; Skarlicki & Folger, 2004). Hence, the present study mainly focuses on interactional injustice as it is more inclined to daily work interactions and it primarily focuses on the relational and social support of justice (Moorman, 1991). This dimension is significant to understanding why employees perceive rude, discourteous, and disrespectful behaviour from coworkers. Furthermore, research reveals that the perception of distributive and procedural injustice can contribute to workplace incivility (Sarwar & Muhammad, 2020). However, interactional injustice, more closely related to incivility, remains underexplored in the existing literature.

In a meta-analytical review, Colquitt (2001) reported that a lack of interactional justice at work leads to several adverse outcomes, such as decreased job satisfaction and citizenship behaviour and increased work withdrawal. Similarly, Simons and Roberson (2003) mentioned that interpersonal injustice leads to low organizational commitment and high turnover. The perceived interactional injustice enhances deviant behaviour at work (Khattak & Abukhait, 2024). Another study noted that the perception of interactional injustice increases employees' turnover intention (Kuuyelleh et al., 2025). Interactional injustice is essential in increasing counterproductive work behaviour (Jafri et al., 2020; Le Roy et al., 2012). Moreover, the perception of interactional injustice affects the employees' cognition (Grandey & Fisk, 2004). In this line, when employees experience unfair personal treatment at work, it harms their well-being (Miner & Cortina, 2016). The injustice promotes employees' disengagement at the workplace (Wang, 2024). The perception of injustice enhances bullying behaviour in the workplace (Reknes et al., 2020).

De Clercq et al. (2019) noted that employees who experience stressors at work cannot maintain a positive relationship. Munir et al. (2020) indicated that stressors mitigate a friendly workplace environment. Additionally,Leiter (2013) said that stressors significantly contribute to incivility. In this context, interactional injustice serves as a stressor. Workplace stressors may be related to anything a person perceives as stressful, such as lack of communication, disrespectful and disregarded behaviour in the work environment, or lack of autonomy (Spector, 2005). According to stress appraisal theory, individuals perceive anything as a harmful or threatening stressor that negatively affects cognition resources and emotional well-being (Lazarus & Folkman, 1984). This appraisal determines how individuals interpret and respond to stressors, potentially leading to adverse emotional and behavioural outcomes such as coworker incivility. For instance, employees who remain uncertain about organizational decisions and feel deprived of respect and dignity often spill this frustration, anger, and rudeness on their immediate members(coworkers). Hence, it is hypothesized that

H1: The interactional injustice is positively related to perceived coworker incivility.

2.3   *Mediating Role of Stress*

Moreover, perceived unfairness is one of the primary reasons for developing negative emotions in the workplace (Folger et al., 1998; Howard & Cordes, 2010). Employees who feel that they are unfairly treated experience more depression (Lynch et al., 2021; Skitka, 2002), emotional exhaustion (Howard & Cordes, 2010), and low social worth (Lind & Tyler, 1988). Employees who perceive injustice at work drain their valuable emotional and cognitive resources and experience psychological stress. Additionally, employees who receive inadequate information regarding decisions experience more uncertainty and appraise the situation as stressful (Wu et al., 2007). In a related line, other studies stated that providing limited information makes the job more stressful, hindering individuals' ability to cope with the situation (Bouckenooghe, 2010; Judge & Colquitt, 2004; Vermunt & Steensma, 2016). When the manager hinders the employees' information, employees perceive that the employer does not respect them (Greenberg, 2004). Insufficient information also lets employees perceive that organization decisions are based on favoritism rather than merit (Cheung & Law, 2008). It incites employees to perceive the situation as stressful, which strains psychological stress. Additionally, the perception of interpersonal injustice plays a prominent role in developing emotional exhaustion (Cao, 2022). In a related vein, Koksal and Mert (2024) noted that interactional injustice exacerbates employees' emotional exhaustion by intensifying the feeling of mistreatment.

According to the stress appraisal theory, individuals experience stress when they appraise the situation as stressful (Lazarus & Folkman, 1984). Here, the employee's perception of interactional injustice is stressful. It is because employees are not treated with respect and dignity and don't get enough information from management, so that they may

experience psychological stress. Psychological stress is revealed as a state of mental and emotional strain that results from stressful events (Lazarus & Folkman, 1984). Research also noted that perceived stressors lead to psychological stress (Monroe & Slavich, 2016). Hence, it is hypothesized that:

H2: The interactional injustice is positively related to stress.

According to (Schweda,2019); stress tends to alter employees' behaviour. It engages employees in aggressive behaviour at work (Chen, 2023). Another study also reported that stress lowers performance and increases absenteeism (Kim & Stoner, 2008). The stress involves employees in counterproductive behaviour and reduced creativity (Syed et al., 2021). Stress diminishes empathy and involves negative behaviour (Silver & Teasdale, 2005). The employees under stress consciously or unconsciously engage in uncivil behaviour (Rüzgar, 2025). Additionally, stressed employees are detached from their work responsibilities and show low motivation and morale (Abramson, 2022). Stress causes restlessness and provokes uncivil behaviour at work, like eye rolling, harsh tones and rude gestures (Urban et al., 2021). Stress at work negatively affects the employees' behaviour (Ashraf et al., 2019). It may foster the worker incivility (Deng et al., 2025). Employees who experience stress are more likely to disrespect coworkers (Rawlins, 2017). Incivility violates mutual respect in interpersonal relationships, as shown by coworkers' rude and condescending behaviours (Andersson & Pearson, 1999). According to Post (2013); employees who experience more stress are more likely to behave rudely to their coworkers. Hence, it is hypothesized that

H3: Stress is positively related to the perceived coworker incivility.

Based on the above discussion and stress-appraisal theory (Lazarus & Folkman, 1984), perceived stressors develop negative emotions in individuals and involve them in negative behaviour. They further elaborate that a perceived stressor is anything the person appraises as stressful. In this regard, when employees experience interactional injustice, suppose they are not treated with respect at work, don't get enough information regarding decisions and do not get timely feedback. This appraisal distressed employees as he did not get what made them feel valuable to the organization. This stress makes them rude and discourteous to others, as they feel helpless; this feeling spills over the immediate work environment, and the resultant coworkers experience incivility from the other coworkers.

H4: Stress mediates the relationship between interactional injustice and perceived coworker incivility.

Figure 1

Theoretical Framework
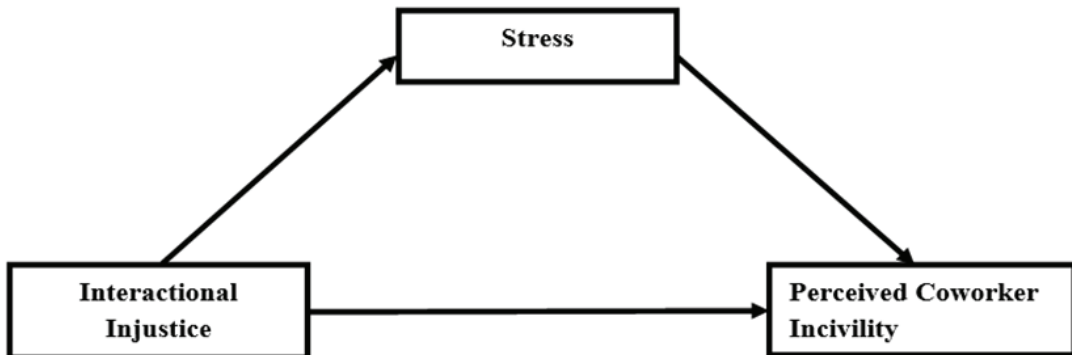
Source: Authors' Work

Figure 1: Theoretical Framework

2.4   Research Design

According to Saunders et al. (2007), the research design is the stage of turning research aims into research projects. It provides the framework of research strategies and methods for conducting a study. Blaikie and Priest (2019) reported that the choice of methods largely depends on determining philosophical assumptions that researchers explicitly and implicitly make in their studies. Hence, the study is based on the positivism philosophy as the study aims to test and verify the established relationship based on the existing theory. Additionally, Park et al. (2020) stated that positivist studies require a large sample size to justify meaningful effect size among variables and maintain the objectivity of research. Ponto (2015) mentioned that a survey strategy is the best to get a large amount of data from the population economically. Hence, the current research was based on positivist philosophy, and the survey research strategy was used to generalize the study findings.

3.   **Data Collection Technique**

Data was collected from 192 bank employees in Lahore, Pakistan. A study incorporated a time lag design with a two-week time interval. Podsakoff et al. (2012) have suggested that the time lag should not be too short or long. A person's memory will inflate the relationship between variables if the time lag is too short. On the other hand, if the time lag is too long, certain factors (i.e., change of manager or employee turnover) will conceal the relationship between variables.

Furthermore, the sample size was calculated using Hair's 10 m formula. The total number of items in the three scales is 18. Hence, the sample size of the current study is 180 respondents. A total of 40 branches were approached, and 210 questionnaires were distributed to get the desired sample size. The mismatching of data was handled by matching the four last digits of their phone number. Firstly, 210 questionnaires related to interactional injustice and psychological stress were distributed in time 1. After eliminating missing values, 201 responses were valid, so 201 questionnaires related to perceived coworker incivility were sent to respondents in time 2. The data was again screened for the missing value, and the final set of 192 was retained for statistical analysis. The survey was conducted using a paper-pencil, and the respondents were from different banking departments, including operations, sales, customer services, HR, audits, etc., were included. While a group of lower cadre employees used for security and cleaning was also present, they were excluded from the study because most third parties employ them and are not included in the bank's payrolls.

3.1   *Measures*

Interactional injustice was measured by a nine-item scale (Moorman, 1991). A sample item is "Generally, a company representative treats you with kindness and consideration". The scale is a unidimensional scale that measures informational and interpersonal components of interactional justice. While, stress is measured by the 6-item scale (Cullen et al., 1985). A sample item is "When I am at work, I often feel tense or uneasy" (1=strongly disagree; 5=strongly agree). However, Perceived coworker incivility was measured using the 7-item scale of Cortina et al. (2001). A sample item is "During the past five years, you are in a situation when your coworkers put you down or condescended to you."

4.   **Results**

4.1   *Descriptive Statistics and Correlation*

Table 1 shows the values of the descriptive statistics and correlation. The table reveals that all constructs, namely interactional injustice, stress, and perceived coworker incivility, are significantly correlated. But, demographic variables such as gender, age, and qualification

are not associated with the primary constructs of the study. Moreover, the normality of the constructs was tested by skewness and kurtosis tests. The kurtosis values are between the range of +3 and -3, while for skewness, the values are in the range of +1 and -1 to justify the normality of data (Hair et al., 2010). The data of constructs was normally distributed as the values fall within the range.

Table 1
Descriptive and correlation statistics

Constructs	Mean	SD	1	2	3	4	5	6
Gender	1.32	.48						
Age	1.81	.72	.133*					
Qualification	1.84	.68	.056	.266*				
Interactional Injustice	23.7	4.17	-.023	.034	.069			
Stress	22.3	4.20	.053	.012	.031	.169**		
Perceived Coworker Incivility	27.8	5.05	-.007	.085	.021	.292**	.414**	-

Note: Correlation is significant at **$p <= 0.05$; *$p <= 0.01$

4.2   *Confirmatory Factor Analysis*

Confirmatory factor analysis was conducted to check the measurement model's psychometric properties (reliability and validity). Table 2 demonstrates that all the items are significantly loaded on their parent construct, with the factor loading weights above threshold >0.50, recommended by Fornell and Larcker (1981). It indicates that each item represents its respective construct. Moreover, model fit indices of different models are compared to indicate that the study model is best suited to the data. Table 3 reveals that the current study model has acceptable model fit indices: Chi-square/degree of freedom(X2/df) = 1.8, Comparative Fit Indices (CFI) =0.968, Tucker Lewis Indices (TLI)= 0.959, Root Mean Square Error of Approximation (RMSEA=0.05) as compared to other models.

The convergent and discriminant validity of the constructs were assessed. The convergent validity was checked in two ways. First, the factor loading of the items on their respective constructs was examined; as discussed earlier, factor loadings are above 0.5, establishing a strong association between items and construct. Secondly, convergent validity was determined by checking the average variance extracted values. According to Fornell and Larcker (1981), the value of AVE should be above 0.50 to justify the convergent validity of constructs. Table 4 reveals that AVE values of interactional injustice, stress, and perceived coworker incivility are above the threshold. The discriminant validity was assessed by comparing the square root value of AVE with the correlation coefficient. AVE's construct square root value is above the correlation coefficient, justifying the discriminant validity. Moreover, the discriminant validity was also examined by comparing the maximum shared variance (MSV) to average variance extracted (Syed et al., 2021). The result reveals that the

MSV value is less than AVE, showing that the variance extracted by each construct is more than the variance shared by other constructs, justifying discriminant validity. Moreover, the reliability of the constructs is determined by Cronbach's alpha and composite reliability (CR). The values of alpha and CR are above the threshold of 0.7 and 0.8, respectively (Fornell & Larcker, 1981), demonstrating strong reliability, as shown in Table 4.

Table 2
Measurement Model

Measures	Loading
Interactional Injustice	
In general, representative of this company shows concern for your rights.	.893
In general, representative of this company treats you with kindness and consideration.	.882
In general, representative of this company takes steps to deal with me in a truthful manner.	.862
In general, representative of this company's able to suppress personal bias.	.807
In general, t representative of this company considers my viewpoint.	.811
In general, representative of this company provides me with timely feedback about decisions and their implications.	.893
Stress	
When I am at work, I often feel tense or uneasy.	.815
A lot of time, my job makes me very frustrated or angry	.822
I am not usually calm and at ease when working	.728
Most of the time, when I am at work, I have much to worry about	.716
I am usually under a lot of pressure at work	.708
There are a lot of aspects of my job that make me upset.	.714
Perceived Coworker Incivility	
During past five years, have you in a situation where your coworker?	
Put you down or was condescending to you	.703
Paid little attention to you statement or showed little interest in your opinion	.711
Made derogatory remarks about you	.831
Addresses you in unprofessional term, either publicly or privately	.857
Ignored or excluded you from professional camaraderie	.849
Doubted your judgment on a matter over which you have responsibility	.793
Made unwanted attempt to draw you into a discussion of personal matters	.773

Table 3
Comparison of Measurement Models

Models	X²/df	CFI	TLI	RMSEA
Three-Factor Model (IIJ+STR+PCI)	1.8	.968	.959	.05
Two-Factor Model (IIJ merged STR + PCI)	8.4	.709	.628	.157
One-Factor Model	14.21	.491	.355	.210

Note: *IIJ= Interactional injustice, STR= Stress, PCI= Perceived Coworker Incivility, X2/df=Chi-square/degree of freedom, CFI= Comparative Fit Indices, TLI=Tucker Lewis Indices, RMSEA=Root Mean Square Error of Appromization*

Table 4
Validity and Reliability

Constructs	1	2	3	α	CR	AVE	MSV
Interactional Injustice	*0.75*			0.94	0.88	0.56	0.20
Stress	.169**	*0.74*		0.88	0.89	0.56	0.20
Perceived Coworker Incivility	.292**	.414**	*0.86*	0.89	0.944	0.739	0.10

Note: *Italic values in diagonal are the square root of AVE, α= Cronbach Alpha, CR= Composite Reliability, AVE= Average Variance Extracted, MSV = Maximum Shared Variance.*

4.3   Hypothesis testing

A structured model was constructed to test hypotheses in AMOS. The results are presented in Table 5. The interactional injustice has direct positive impacts on the perceived coworkers' incivility (Beta =.311; S. E= 0.061; $p < 0.01$), supporting hypothesis 1. The mediation role of stress between interactional injustice and perceived coworkers' incivility is examined using bootstrapping at 95% bias confidence interval analysis and 5000 samples. Moreover, the steps given by Baron and Kenny (1986) are followed to establish mediation. The paths from the independent variable to the mediator variable and the mediator variable to the dependent variable are significant. The results reveal that interactional injustice significantly impacts stress (Beta =.149; S. E= 0.057; $p < 0.01$), supporting hypothesis 2. The stress also substantially affects the perceived coworker incivility (Beta =.433; S. E= 0.061; $p < 0.01$); hence H3 supported. The indirect effect of stress is also significant (Beta =.065; S. E= 0.035; $p < 0.05$), showing stress mediates the relationship between interactional injustice and perceived coworkers' incivility; therefore, the H4 hypothesis is supported.

Table 5
Hypothesis Testing Result

Direct Paths	Estimates	Standard Error	Result of Hypotheses
Interactional Injustice → Perceived Coworker Incivility	.311**	.061	Supported
Interactional Injustice → Stress	.149**	.057	Supported
Stress → Perceived Coworker Incivility	.433**	.061	Supported
Interactional Injustice → Stress → Perceived Coworker Incivility	.065*	.035	Supported

Note: *N= 192; unstandardized coefficients are mentioned; *p < 0.05; **p < 0.01*

5.　　Discussion

The current study examined the direct influence of perceived injustice on perceived coworker incivility. It also provides the mechanisms through which interactional injustice affects the perceived coworkers' incivility, highlighting the mediating role of stress. The findings contribute to the literature on workplace behaviours by demonstrating the psychological processes underlying workplace incivility. The significant positive influence of interactional injustice on perceived coworker incivility addresses unfair and disrespectful treatment by organizational authority and is essential in nourishing an uncivil work environment. Employees who perceive unfair treatment from the manager are more likely to behave discourteous to their coworkers.to De Clercq (2019), employees who experience stressors at work cannot maintain a positive relationship. This finding aligns with Cortina (2017), who stated that violation of mutual respect at work promotes employees to perceive or engage in incivility. The finding also aligns with other studies that noted that the perception of interactional injustice engages employees in negative work behavior (Jafri et al., 2020; Reknes et al., 2020). Moreover, the finding also reveals that interactional injustice significantly increases the stress level. The findings suggest that interactional injustice is not merely concerned with fair interpersonal treatment but is an emotional stressor. It aligns with Monroe (2016) perceived stressors lead to psychological stress. The employees who experience interactional injustice at work are more likely to feel undervalued and disrespected, fostering stress. The finding aligns with Cao (2022), who noted that the perception of interpersonal injustice plays a prominent role in developing emotional exhaustion.

Additionally, the result shows that stress predicts perceived coworker incivility. Stressful employees are more sensitive to workplace dynamics, which results in misunderstanding others' actions as uncivil. Alternatively, stress weakens the self-regulation ability of employees, resulting in employees behaving uncivilly to others, aligning with the

study (Taylor & Kluemper, 2012). The result also aligns with Urban (2021), who mentioned that stress causes restlessness and involves individuals in uncivil behaviour. Finally, the result also reveals the mediating role of stress between interactional injustice and perceived coworker incivility. The mediation highlighted the indirect paths through which interactional injustice predicts the perceived coworker's incivility by increasing the stress level of employees. The finding aligns with Lazarus (1984), who stated that perceived stressors cause distress and, as a result, change the behaviour of individuals.

5.1   *Theoretical Implications*

The current study provides valuable insights into organizational justice, stress and workplace incivility literature. The study explains that employees cognitively evaluate interactional injustice as a stressor influencing their behaviour. The study examines stress as a mechanism between interactional injustice and coworker incivility. The study provides empirical support to stress-appraisal theory, which states that individuals perceive or appraise the workplace condition and environment as a stressor based on the cognitive evaluation of the situation. In this line, the study reveals that employees perceive interactional injustice as a stressor, which leads to emotional strains and behavioural changes. When the employees perceive the immediate manager's unfair treatment, they appraise the situation as a threat to their self-respect, increasing the psychological stress and making them more likely to engage in coworker incivility.

Furthermore, the study adds to the literature by demonstrating that stress appraisal is not limited to employees' direct relation to the immediate manager but also affects peer interaction. The current study also reveals that interactional injustice has outcomes beyond the supervisor-subordinate interactions. Previous studies have primarily contributed to the injustice affecting job performance, turnover intentions, and commitments (Bilal et al., 2017; Kuuyelleh et al., 2025). However, the current study highlights that the perception of unfair treatment from authority figures shapes how employees interact/behave with their coworkers. It suggests that interactional injustice is a stress-inducing agent that interrupts workplace harmony.

5.2   *Practical Implications*

The current study provides valuable insights for practitioners. The finding highlights the antecedent of perceived coworker incivility and provides the foundation for developing strategies to mitigate the cause (interactional injustice). Management should develop HR strategies emphasizing respectful interpersonal relationships and fairness in a work environment. For this, the organization should provide formalized interactional justice training to managers to practice and promote respectful communication with employees. The training program should focus on three components: active listening, conflict resolution, and

respectful feedback delivery to employees to reduce the feeling of interactional injustice. The training also equipped managers with skills to promptly address employees' feelings and grievances. The management should encourage a climate of interactional justice to eliminate incivility in the workplace. Previous studies have confirmed that interactional justice is vital in shaping employees' attitudes and behaviour (Judge et al., 2006; Khattak et al., 2019; Skarlicki & Folger, 2004). The organization can also introduce AI sentiment tools to detect the employees' perceptions of fairness and monitor their stress levels. Moreover, the organization should also monitor and reduce employee stress by providing counseling services, stress management training, and wellness initiatives. Conclusively, by reducing stress and promoting an interactional justice climate, organizations can minimize the occurrence of perceived coworker incivility and improve the work environment.

5.3   *Limitation and Future Direction*

While the current study has practical implications, it is not without limitations. Firstly, the study used a time lag design that can reduce common method bias. Future research must use the longitudinal design of data collection to validate the constructs' relationship. Secondly, data on all variables was collected from the same respondents. Future studies may use multi-source data to remove any bias or socially desirable effects from the data. Thirdly, stress mediated the relationship between interactional injustice and perceived coworker incivility. Future research may use other mediators (i.e., psychological contract violation, ostracism, coworker undermining, etc.) to elaborate more on the mechanism between interactional injustice and perceived coworker incivility. Fourth, future studies may incorporate moderators (organizational practices or individual characteristics) that may reduce the occurrence of workplace incivility. Finally, the study was conducted in the banking sector. Future studies may be conducted in other sectors to generalize the findings.

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Determinants of Work Family Conflict: Studying Gender Ratio as a Significant Predictor

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Abstract

The increase in the number of dual-earner couples and multi-workers is resulting in socio-economic changes which ultimately trigger the change in lifestyle of the people. Shortage of time to accomplish family and work-related jobs is reported as a common source of conflict causing stress and resulting in health and family functioning issues. The phenomenon of Work-Family Conflict (WFC) is therefore becoming a prevalent research area for scholars concerned with human resource management. This study has examined appropriate data for studying the mediated and moderated mechanism of the determinants of WFC. Gender Ratios in Family (GRF) and Time Management (TM) have been studied as antecedents of Time-based Work Family Conflict (TWFC). The direct impact of GRF on TWFC, mediation and moderation impact of TM on the relationship between GRF and TWFC has been studied in this research. The population of this study is the employees working in public sector organizations of Pakistan. Cross-sectional research design has been used with a sample size of 150 respondents. The study establishes that GRF has a significant impact on TWFC whereas the mediation and moderation impact of TM on said relationship was not found significant.

Keywords: Work-Family conflict; work-life balance; time Management; gender ratio; social roles.

JEL Classification: M10

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1.   Introduction

Work Family Conflict (WFC) affects the family members of the employees and their organizations along with them that is why researchers' interest increased in this area (Lu et al. 2009). Social scientists predicted years ago that WFC would become the most significant challenge of this century in the field of human resource management (Siegel et al., 2005). Researchers preview WFC as a popular research area for the persons concerned with sociology (Allen et al., 2014), and behavioral science (Sarfaraz & Khalid, 2015). It is an important construct in the domain of work-family studies and seems to be the most frequently studied topic in the area of work-family studies (Kelly et al., 2008). Work-family conflict is due to different demands of the role at work and the role in the family. Goode (1960) also states that multiple roles create strain. He says that a person may face different kinds of demands of a role and conflicts, which he refers to as "role strains" while carrying out some specific obligations (Goode, 1960). Greenhaus and Beutell (1985) have perceived work-family conflict as an inter-role conflict that occurs when the demands of a role in one domain become incompatible with the demands of a role in another other domain.

1.1   Background of Study

Humans are supposed to play different roles in different spheres of life during different times. Social Role Theory states that every person in a society is given a specific role depending upon the predetermined social category of the person. For example, father, mother, manager, teacher, etc. These social roles do have a set of norms, duties, rights and behaviors and the person is supposed to conform to these obligations. In a society, men and women are expected to behave differently. Another important aspect of Social Role Theory is the division of labor based on the genders of the persons. It says that both genders tend towards different obligatory roles with respect to their family and occupation (Adepoju, 2017). One of the issues with Social Role Theory is societal beliefs. Societal beliefs about gender roles dishearten women from joining paid jobs (Adepoju, 2017). Many of the researchers have studied WFC as a women's problem (Riaz & Ishaq, 2015). Riaz and Ishaq (2015) have studied antecedents and consequences of work-life conflict among the life of female workers from the perspective of South Asian culture whereas Begum et al. (2024) took the population of their study, the female teachers working in the Universities of UAE. From a Pakistani perspective, as the educational level of women increases, their economic participation also increases (Naqvi et al., 2002). With the change of mindset coming through school education, female employees are occupying their niches in male dominated jobs.

By means of paid jobs and entrepreneurial business, women are expanding the scope of their relative earnings at the cost of detriment to their traditional roles (Olaoye, 2014). This phenomenon of detriment to the traditional role is disturbing family life and social structure as well which may be evidenced by the increasing number of late marriages, never married and divorces in educated working women (Gambles et al., 2006; Sathar et al., 1986;). Previous studies have highlighted that women leave work life after marriage due to increased family responsibilities

(Azid et al., 2010; Riaz & Ishaq, 2015). Few decades earlier, WFC was perceived as a woman's problem but recent studies has proved that men also experience WFC (Keene & Quadagno, 2004). It has become more evident that men also experience work-family conflict, its intensity might be more or less as compared with the women (Keene & Quadagno, 2004). Certain other studies show that male workers do experience higher WFC than that of the female workers (Keene & Quadagno, 2004; Milkie & Peltola, 1999).

1.2   Research Questions

- Is there a relationship between the gender ratio of an employee in his family and time-based work family conflict?
- Does time management have a significant impact on time-based work family conflict?
- Whether time management mediates or moderates this relationship.

1.3   Research Gap and Problem Statement

With changes in family life due to multi-workers and an increased number of dual-earner couples, doing the job along with family responsibilities has become a challenge for many of today's professionals (Hammer & Neal, 2008). Today's workforce is facing work-family conflict due to a shortage of time as a common source of stress which is resulting in health and family functioning issues. Consequently, the phenomena of work-family conflict have become a more popular research area among social scientists but existing studies on this topic have mostly been done in developed countries. There is a research gap for similar studies on developing countries like Pakistan to observe the results from a diverse cultural perspective. Social Role Theory supports the differences in the behaviors and the differences in the roles of men and women in society. This concept leads to the phenomenon that if a certain gender is underrepresented while the other is in abundance, the work responsibilities of the persons belonging to the underrepresented category will increase. E.g. if there is only one female in a family strength of 10 people, she would have to cook food and wash clothes for 9 persons in a traditional culture of Pakistan. On the other hand, if there is only one male in a family of 10 people, he would have to earn for 9 persons which would ultimately increase the work-family conflict. However, the literature does not provide any research article which would have studied the gender ratios in the families of employees as a determinant for work-family conflict, neither in Pakistani culture nor in any other. This study has opened a new direction for future research on work-family conflict and gender issues. On the other hand, this research has studied the impact of time management, whether it mitigates time-based work-family conflict or not. This is an element of immediate benefit for the readers who are supposedly searching for solutions to work-family conflicts in time management only.

2.   Literature Review

2.1   Work-Life Balance (WLB)

Carlson and Frone (2003) have stated that in the 1970s, it became identified that different domains of an individual's life interact with one another; and the researchers felt these domains must be studied within an integrative framework. In the decade of 1980s, research activity in the area of work-family increased due to some demographic trends in the work force (Frone et al., 1997). In the area of work-family domain, social scientists first focused on work-life balance. It has been defined by many researchers and research organizations. E.g., the Irish National Framework Committee for Work-life Balance Policy has defined work-life balance (as cited in Olaoye, 2014) as a balance in an individual's work and his life outside work. The balance is achieved while an individual's right to a satisfied life inside the paid work and outside the paid work as well is accepted as the norm for a mutual benefit for the individual, business and society (Olaoye, 2014). Work-life balance has also been defined as the extent to which an individual is equally engaged in and satisfied with his work role as well as the family role (Greenhaus et al., 2003). It exists when people experience a lack of conflict between the demands of work and non-work roles (Panganiban & Villareal, 2016).

2.2   Work-Family Conflict (WFC)

The ultimate product of studying work-family balance and work-family conflict is to achieve work-family balance for a better life of subjects, which in return contributes towards performance at work. We play different roles in our lives and these roles may be as a father, as a son, a brother, a husband, a nephew, an uncle at home, etc. while on the other side; we may be an employee, an employer, a subordinate, a boss, a professional peer, etc. (Olaoye, 2014). These roles may be classified into two major categories: work roles and family life roles. Both of these categories of roles do exert pressure on workers to spend time and energy to fulfill the responsibilities of their roles. When demands of work roles and family roles become incompatible with each other, work-life conflict sets in (Olaoye, 2014). In the existing literature, work-family conflict has been defined as a form of inter-role conflict. The role pressures from both the domains, i.e. work domain and family domain are incompatible with each other in some respect which makes it difficult for the workers to participate in the work (family) role by virtue of participation in the family (work) role (Greenhaus & Beutell, 1985).

During the years 2015 to 2024, we found Wei et al. (2016) have studied its relationship with safety participation and job satisfaction in China; Prajogo (2016) has studied its relationship with Emotional Exhaustion and Life Satisfaction in Indonesia; Westaby et al. (2016) have studied its relationship with Spillover in UK; Lipińska-Grobelny (2016) has studied its relationship with life satisfaction in Poland; Beigi et al. (2016) have studied its relationship with working hours, job satisfaction, time spent with family, work interference to family (WIF) and family interference

to work (WIF) in the perspective of Iran; Rashid et al. (2016) have studied its relationship with work and home demand in Malaysia; Xu and Song (2016) have studied its relationship with psychological wellbeing in Korea; Young (2015) has studied its relationship with structural and perceived neighborhood in Canada; Yucel and Minnotte (2017) have studied its relationship with workplace support, life satisfaction, mental health in US; Selvarajan et al. (2016) have studied its relationship with role of personality and social support in US; Tekingunduz et al. (2016) have studied its relationship with performance and job satisfaction in Turkey; Paghoush et al. (2017) have studied its relationship with Burnout, Life Quality and Job Satisfaction in Iran. Leonard (2016) has studied the link of work-life conflict with roles of organizational justice in Australia; Polat Üzumcu and Akpuulat (2017) have studied its relationship with life satisfaction on sample population of Turkey; Bennett et al. (2017) have studied its link with generational cohort and life cycle stage differences taking sample population of U.S., Canada, U.K., and Australia; Taşdelen-Karçkay and Bakalım (2017) have studied its relationship with life satisfaction in the perspective of Turkey; Karakas and Sahin (2017) have studied its relationship with Job Performance and Job Stress taking sample population of Western Black Sea Province, Turkey; Adepoju (2017) have studied its relationship with the Job and the Life Satisfaction in the perspective of United States; Siahaan (2017) has studied its relationship with stress taking population of state owned organization of Indonesia; Ashar and Harsanti (2017) have studied its relationship with the quality of work life in Indonesia; Gan (2016) has studied its relationship with parental conflict levels in Israel; Kuntari et al. (2017) have studied its relationship with Gender and Life Role Importance in Indonesia; Vatharkar (2017) has studied its relationship with Job Satisfaction in India; Mäkelä et al. (2017) have studied its relationship with difference of gender in Finland; Gragnano et al. (2020) have studied its relation with job satisfaction; Yuswanti et al. (2021) have studied its relation with performance; Arzu et al.(2022) have studied its relation with work-family enrichment; Miller et al. (2022) have studied its relation with mental health; Al Riyami et al. (2023) have studied work-family conflict along with work-from-home and work-motivation; Agrawal and Amin (2023)has studied its relation with job turnover intention; Xiao et al. (2023) have studied its relation with employee consumption behavior. Fan et al. (2024) have studied its relationship with safety performance in West China. Hence it is evidenced that most of the studies were conducted in western countries. The results of western countries may not be generalized over eastern countries due to the difference in their cultures. In eastern countries like Pakistan, gender differences are observed with more strength in the society. Hence the result may differ in different cultural perspectives.

2.3   *Dimensions of Work-Family Conflict*

According to Frone et al. (1997) work-family conflict have two dimensions; work-to-family conflict (the extent to which work is interfering with family) and family-to-work conflict (the extent to which family is interfering with work). Work-to-family conflict is an indication of work role overload and family to work conflict indicates family role overload. Usually, both of these dimensions are studied separately in order to better understand the antecedents and effects (Kelly et al., 2008).

2.4   Forms of Work-Family Conflict

Existing literature on work-family conflict provides three forms / types of work-family conflict i.e. time-based conflict, strain-based conflict, and behavior-based conflict (Greenhaus & Beutell, 1985). Researchers have categorized its three different types on the basis of antecedents of conflict. These three types of work-family conflict have been identified in the studies of Adepoju (2017) and Greenhaus and Beutell (1985) as follows:

a)   Conflict occurred on the basis of time: when the allotted time for one role creates difficulty to participate adequately in another role.

b)   Conflict happened due to behavioral issues: when a specific expected behavior for one's role is not compatible with behavioral expectations for another role.

c)   Conflict caused due to strain: when the strain experienced in a specific role negatively affects the participation in another role.

2.5   Antecedents of Work-Family Conflict

Siegel et al. (2005) have reported that "demographic shifts, economic trends, technological advances, and competitive forces also have contributed to a workforce that is increasingly experiencing work-life conflict". The challenge of going balanced with work and family is proliferating primarily because of the growing figure of dual earner couples; which is the basic cause of work-family conflict in virtue of which the number of working mothers has also been increased in society and the very phenomenon has involved the fathers in child care and has increased family demands for fathers (Amstad et al., 2011). The research made by Lu et al. (2009) has indicated that the causes and consequences of work and family conflict cannot be examined leaving the cultural factors.

2.6   Consequences of Work-Family Conflict

In the available body of literature; psychological strain, life satisfaction, somatic complaints, adverse mental health, depression, and substance use or abuse have been related to work-life conflict (E.g. Kelloway et al. (1999); (Greenhaus et al. (2003); Peeters et al. (2004); Vinokur et al. (1999); Grzywacz and Bass (2003); Oshio et al. (2017) have stated that "It is well known that work-to-family conflict (WFC) is negatively associated with employees' health outcomes, including mental health and health behavior". Siegel et al. (2005) have reported that "work-life conflict is predictive of emotional exhaustion, depression, cardiovascular illness, alcoholism, and lowered job and life satisfaction".

Siegel et al. (2005) "On the organization front, work-life conflict has been associated with absenteeism, turnover, reduced performance, and lower organizational commitment". The phenomenon of work-family conflict is prevailing and probably growing at an all-time high from

the last many years (Siegel et al., 2005). Work-family conflict creates stress which has negative effects on the general wellbeing and behaviors of subjects (Amstad et al., 2011; Geurts et al., 2003). Workplace burnout, turnover intentions, absenteeism, work-related strain have also been mentioned in different studies as outcomes of work-family conflict (Netemeyer et al., 2004; Peeters et al., 2005; Shaffera et al., 2001). Amstad et al. (2011) has also concluded that WFC affects the wellbeing, behavior, family life and work of the subject but has also stressed that combining the work and family domains can also have a positive effect as well on the overall life of the subject. Amstad et al. (2011) have reported that "It has repeatedly been demonstrated that living multiple life domains has a positive effect on individuals' wellbeing and health".

2.7   *Moderating Effects on Work-Family Conflict*

Amstad et al. (2011) have determined that working hours have a moderating effect on work-related, family-related, and domain-unspecific outcomes of work-family conflict. The strategies which foster a family-friendly work environment have been found beneficial for both the organization and the employee (Amstad et al., 2011).On the other hand, external child care is becoming very common among dual-earner couples which shows that external child care has a mitigating impact on WFC (Voydanoff , 2005). Gambles et al. (2006) has stated that "domestic servants in middle-class families, and the availability of members of extended families more generally in the population, have some-what cushioned the 'work-family' conflicts and tensions that could lead to change".

2.8   *Measurement of Work-Family Conflict*

Initially, the researchers measured WFC in a single direction which involved only the conflict occurring due to work interference with family (Greenhaus & Beutell, 1985). Later the researchers recognized the dual nature of WFC by measuring it in both directions: the work interference with family (WIF) and family interference with work (FIW) (Adepoju, 2017). The researchers used different measuring tools for the measurement of work-family conflict (Carlson et al., 2000; Netemeyer et al., 1996; Stephens & Sommer, 1996).

2.9   *Time Management*

Macan et al. (1990) state that a person frequently engaged in time management (TM) would experience lesser role ambiguity, lesser role overload, lesser job tension and rare physical stress symptoms like headaches and ulcers (Macan et al., 1990). Green and Skinner (2005) has stated about time management training that it provides an obvious solution for work-family conflict. Richardson and Rothstein (2008) have stated that time management involvements provide skills training for self-monitoring, goal setting, scheduling and prioritizing tasks, conflict resolution, negotiating and problem solving. Green and Skinner (2005) believe that "many earlier forms of time management training do not work". Green and Skinner (2005) says that "the evidence,

collected using quantitative and qualitative approaches, suggests that although such training is affected by context and motivation, it does have a positive impact for the majority of participants".

Green and Skinner (2005) recommend that further research should be done to assess the effectiveness of time management training in controlling work-family conflict, because previous researches in this concern has been limited in scope. Green and Skinner (2005) has defined time management as the utility of time for achieving work and life goals. Green and Skinner (2005) has categorized TM into four generations. The premier generation is based on checklists, reminders and notes. The second generation is with additions of preparation, planning, goal setting and scheduling. The third one has added further sophistication i.e. prioritizing and control, keeping in view the values of activities, setting long-term to short-term goals. Whereas, the fourth generation of TM provides the subjects to use the best features of the earlier three with a focus on identifying that what is really important in life. Green and Skinner (2005) has reported that behavioral improvements have been seen through time management training.

2.10   *Hypotheses and Theoretical Framework*

H1: Respondent's Gender Ratios in their Families has a direct inverse impact on Time-based Work-Family Conflict.

The researcher faced time-based work family conflict in practical life. He, being the student of research used his analytical mind and posited that he is facing time-based work family conflict due to the reason that he is the only male in the family. On exploring the literature, the researcher found that social role theory supports gender differences and similarities in human social behaviours and responsibilities. The concept of framing H1 was then derived from social role theory that when a certain gender, e.g. female is short in a family unit and there is a single female in a family of ten persons, the responsibilities associated with females like washing and cooking would have to be done by her as overloaded. She would do lose balance in her work role and family role. She would require more time for family responsibilities than that of professional responsibilities. The basic cause of this work-family conflict would be short of gender of the employee in his/her family.

H2: Time Management has a direct inverse impact on Time-based Work-Family Conflict.

It was perceived that a person facing time-based work family conflict would get it decreased by practicing time management whereas, in the absence of time management practices, the conflict may further rise. Green and Skinner (2005) have also recommended conducting studies to see the impact of time management on work-family conflict.

H3: Time Management mediates between Respondent's Gender Ratios in their Families and Time-based Work-Family Conflict.

As a heuristic observation, it appears that a person experiencing time-based work-family conflict due to an underrepresented gender ratio in their family may attempt to manage their time. The success or failure of this time management effort could determine the extent of their time-based work-family conflict. Therefore, time management may act as an inverse mediator between gender ratio in the family (GRF) and work-family time-based conflict (WTFC).

H4: Time Management moderates the relationship between Respondent's Gender Ratios in their Families and Time-based Work-Family Conflict.

It seems that in time-based work-family conflict, the basic reason is shortage of time for fulfilling the responsibilities in both the domains. If the person facing the conflict uses time management techniques, he would ultimately get the conflict mitigated.
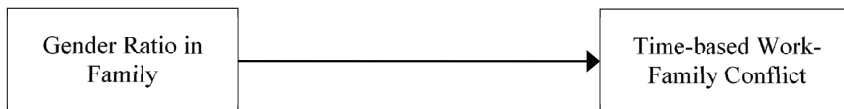

Figure 1: (Gender Ratios in Families as an independent variable whereas Time based Work Family Conflict as a dependent variable)
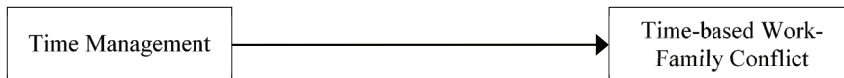

Figure 2: (Time Management as an independent variable whereas Time based Work Family Conflict as a dependent variable)
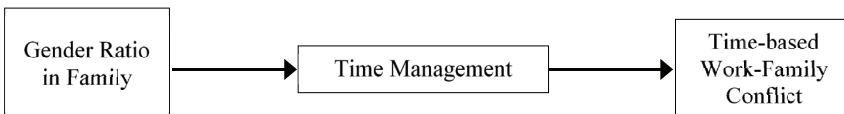

Figure 3: (Gender Ratios in Families as an independent variable; Time Management as a mediating variable; and Time-based Work Family Conflict as a dependent variable)
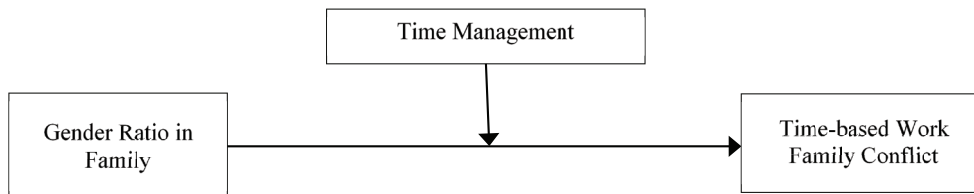

Figure 4: (Gender Ratios in Families as an independent variable; Time Management as a moderating variable; and Time-based Work Family Conflict as a dependent variable)

3.   Methodology

In this study, quantitative research design with cross-sectional research method has been used. Hypotheses testing have been made on the bases of data analysis. The employees of different organizations working under Federal and Provincial Governments of Pakistan were determined as a population for this research work. Population was determined without any discrimination of organization name or cadre or sector. Pakistani culture was the perspective of selecting the population because gender differences are observed in all corners of the country. The sample size was determined in consultation with field experts i.e.150 respondents. Purposive/ Judgmental sampling technique were used to select the respondents. To study the relationship of the variable "Time Management"; it was planned that the respondents should be literate of Time Management. Hence, the respondents are participants of a training course on "Time Management" held at Pakistan Planning and Management Institute (PPMI) which is a state-owned institute and obtains training nominations from public sector organizations from all over the country without discrimination of area, culture, and native language. These public sector organizations recruit their employees according to the sizes of the populations of different regions of the country. PPMI provide trainings on different topics one of them is Time Management. The data of 150 participants was available who attended the Time Management Course in the last three years period.

To persuade the respondents to an open-minded response, they were briefed about the significance of this research and were assured about the secrecy of their personal data. Names of the organizations of the respondents were not asked in the questionnaire however types of organizations were asked whether it is Government, Semi-Government, Autonomous, Corporation or Company. Initially in the Pilot Study, a questionnaire comprising 27-items was designed to measure the research variables. Items to measure Time-based Work Family Conflict were adapted from Carlson et al. (2000). Items for measuring Time Management were employed from (García-Ros et al., 2004); Pérez-González and Hinojosa (2004) with little modification. Later the items were reduced to 19 based on Confirmatory Factory Analysis. Further 8-items were included to seek demographic information about the subjects. Data was collected through multi-methods, i.e. by getting questionnaires filled by face-to-face interaction with the respondents, by getting questionnaire filled by the respondents through reply paid post mails and by getting response through online questionnaire filling via internet.

4.   Data Analysis

For data analysis, various statistical tools and techniques have been used with the help of IBM SPSS Statistics (Version 21) and IBM SPSS Amos (Version 21.0.0). These include Frequency Distributions, Mean and Standard Deviation, Independent Sample t-tests, ANOVA, Path Analysis through Structural Equation Modelling and Regression Analysis.

4.1   Descriptive Statistics

Demographic data of 150 respondents those participated in this research is tabulated below along with frequency distribution:

Table 1
Frequency Distribution w.r.t. Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	130	86.7	86.7	86.7
	Female	20	13.3	13.3	100.0
	Total	150	100.0	100.0	

Table 2
Frequency Distribution w.r.t. Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 25	6	4.0	4.0	4.0
	25 to 34	41	27.3	27.3	31.3
	35 to 44	62	41.3	41.3	72.7
	45 to 54	31	20.7	20.7	93.3
	55 or More	10	6.7	6.7	100.0
	Total	150	100.0	100.0	

Table 3
Frequency Distribution w.r.t. Qualification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	12 Years	3	2.0	2.0	2.0
	14 Years	20	13.3	13.3	15.3
	16 Years	64	42.7	42.7	58.0
	18 Years or More	63	42.0	42.0	100.0
	Total	150	100.0	100.0	

Table 4
Frequency Distribution w.r.t. Income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 40000	22	14.7	14.7	14.7
	40000 to 59000	20	13.3	13.3	28.0
	60000 to 79000	30	20.0	20.0	48.0
	80000 to 99000	33	22.0	22.0	70.0
	100000 or More	45	30.0	30.0	100.0
	Total	150	100.0	100.0	

4.2   *Inferential Statistics: Independent Sample t-test*

The significance of the level of variation between both the groups of respondents (male and female) was measured through independent sample t-test. The outcomes of the test describe demographic information such as gender with regards to the variables that has been measured in this study, i.e. GRF, TM and TWFC.

Table 5

Gender Statics for the Levels of GRF, TM and TWFC

Variables	Gender	N	Mean	Std. Deviation
GRF	Male	130	.5075	.14980
	Female	20	.4760	.16494
TM	Male	130	3.3900	.76329
	Female	20	3.6800	.65018
TWFC	Male	130	2.5526	.73313
	Female	20	2.8583	.64044

Table 6

Independent Samples t-Test for GRF, TM and TWFC to See Variance in Male and Female Respondents

Variables	Hypothesis	Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
GRF	Equal variances assumed	1.085	.299	.865	148	.389
	Equal variances not assumed			.806	24.071	.428
TM	Equal variances assumed	1.266	.262	-1.610	148	.109
	Equal variances not assumed			-1.812	27.728	.081
TWFC	Equal variances assumed	.207	.650	-1.763	148	.080
	Equal variances not assumed			-1.948	27.270	.062

We see from the outcomes of independent sample t-test that mean value of GRF level is 0.5075 for male respondents and 0.4760 for female respondents. This shows that male respondent's gender ratio in their families is little higher than that of female respondents. For independent sample t-test, we frame two hypotheses; first that variance is equal in both the genders; and the other is null hypothesis. In case of GRF, we see that f-value is 1.085 which is not greater than 3 and significance level is 0.299 which is not less than 0.05. On the other hand, we see that t-value is 0.865 which is not zero which mentions that variance is not similar in both the genders. Hence the hypothesis of equal variance is rejected. Now we consider the null hypothesis. T-value for null hypothesis is 0.806 with significance of 0.428 which is not less than 0.05. Hence the null hypothesis also rejected due to less significance. We may conclude that variance in the level of GRF in male respondents and female respondents do exist but neither similar nor significantly different.

The mean values for the levels of TM and TWFC has been calculated in the Table which shows higher levels for female respondents and comparatively lower levels for male respondents. F-values, t-values and their significance levels as shown on the Table denotes that variances for TM and TWFC in both the genders are not equal and neither similar nor significant. Besides, above interpretation, the mean values of the levels of GRF, TM and TWFC in male respondents' verses females, are predicting the acceptance of the hypotheses (H1) of this study. Lower GRF in female respondents inversely impacted higher TWFC in comparison with male respondents. On the other hand, TM is higher in females than males, but this higher TM has not mitigated the impact of GRF on TWFC proportionately.

4.3   Analysis of Variance (ANOVA)

In order to measure the mean differences among more than two categories or factors of a demographic feature with regards to the established variables of a study model, ANOVA has been applied for age, education, employer category and income of the respondents of this study.

Table 7

One Way ANOVA for GRF, TM and TWFC with regards to Age of the Respondents

Variables	Descriptive Statistics				Analysis of Variance					
	Age Groups	N	Mean	Std. Dev.	Type of variance	Sum of Squares	df	Mean Square	F	Sig.
GRF	Less than 25	6	.5517	.10629	Between Groups	.016	4	.004	.173	.952
	25 to 34	41	.5034	.14425	Within Groups	3.413	145	.024		
	35 to 44	62	.5000	.14966	Total	3.429	149			
	45 to 54	31	.5045	.15334						
	55 or More	10	.4910	.22418						
	Total	150	.5033	.15170						
TM	Less than 25	6	2.4500	.61237	Between Groups	8.297	4	2.074	3.939	.005
	25 to 34	41	3.3000	.75067	Within Groups	76.350	145	.527		
	35 to 44	62	3.5032	.74854	Total	84.647	149			
	45 to 54	31	3.5258	.70426						
	55 or More	10	3.7800	.56529						
	Total	150	3.4287	.75372						
TWFC	Less than 25	6	2.6111	.69655	Between Groups	3.674	4	.919	1.774	.137
	25 to 34	41	2.8415	.64113	Within Groups	75.075	145	.518		
	35 to 44	62	2.4919	.81450	Total	78.749	149			
	45 to 54	31	2.5269	.64420						
	55 or More	10	2.4000	.60451						
	Total	150	2.5933	.72699						

As apparent from Table-7, five age groups were formed for collecting the information about the age of the respondents, i.e. less than 25, 25 to 34, 35 to 44, 45 to 54 and 55 or more. Out of 150 respondents, only 6 respondents were from first age group, 41 from second age group, 62 are from third age group, 31 form the fourth group and 10 from the fifth. One-way ANOVA test

was applied on all the variables of the study against the demographic feature age of the respondents. The outcomes of the test have been summarized in Table-7. On descriptive side, the tabulated results describe about the group categories against each established variable, number of respondents in each group, mean values of said five age groups against all variables and standard deviations of each group. In variance analysis, the table gives the detail about the measured variance between groups, the measured variance within the groups and the measured total variance. The crux of ANOVA test is calculation of f-value along with its significance (p-value) because the decision of rejection or acceptance of null hypothesis is made on f-value. Critical f-value is found from the F-value Table which gives a complete chart at two levels of significance i.e. 0.01 and 0.05. Rows and columns of the chart provide df (degree of freedom) of numerator and denominator. A common perception is found that if f-value is >3.95 with significance <0.05, null hypothesis (that all group means are same) is rejected. We see from Table-7 that f-value for GRF is 0.173 which is very low and p-value is also greater than 0.05. Hence, we conclude that group means of all five age groups are not same for the variable GRF. Similar (not same) is the case with the variable TWFC. On the other hand, F-value for TM is 3.939 with p-value 0.005 hence it is significant but since f-value is not >3.95 we may not reject the null hypothesis.

The results of One-Way ANOVA for the demographic feature, education have been summarized in Table-8 below:

Table 8

One Way ANOVA for GRF, FRO, TM and TWFC with regards to Educational Level

Variables	Descriptive Statistics			Analysis of Variance					
Education Levels	N	Mean	Std. Dev.	Type of variance	Sum of Squares	df	Mean Square	F	Sig.
GRF	12 Years	3	**.5700**	.11790	Between Groups	.037	3	.012	.538	.657
	14 Years	20	.5080	.14059	Within Groups	3.391	146	.023		
	16 Years	64	.4877	.16477	Total	3.429	149			
	18 Years or More	63	.5146	.14356						
	Total	150	.5033	.15170						
TM	12 Years	3	2.7000	1.11355	Between Groups	2.906	3	.969	1.730	.163
	14 Years	20	**3.5900**	.84099	Within Groups	81.741	146	.560		
	16 Years	64	3.4984	.68371	Total	84.647	149			
	18 Years or More	63	3.3413	.76594						
	Total	150	3.4287	.75372						
TWFC	12 Years	3	2.3889	.69389	Between Groups	3.255	3	1.085	2.098	.103
	14 Years	20	2.2500	.72849	Within Groups	75.494	146	.517		
	16 Years	64	2.6016	.68790	Total	78.749	149			
	18 Years or More	63	**2.7037**	.74742						
	Total	150	2.5933	.72699						

We see from above table that none of the variables has f-value >3.95. P-values are also not <0.05. Hence null hypothesis may not be rejected. On descriptive side, mean values of the groups show highest level of GRF for the respondents having education level of Intermediate;

highest level of TM for Graduate respondents and the level of highest TWFC for the respondents have education level of Ph.D./M.Phil.

Table 9

One Way ANOVA for GRF, FRO, TM and TWFC with regards to Monthly Income

Variables	Descriptive Statistics				Analysis of Variance					
	Income Group	N	Mean	Std. Dev.	Type of variance	Sum of Squares	df	Mean Square	F	Sig.
GRF	Less than 40000	22	.4945	.14222	Between Groups	.092	4	.023	.998	.411
	40000 to 59000	20	.5325	.12439	Within Groups	3.337	145	.023		
	60000 to 79000	30	.4853	.17049	Total	3.429	149			
	80000 to 99000	33	.5385	.12375						
	100000 or More	45	.4809	.17092						
	Total	150	.5033	.15170						
TM	Less than 40000	22	3.5227	.59436	Between Groups	1.912	4	.478	.838	.503
	40000 to 59000	20	3.3000	.79406	Within Groups	82.735	145	.571		
	60000 to 79000	30	3.4167	.88866	Total	84.647	149			
	80000 to 99000	33	3.2848	.73532						
	100000 or More	45	**3.5533**	.72507						
	Total	150	3.4287	.75372						
TWFC	Less than 40000	22	2.6591	.60744	Between Groups	2.794	4	.699	1.333	.260
	40000 to 59000	20	2.4833	.82522	Within Groups	75.955	145	.524		
	60000 to 79000	30	**2.8000**	.85141	Total	78.749	149			
	80000 to 99000	33	2.6414	.69737						
	100000 or More	45	2.4370	.65162						
	Total	150	2.5933	.72699						

The outcomes of One-Way ANOVA test for the demographic feature, Income have been tabulated in Table-9 above. We see that the respondents of the group with the monthly income from 80000 to 99000 have highest mean value of GRF, i.e. 0.5385. The group of respondents with monthly income of >100000 have highest level of mean value for the variable TM i.e. 3.5533. On the other hand, none of the f-value is greater than 3.95. Similarly, none of the p-value is less than 0.05 in the table.

4.4   Path Analysis for Hypotheses Testing

Path analysis of proposed model of this study was made to test the hypotheses. This was made through statistical approximation of the model using SPSS and AMOS (Version 21).

4.5   Impact of Independent Variable on Dependent Variable

To test H1, i.e. "Respondent's Gender Ratios in their Families has an inverse relation with Time-based Work-Family Conflict"; structural equation model was constructed between the Respondent's Gender Ratios in their Families (GRF) and the Time-based Work Family Conflict (TWFC) faced by them.
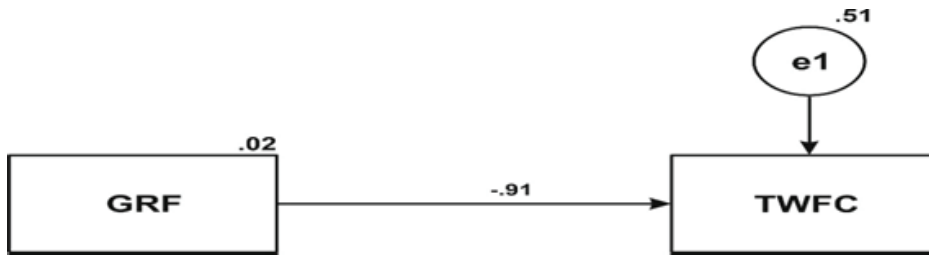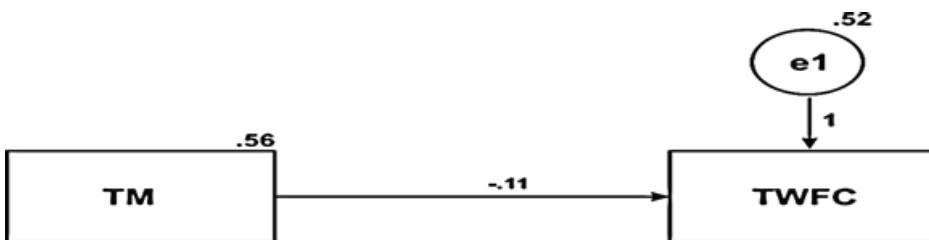
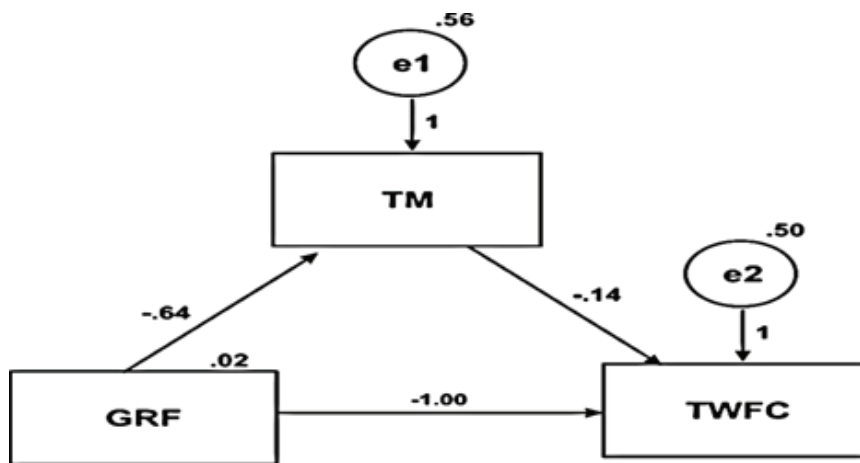*Figure 5:* (GRF stands for Gender Ratios in Families of respondents; TWFC for Time based Work Family Conflict; and e1 as error term for unobserved variables)

Table 10
Regression Weights

			Estimate	S.E.	C.R.	P
TWFC	<---	GRF	-.910	.385	-2.362	.018

Figure-5 and Table-10 show regression estimate between Independent Variable (GRF) and Dependent Variable (TWFC). The slope of the equation i.e. β value (-0.91) shows a strong negative relationship between GRF and TWFC. P-value for this regression estimate is 0.018 which is significant at < 0.05 level. This implies that a significant inverse relationship between said two variables exists. Hence H1 is accepted.

4.6   *The Impact of Independent Variable (TM) on Dependent Variable (TWFC)*

To test *H2*, i.e. "Time Management has a direct inverse impact on Time-based Work-Family Conflict", structural equation model results are shown below:

Figure 6: (TM stands for Time Management; TWFC for Time based Work Family Conflict; and e1 as error term for unobserved variables)

Table 11
Regression Weights

			Estimate	S.E.	C.R.	P
TWFC	<---	TM	-.115	.078	-1.463	.143

Figure-6 and Table-11 shows regression estimate between Independent Variable (TM) and Dependent Variable (TWFC). The slope of the equation shows a week negative relationship between TM and TWFC. P-value for this regression estimate also shows the insignificance of this relationship. Hence H2 is not accepted.

4.7   Supposed Mediating Role of Mediator (TM) on the Relationship between Independent Variable (GRF) and Dependent Variable (TWFC)

To empirically test H3, i.e. "Time Management mediates between Respondent's Gender Ratios in their Families and Time-based Work-Family Conflict"; the results of structural equation model are given as follows:

Figure 7: (GRT stands for Gender Ratios in Families of respondents; TWFC for Time based Work Family Conflict; TM for Time Management; and e1 as error term for unobserved variables)

Table 12
Regression Weights

			Estimate	**S.E.**	**C.R.**	**P**
TM	<---	GRF	-.637	.404	-1.578	.115
TWFC	<---	GRF	-1.000	.384	-2.601	.009
TWFC	<---	TM	-.141	.077	-1.817	.069

Figure-7 and Table-12 depict that the effect of independent variable (GRF) on mediating variable (TM) is significant because the β value is greater than 0.4 but the effect of mediating variable (TM) on dependent variable (TWFC) is 0.14 which is neither greater than 0.4 nor in the same proportionate as that of GRF--->TM. The effect of independent variable (GRF) on dependent variable (TWFC) in the presence of mediating variable has increased and remained significant because β value is maximum, i.e. -1.00. In order to prove mediation, three conditions

should be fulfilled. IV--->MV should be significant, MV--->DV should be significant and IV---
>DV should be insignificant. Since two conditions are not met, hence H3 is not accepted.

4.8   Moderating Effect of Supposed Moderating Variable (TM) on Relationship between Independent Variable (GRF) and Dependent Variable (TWFC)

To test H4, i.e. "Time Management moderates the relationship between Respondent's Gender Ratios in their Families and Time-based Work-Family Conflict", structural equation model was drawn between z-score values of Independent Variable (GRF), Mediating Variable (TM) and Dependent Variable (TWFC) along with Interaction calculated through SPSS. The results are as follows:
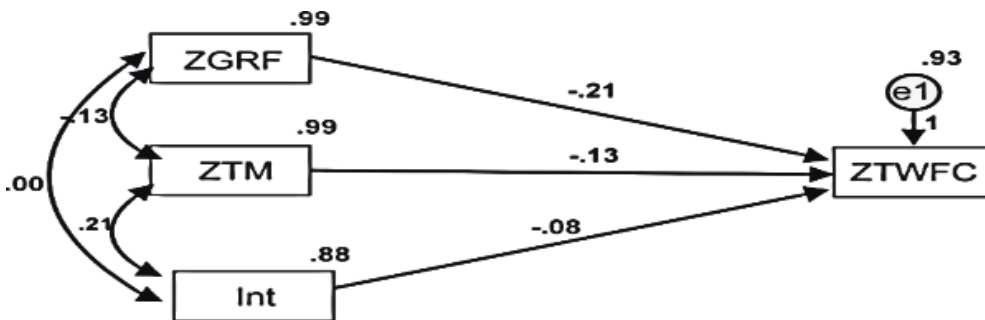
Figure 8: (ZTWFC stands for Z-score for Time based Work Family Conflict; ZGRF for Z-score for Gender Ratios in Families of respondents; ZTM for Z-score for Time Management; and Int for Interaction term)

Table 13
Regression Weights

			Estimate	S.E.	C.R.	P
ZTWFC	<---	ZGRF	-.206	.080	-2.575	.010
ZTWFC	<---	ZTM	-.129	.082	-1.568	.117
ZTWFC	<---	Int	-.078	.087	-.902	.367

We see from Figure-8 and Table-13 that p-value for the effect of independent variable (GRF) on dependent variable (TWFC) is 0.010 which validate the results but β value is -0.21 which is less than 0.4. The effect of supposed moderating variable (TM) on dependent variable (TWFC) is not significant because β value in this case is -0.129 with p-value 0.117. Similarly, the interaction effect is also not significant because it too has β value less than 0.4. To approve H4, all three effects (IV--->DV, MV--->DV and Int--->DV) should be significant. Since all three conditions are not met, hence H4 is not accepted.

5.   Results and Discussion

The purpose of this research was to collect and analyse the appropriate data for studying the mediated and moderated mechanism of the determinants of Work Family Conflict. Four hypotheses have been tested to find the links between the variables; Gender Ratios in the Family (GRF) and Time Management with Time-based Work Family Conflict (TWFC). The first and foremost objective of the study was to determine direct impact of the Gender Ratios in the Families of the employees on their Time-based Work-Family Conflict. H1 was framed to test the conceived inverse relationship between GRF and TWFC. The acceptance of H1 with strong evident data analysis has established this inverse link between Gender Ratios in the Family and Time-based Work Family Conflict. The slope of the Structural Equation Model (SEM) was recoded -0.91 with p-value 0.018. This relationship has been newly established in this study. However, the results are not astonishing because this relationship was conceived in the light of Social Role Theory. Theory supports for different social roles for males and females in the society. There are certain family responsibilities that are mostly affiliated with females, e.g. cooking, washing of clothes, cleaning of house, childcare, etc. Similar is the case with males. In most of the societies of the world, breadwinners are mostly male family members. When a certain gender is underrepresented in a family, the members of that category tend to face an increased workload the family members from the abundant gender would be relaxed due to the participation of more members to fulfil the responsibilities.

Green and Skinner (2005) have recommended to conduct studies for assessing the effectiveness of time management training that whether it does work in controlling work-family conflict or not. In this study the researchers have measured only one form of Work Family Conflict I.e. Time-based Work Family Conflict (TWFC) in order to obtain more crisp results because TWFC is the conflict occurred on the bases of time: when the allotted time for one role creates difficulty to participate adequately in another role. It was perceived that Time Management would do impact TWFC but while testing H2, results showed insignificant relationship between TM and TWFC because path analysis through SEM resulted β value -0.11 with p-value 0.143. H2 was not approved on the basis of this empirical testing but the mystery remained unsolved that why Time Management do not impact Time-based Work Family Conflict. Qualitative study may be carried for examining the phenomena.

Hypothesis, *H3* was framed to test the mediating role of TM between independent variables (GRF) and dependent variable (TWFC). To prove the mediation numerically, the impact of Independent Variable (GRF) on Mediating Variable (TM) should be significant. The β value of SEM path analysis has been recorded -0.637 which is greater than normal threshold value (0.4) but p-value does not support the significance. The impact of Mediating Variable (TM) over Dependent Variable (TWFC) should also be significant to prove the mediation which is also not evidenced because β value for this link is -.14 with p-value .069. The third and last condition to prove this mediation is that the impact of Independent Variable (GRF) on Dependent Variable

(TWFC) in the presence of Mediating Variable (TM) should be insignificant. Whereas the results of SEM show a strongly significant inverse impact (β: -1.00 with p-value: 0.009) of Independent Variable (GRF) on Dependent Variable (TWFC) in the presence of Mediating Variable (TM). The mediation could not be proved because results did not support the hypothesis H3.

Researchers have examined the moderating impact of TM on the relationship between GRF and TWFC. It was conceived that Time Management would mitigate the effect of GRF on TWFC. The perception was not vague. It was based on previous research. E.g. Green and Skinner (2005) have predicted that time management training provides an obvious solution for Work Family Conflict. The results given in Figure-8 and Table-13 have not supported our hypothesis H4. As far as, the question that whether time management mitigates the effect of GRF on TWFC is concerned, the answer is negative. The assumption seems apparently very logical but scientifically it was not proved by the research process carried in this study. This might have certain reasons, and one may be the research methodology because cross sectional research method has been adopted to test all hypotheses of this study whereas the phenomena may require longitudinal research methodology but keeping in view the time and cost constraint it was not appropriate to adopt longitudinal research in this study. However, the authors of this study do recommend longitudinal research in this concern to obtain data from the same respondents before and after going through an appropriate training on Time Management.

5.1   *Theoretical Implications*

Prediction has already been made that WFC would be one of the most significant human resource challenges in 21st century (Siegel et al., 2005). WFC has been studied and focused as it relates to women. Whereas it this research study, authors have seen in independent t-test that there is a little difference between the level of TWFC in male respondents verses female respondents (see Table-6). In this study, both genders have been included without discrimination. Like corporate sector employees, the employees working in the public sector also face work life conflict. Hence the population for this study was decided the public sector of Pakistan which has been neglected in previous investigations.

As an outcome of this study, the researchers have established that gender ratios in the families of the employees do affect their level of time-based work family conflict. Gender ratio inversely affects their work family conflict. This has added new knowledge in the field of work family studies. In virtue of this research, it may be stated that the people having a shorter ratio of their gender in their families would be more exposed to the consequences of work family conflict.

5.2   *Practical Implications*

The organizations as well as employees are succumbing to the adverse physical, mental and psychological effects of work family conflict. Keeping in view the existing scenario, the

policy makers from the public sector have started copying the preventive measures taken by corporate sector to combat the consequences of work family conflict by providing day care services for the kids of their female employees. Whereas, the corporate sector is providing supervisor supportive behaviors, flexi timings, and allowing their employees to work at virtual workplaces and others in addition to day care facilities but this is not with the case of public sector employees. However, Government of Pakistan seems committed to provide daycare facility of female employees because repeated instructions have been issued to public sector in this concern. This study recommends the policy makers and planners to have a vision about their employees that who are more exposed to work family conflict and to be offered the facilities as preventive measures.

Similarly, while making allocations of employees, Human Resource Managers should consider employees from families where their gender is underrepresented. Such employees should not be posted to such positions where the employees are required to remain distant from their homes for long periods or required to be more regular and punctual than other positions. While setting leave priorities, managers should keep in mind the family responsibilities of the employees. This would ultimately pay back to organizations and society.

The people concerned with career counseling should also observe this phenomenon of gender ratio in the family while interviewing the candidates / students before recommending them for different professions. The suitability of a candidate for a job does include the feature of gender ratios in his/her family. In recruitments for paramilitary forces, gender ratios of the families of the candidates should be given due deliberation. In such jobs, there are certain categories of lower ranks who mostly remain away from their families for long periods. If there is a single male family member of a large family size of ten members and he has been recruited for demanding category, it would make his life hectic and his family's as well because in Pakistani culture particularly and in other cultures generally, there are certain responsibilities which have to be performed by male family members only. The prolonged absence of (one and only) male family member creates problems for the family. Which would ultimately lead to an increase in the level of work family conflict.

6.   Limitation and Future Directions

Although mediation and moderation of time management has not been proved in this research study, even then, the authors recommend that it may be tested in a different cultural perspective and with a different methodology. If the results of longitudinal research in future are received contrary to this study, by obtaining data from the respondents at two different points of time before time management training and after training; it would not only add the knowledge about the determinants of the very phenomena but also help in finding its solutions. Gender imbalance has not been studied in this context. It is recommended that it may be studied in future research.

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Impact of Social Media Influencers on Follower's Purchase Intention and the Mediation Effect of Consumer Attitude

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Abstract

The advancement in the digital landscape in recent years has driven brands, especially in the food industry, to adopt modern marketing approaches by leveraging social media influencers (SMIs). These individuals have the ability to change the perception of their customers while influencing their buying decisions. Due to lower profit margins in traditional marketing than in SMI marketing, and with the surge in social media usage like Facebook, YouTube, TikTok, and Instagram, food brands are now moving more towards SMIs to promote their products. The aim of this report is to determine the impact of source credibility (i.e., trustworthiness, expertise, attractiveness, and similarity) of SMIs on follower's buying intention and the mediating effect of consumer attitude towards it. The research involves a target audience of the age group 16-40 years. The data was gathered from 284 participants using a purposive sampling technique. Then the measurement and structural models were taken into account to carry out analysis. As per the results, all hypotheses are accepted except one hypothesis. Findings suggest that attractiveness has the most effect on the purchase intention of the followers, followed by similarity. It was found that the consumer attitude behaves as a mediator between attractiveness of SMIs and follower's purchase intention. Besides that, trustworthiness also affects the followers' purchase intention but to a lesser extent compared to attractiveness and similarity. Moreover, no relationship exists between follower's purchase intention and expertise. This research aims to assist brand managers in assessing the potential benefits of investing in SMIs and understanding their key attributes that significantly impact consumer preferences. By identifying the types of SMIs that resonate most with consumers, the research seeks to provide insights into whether engaging with SMIs can enhance product sales and contribute positively to overall business.

Keywords: Food industry; purchase decision; social media influencer; source credibility.

JEL Classification: M31, M37

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1.   Introduction

In the digital age, social networking platforms like Facebook, YouTube, TikTok, and Instagram have emerged as the crucial parts of marketing strategies. These platforms have allowed individuals to share their experiences and information with a larger audience and have provided opportunities for brands as well to achieve their marketing goals effectively(Tigerhielm & Hämäläinen, 2024). Amid an intensely competitive food industry, food brands are looking for the right marketing strategies to gain an advantage using these platforms. To achieve that, they need suitable influencers with persuasive skills to advertise their products (Mardhiah & Widodo, 2023). Consequently, they have shifted their focus towards social media influencers to endorse their brands(Dam et al., 2023). Known as dynamic third-party endorsers, these influencers have taken advantage of numerous social media platforms for the promotion of the products to their online audience while keeping them informed of the latest updates (Azhar et al., 2022) .

An analysis shows that 70% of the Gen Z adults from the survey were inspired by SMIs to try the advertised food, indicating that the influence of SMIs can impact the consumer behavior (Dam et al., 2023) In addition to that, the consumer attitude also plays a key role in forming purchase decision, as it shows the acceptance of SMIs recommendations. The attitude, evidentially, is influenced by the trustworthiness in vloggers, a type of SMI, which in turn significantly impacts purchase intention. (Ramos, 2025) Additionally, the influencer marketing, directed by trustworthiness and perceived credibility of SMIs, also influences consumer attitudes and behaviors more than other promotional approaches (Ashraf et al., 2023).

As per study conducted in the Pakistani market, the purchase intention of the consumer is altered by a few factors like trustworthiness and credibility of SMIs where trustworthiness was found to be a significant factor affecting the reliability of the influencer as well as consumer purchase intention (Azhar et al., 2022). Furthermore, the trait of trustworthiness was found to have a positive impact on consumer purchase intention in the context of online purchasing as well (Daradinanti & Kuswati, 2025).The credible and relevant facts communicated by the SMIs along with the motivation towards a purchase also influence consumer choice(Azhar et al., 2022) .

According to above insights, comprehending the role of source credibility in SMI marketing and its influence on consumer attitude and behavior is important. Thus, we developed the following research questions which can provide valuable information and guidance to brand managers in the highly competitive food industry:

a.   Does the source credibility of SMIs affect the follower's purchase intention?
b.   Does consumer attitude mediate the relationship between the attractiveness of SMIs and follower's purchase intention?

Following the rise of SMIs, the marketing environment has observed a substantial revolution recently. From a million-dollar to a multi-billion-dollar industry, the ever-growing world of marketing has observed significant growth through SMIs in recent years, especially in the food industry. A study shows that around 60% of the brands were using SMI marketing as of 2019 (eMarketer, 2019). The marketing size through SMIs was just $0.5 million in 2015 which rose to $9.7 billion in 2020 and was expected to pass the milestone of $15 billion in 2022 (Ashraf et al., 2023). Moreover, a study mentions that the industry of food influencer marketing is expected to grow 42% from 2019 to 2024(Dam et al., 2023). With a successful prospect in the market and increasing popularity of SMIs, particularly vloggersbusinesses are engaging with them to promote their products and services. They aim to maximize their market share and outperform their competitors (Ramos, 2025) .

The reason behind performing this analysis is to explore the result of investing in SMIs on business growth and identify the specific qualities necessary for SMIs to effectively attract a wider audience. According to Ashraf et al. (2023), 49% of consumers rely on the recommendation of influencers while about 40% of consumers go for purchasing the products promoted by SMIs. Therefore, brands are now investing in SMIs to develop positive consumer attitude towards them. (Jamil et al., 2024) .

This research is carried out to inquire about how one of the characteristics of SMIs that is source credibility affects the purchase intention of followers in food industry. The exogenous variable is source credibility, which has further four dimensions trustworthiness, expertise, attractiveness, and similarity. The endogenous variable is the follower's purchase intention and there is a third variable mediator which is consumer attitude. It acts as a mediator between follower's purchase intention and SMI's attractiveness. The research was carried out among people living in Karachi, Islamabad, Lahore, Quetta, Peshawar, Sadiqabad and some other cities in Pakistan who use social media and follow food bloggers and other SMIs of the food industry. Individuals aged 16 to 40 years were targeted as this age group is expected to be the most influenced by social media and SMIs (Munsch, 2021).

This study attempts to cover various literature gaps. It is being carried out in Pakistan, one of the developing countries. Most studies on SMIs were carried out in the advanced countries such as the United Kingdom, the United States, the Netherlands, France, Spain, Australia, and others. The results of the research done in these countries may not be applicable in the context of Pakistan due to various reasons such as cultural differences, economic disparities, audience demographics, and local trends (Ashraf et al., 2023) Furthermore, most research has been done specifically for the cosmetics and beauty sector(Shastry & Anupama, 2021). However, this particular study is being conducted in the food industry. The objectives of the study are:

a.   To gauge the effects of four dimensions of source credibility, one of the characteristics of social media influencers on followers' purchase intention.

    b.   To find out whether consumer attitude appears as a mediator between attractiveness of SMIs and follower's purchase intention.

In the highly competitive food industry, it has become necessary for brands to build effective marketing plans for promoting their products. However, in developing countries like Pakistan, the effectiveness of SMI marketing is uncertain due to lesser studies on the credibility of SMIs on consumer purchase intention(Lim et al., 2017). There is still a hesitancy among brand managers to leverage SMIs for promoting their products without sufficient evidence, potentially losing opportunities to attract customers in a high-growth market (Ashraf et al., 2023). The purpose of this research is to provide brand managers the valuable findings regarding the effect of source credibility's dimension - expertise, attractiveness, similarity, and trustworthiness – on consumers' purchase intention so that they can make better marketing strategies(Al Kurdi et al., 2022; Dam et al., 2023). These insights are crucial for staying ahead of competitors; otherwise, brands risk falling behind and losing their potential customer base (Nurhandayani et al., 2019).

2. Literature Review

2.1   *Social media influencers*

(Glucksman, 2017) describes social media influencers (SMIs) as independent third-party individuals who leverage several online platforms, comprising blogs, social media posts, and tweets, to shape and transform their audience's attitudes. They intend to work towards changing the attitudes and behavior of their followers so that it can be inclined in favor of a brand (Breves et al., 2019). Through social media platforms, these influencers pave the way for the spreading of information and promoting their influence on their followers which allows them to be their key opinion leaders (Kim Marjerison et al., 2020).

The SMIs are approached by brands so that they can endorse their famous and trending products for the purpose of creating content and awareness. Customarily, these brands themselves pay social media influencers for content generation with the aim of increasing their sales by focusing on their followers(Baig & Shahzad, 2022) . Thus, the power to create engaging content is a key driver of social media influencer's success (Kian Yeik et al., 2022).

Chaiken (1980) stated that when the information could be trusted coming from the source then only the source is perceived as reliable and credible. The concept of source credibility was introduced and a theoretical framework was developed by Hovland and Weiss (1951)and it states that source credibility of SMIs has four dimensions- attractiveness, expertise, trustworthiness, and similarity.

Attractiveness refers to celebrities' physical appeal, encompassing their facial features, body, and overall aesthetic (Ismagilova et al., 2020). Expertise is the competitiveness of celebrities

in their relative field, knowledge of the products they are endorsing, and experience (Ismagilova et al., 2020). Honesty and truthfulness are essential components of trustworthiness when celebrities endorse products or share messages (Jin et al., 2019). All the common attributes or personal characteristics of the audience with the celebrity enhance the persuasiveness of the message and can be termed as similarity(Schiappa et al., 2007).

2.2   Consumer Attitude

Consumer attitude is a complicated phenomenon linked with multiple perspectives and processes (Hsu, 2020). This phenomenon can be distinguished as emotions and feelings that an individual has directed to any object which is impacted by multiple factors such as the logo (Septianto & Paramita, 2021). In fact, consumer attitude towards food is a significant issue in the food industry, especially in the present times (Hsu, 2020). The growing changes in attitude of the consumers leading to a change in purchase decisions cannot be catered without knowing the motivations and expectations of the consumer (Topolska et al., 2021).

Consumer attitude is either positive or negative perception, emotion, or opinion that consumers hold towards a social media influencer (Phelps & Hoy, 1996)

2.3   Purchase Intention

Purchase intention measures the possibility or probability of a customer buying a particular product(s) in the foreseeable future (Putri et al., 2024). The purchase intention is exceptionally vital for the brands when they are making plans regarding the strategies that would cater to the products that would compete in the industry (Xin & Yang, 2018). The eagerness of the consumer to go online or to do physical shopping is ascertained by their intent of the purchase(Shastry & Anupama, 2021)

According to Lu et al. (2024);the chances of a product being bought and the willingness of the consumer to introduce it to others is referred to as Purchase Intention. Past research like Laroche et al. (1996) has found that social media influencers can influence followers' purchasing decisions and cultivate a willingness to buy, either directly or indirectly. This marketing tool is used commonly to predict sales and effectiveness of a company's marketing strategy (Morwitz, 2014).

2.4   Hypothesis development

2.4.1   Expertise and Followers Purchase Intention

Expertise can be described as source's apparent authority, derived from the knowledge, experience, and credibility (Weismueller et al., 2020), whereas purchase intention is a person's conscious decision to buy a particular brand (Lou & Yuan, 2019).

A study was performed in Jeddah, Saudia Arabia on Gen Z food enthusiast to find out the impact of food influencers on their purchase decisions. The study also examined the impact of food influencers' expertise on Saudi food consumers' purchase intention. In this study, the data was gathered from 100+ respondents with the population of the study being the students from high school and university, both undergraduate and postgraduates, and diploma students. It was found that expertise has a significant impact on purchase intention (Hanin, 2024). In research performed by Widyanto and Agusti (2020) with the purpose of finding the impact of expertise on purchase intention, 154 participants were involved who belonged to the Generation Z category in Jakarta. It was concluded that expertise has a significant impact on the purchase intention. Thus, the hypothesis is formed:

H1: Expertise has a significant positive impact on follower's purchase intention.

2.5   *Trustworthiness and Purchase Intention*

Trustworthiness refers to the extent to which the receiver considers the communicator's intention genuine and trustworthy (Martiningsih & Setyawan, 2022). Research was conducted in Indonesia to find out the effect of trustworthiness of celebrity endorsement effects on online purchase intention. A quantitative research methodology was followed, and the data was collected via online survey dispersed via google forms to customers who had used or were planning to use the online travel agency products. The total number of respondents were 205. The data analysis was done using Smart PLS. It was found that celebrity trustworthiness had a significant positive effect on purchase intention (Daradinanti & Kuswati, 2025).

H2: Trustworthiness has a significant positive impact on follower's purchase intention.

2.6   *Similarity and Purchase Intention*

Proposed by Yuan and Lou (2020), the similarity in the source credibility is fourth dimension which can improve the persuasion of the message, whereas Schiappa et al. (2007) defined similarity as a familiar characteristic of the source with the respective audience. Al-Darraji et al. (2020) conducted research in Sweden to find the impact of factors of trust i-e similarity, familiarity and credibility shown by influencers on customers purchase intention. Quantitative research design was followed. The data was collected through an online questionnaire with the sampling unit being set with customers who made purchases on the basis of influencers recommendation. The questionnaire was developed via Google survey tool and questionnaire had 7 point-Likert scale. The data was collected from a total of 137 respondents, and it was analyzed using multiple and linear regression analysis. The results concluded that similarity has a significant impact on purchase intention as the customers believe that more similar they feel to an influencer, the more willing they are to buy based on the influencers recommendations.

Rani et al. (2023) conducted a study in New Dehli, India to find the impact of social media influencers' credibility and similarity on Instagram's consumers intention to purchase. Purposive Sampling was used and the data was collected from a total of 384 respondents. The Questionnaire consisted of Close ended questions developed on 5-point Likert Scale that were used to access the impact of credibility and similarity of social media influencer on the customers. The data was analyzed using Pearson Correlation and regression analysis. It was found that there was a significant and positive impact of similarity on customers purchase intention signifying that the more customer feels similar to the influencer the more willingness he has to buy certain product endorsed by the influencer. Thus, the hypothesis is formed:

H3: Similarity has a significant positive impact on follower's purchase intention.

2.7   *Attractiveness and Purchase Intention:*

Attractiveness is referred to the look and physical attraction of a person regarding facial and physical characteristics (Ismagilova et al., 2020).

Weismueller et al. (2020) researched to find how attractiveness of influencers affects purchase intentions. A quantitative research method was used, and data was gathered from 306 respondents within the age group of 18 to 34. The results concluded that attractiveness has a significant impact on purchase intention. Thus, the hypothesis is formed:

H4: Attractiveness has a significant positive impact on follower's purchase intention.

2.8   *Consumer attitude mediates between attractiveness and follower's purchase intention*

Consumer attitude refers to the positive or negative opinions, emotions, or views that consumers hold about a social media influencer (Phelps & Hoy, 1996). Consumer attitude towards an influencer promoting a product can further be enriched through the attractiveness of endorser (Onu et al., 2019) . Amitay et al. (2020) did research to find the impact of celebrity endorsements on purchase intention where customer attitude and brand awareness were taken as mediators. It was quantitative-based research and a total of 100 respondents were part of the study. It was found that mediation of consumer attitude had a more profound impact on purchase intention than brand awareness. Numerous studies have investigated the attractiveness-purchase intention relationship, revealing consumer attitude as a significant mediator. Thus, the hypothesis is formed:

H5: Consumer attitude mediates the relationship between attractiveness and follower's purchase intention.
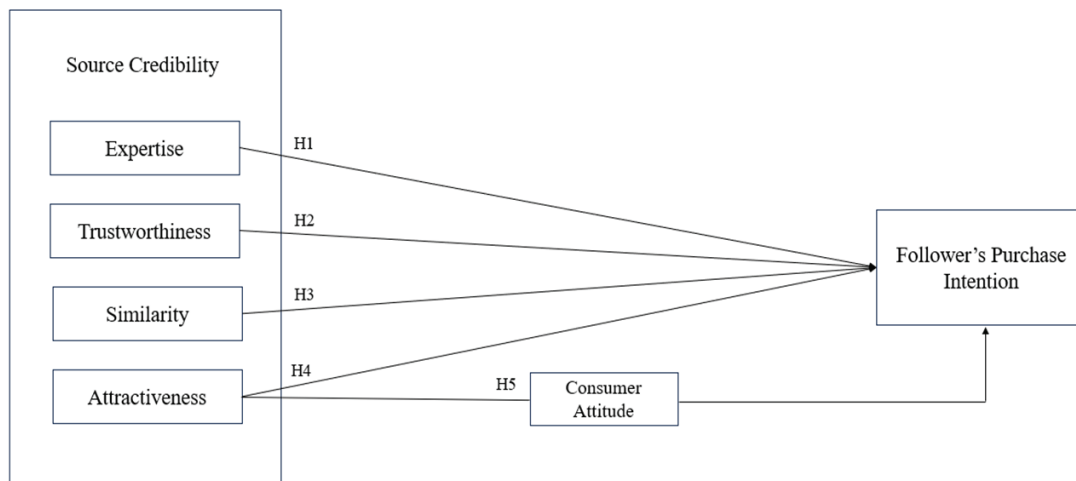
Theoretical framework:

Figure 1: Theoretical Framework

3.   Methodology

3.1   Sample

A standardized questionnaire with closed-ended questions was employed to gather data from respondents, adapted from existing literature as it is a quantitative study. As far as the secondary data is concerned, it has been collected through the literature review. The questionnaire was administered in English, a globally recognized language widely spoken in Pakistan alongside Urdu, the official language (Haidar & Fang, 2019) .

People who follow food bloggers on social media, aged between 18 to 40, and residing in Pakistan participated in the study. This age group was selected due to their high social media engagement (Ashraf et al., 2023) There are four exogenous variables involved in this study such as attractiveness, expertise, trustworthiness, and similarity, and one endogenous construct which is the purchase intention of the follower. Consumer attitude is also involved as a mediating variable.

Sampling techniques such as non-probability sampling has been used. To ensure accurate information, we have used purposive sampling to find out the consumers who use social media and follow food bloggers and other SMIs. The total sample size is 284 and total no. of indicators involved in this study are 24. General rule of thumb which says minimum sample size should be 10 times of total no. of indicators as per (Jhantasana, 2023; Sekaran, 2003).There are three pre-screening questions at the time of recruitment such as do you use social media platforms such as Facebook, YouTube, and Instagram, etc. or do you follow any food social media influencer/ blogger such as Irfan Junejo, Hamza Bhatti, or any other. Further, the last question was, please mention the name of any food blogger/social media influencer you follow and answer the below questions keeping your selected blogger/SMI in mind.

For analysis, only those responses were taken into consideration that contained a valid influence or blogger name. Once pre-screening questions were filled in by respondents, they were then permitted to take part further in the survey. For this reason, our sampling is considered as purposive sampling technique (Cash et al., 2022).

Using Google Forms, an online form was generated to collect responses from target audiences. It was distributed among 284 audiences using different social media platforms such as Instagram, Facebook, and WhatsApp. The survey yielded 284 responses, achieving a perfect response rate of 100%.

Demographic Overview of Survey Respondents: Regarding the demographic of respondents, males contributed more with a percentage of 71. Further, many respondents were aged between 21 to 25 with a percentage of 57. Bachelor's students contributed the most to the survey with 70.4%. Regarding professional experience, 49.6% are the ones who have 1 to 5 years of experience. With a percentage of 76, the residents of Karachi contributed the most to the survey.

Table 1

Demographic profile of the respondents

Profile	Frequency	Percentage %
Gender		
Female	82	28.9
Male	202	71.1
Age (Years)		
18 - 20	13	4.6
21 - 25	162	57.0
26 - 30	82	28.9
31 - 35	18	6.4
36 - 40	09	3.2
Education		
Intermediate Degree Holders	12	4.3
Bachelor's Degree Holders	200	70.4
Master's Degree Holders	72	25.3
Professional Experience		
Less than 01 Year	108	38.0
01 – 05 Years	141	49.6
06 – 10 Years	24	8.5
11 – 15 Year	05	1.8
16 - Above	06	2.1

Table to be continued…

Profile	Frequency	Percentage %
City of Residence		
Karachi	216	76
Islamabad	23	8
Lahore	27	10
Quetta	7	2.3
Peshawar	2	0.7
Sadiqabad	1	0.4
Others	8	2.6

3.2   *Measure*

The questionnaire contained three sections, the first was to explain the purpose of the survey and to describe the study. All respondents were guaranteed that their provided information and their identification remained confidential. The second section included the pre-screening questions, where it was asked from the respondents for name of the social media influencer or blogger which they pursue. In this study, both 5 points Likert and Semantic scales have been used for the structured close-ended questionnaire.

The source credibility scales or indicators are adopted from the study conducted by (Munnukka et al., 2016). Purchase intention was assessed using a six-item scale adapted from the study (Liu & Brock, 2011). Consumer attitude towards SMIs construct consists of three items adopted from (Muehling, 1987). Measurement scales of all constructs are given in Appendix A.

4.   Data Analysis

For data analysis, the technique used is PLS SEM. SEM's strength lies in its ability to assess latent or hidden variables at the measurement level (measurement model) and explore relationships between them at the theoretical level (structural model) (Hair et al., 2012) .

PLS-SEM has been used in this study as it works effectively on small sample sizes and is suitable for handling complex models as well as because of its flexibility with non-normal data (Hair et al., 2012)A measurement model has been run to check indicator reliability, and internal consistency reliability by calculating composite reliability and Cronbach's alpha, convergent validity, and discriminant validity. Then structural model was run to determine the impact of attractiveness, expertise, trustworthiness, and similarity on follower's purchase intention and the mediating effect of consumer attitude between the attractiveness of SMIs and purchase intention of the follower.

5.   Results and Discussions

To examine Indicator reliability, the study used factor loadings. The values resulted in the range of 0.799 to 0.937, as shown in Appendix. The results demonstrated a strong measure of latent factors since the values are greater than 0.708 (Collier, 2020; Hair et al., 2019).

To evaluate model's reliability and internal consistency, composite relatability and Cronbach's alpha have been used in PLS SEM, as shown in Table 2. Since the values are in the range between 0.879 to 0.954 and are greater than 0.7, therefore, all the constructs meet Cronbach's alpha criteria (Hair et al., 2019).

For all the constructs, composite reliability rho_a and rho_c values were in the range between 0.885 to 0.963, as shown in Table 2 below. That shows that data is highly consistent since the composite reliability ranges from 0-1 with 0.7 being the cutoff limit (Collier, 2020; Hair et al., 2019).

Table 2
Internal Consistency and reliability

Variables	Cronbach's Alpha (α)	Composite Reliability (rho_a)	Composite Reliability (rho_c)
Attractiveness	0.911	0.919	0.938
Consumer Attitude	0.903	0.905	0.939
Expertise	0.912	0.914	0.938
Follower's Purchase Intention,	0.954	0.954	0.963
Similarity	0.879	0.885	0.925
Trustworthiness	0.906	0.914	0.935

The Average variance extracted (AVE) has been used to assess the convergent validity. Since the values were above 0.5 and in the range of 0.783 to 0.838, as shown in Table 3, therefore, the convergent validity has been established (Collier, 2020; Hair et al., 2019).

Table 3
Validity analysis

Variables	AVE
Attractiveness	0.791
Consumer Attitude	0.838
Expertise	0.792
Follower's Purchase Intention,	0.831
Similarity	0.806
Trustworthiness	0.783

According to the Fornell-Larcker criteria, since all the diagonal values are greater than the other values in the table, therefore, discriminant validity has been established, as shown in Table 4 below (Collier, 2020; Hair et al., 2019).

Table 4
Fornell-Larcker criterion and correlation

	A	CA	E	FPI	S	T
Attractiveness	0.889					
Consumer Attitude	0.648	0.915				
Expertise	0.68	0.59	0.89			
Follower's Purchase Intention,	0.795	0.678	0.66	0.900		
Similarity	0.829	0.66	0.701	0.818	0.898	
Trustworthiness	0.753	0.693	0.763	0.733	0.737	0.885

As per the Table 5, all Heterotrait-Monotrait (HTMT) values are lesser than 0.9, meeting the criteria, therefore, discriminant validity has been established (Gold et al., 2001).

Table 5
Heterotrait-Monotrait (HTMT)

	A	CA	E	FPI	S	T
Attractiveness	-					
Consumer Attitude	0.71	-				
Expertise	0.748	0.65	-			
Follower's Purchase Intention,	0.85	0.73	0.705	-		
Similarity	0.89	0.74	0.782	0.89	-	
Trustworthiness	0.831	0.764	0.843	0.785	0.824	-

A path analysis was performed, and the bootstrapping process was running with 10,000 samples. No multicollinearity issues were found as the VIF values were from 1 to 3.349 as shown in Table 6, all within the acceptable threshold (Collier, 2020).

Table 6
Multicollinearity

Variables	VIF
Attractiveness	1
Consumer Attitude	2.124
Expertise	2.662
Follower's Purchase Intention,	-
Similarity	2.647
Trustworthiness	3.349

After testing hypotheses shown in Table 7, results show that majority of the hypotheses are supported, except for H1, as indicated in Table 6. Hypothesis 1, that is SMI's expertise has a positive impact on follower's purchase intention, has $\beta = 0.035$ and $p = 0.316$. Since the value of significance is greater than ideal value that is 0.05, therefore the hypothesis H1 is not supported which suggests that expertise of SMIs does not positively impact follower's purchase intention.

Hypothesis H2 was related to the trustworthiness of SMIs having a positive impact on follower's purchase intention. The β value is 0.188 and p-value is 0.004 demonstrating if trustworthiness increases by 1 unit, then follower's purchase intention increases by 0.188 units, keeping other things constant. The hypothesis H2 is supported as the p-value is lower than 0.05 concluding that trustworthiness positively impacts follower's purchase intention.

Hypothesis H3, that is SMI's similarity has a positive impact on follower's purchase intention, is accepted since the p-value is 0 which is smaller than 0.05 indicating that the hypothesis H3 is supported and there is significant relationship between similarity and follower's purchase intention. In addition, value of β is 0.544, which shows that there is positive relationship between these two constructs and if similarity increases by 1 unit, then follower's purchase intention increases by 0.544 units, keeping other things constant.

Hypothesis H4 was related to SMI's attractiveness having a positive impact on follower's purchase intention. Since the value of p is 0 which is less than 0.05 therefore the hypothesis is supported. Moreover, the β is 0.648 which shows that a strong positive relationship exists between attractiveness and follower's purchase intention. If the value of attractiveness is increased by 1 unit, the value of follower's purchase intention increases by 0.648 units, keeping other things constant. The results indicate that attractiveness positively impacts the follower's purchase intention.

Table 7
Hypotheses testing

Hypotheses	Path	β	Significance	Support
H1	Expertise -> follower's purchase Intention	0.035	0.316	no
H2	Trustworthiness -> *Follower's purchase intention*	0.188	0.004	yes
H3	Similarity -> *Follower's purchase intention*	0.544	0	yes
H4	Attractiveness -> *Follower's purchase intention*	0.648	0	yes

Mediation analysis in Table 8 shows that the H5, which was related to the consumer attitude mediating the relationship between attractiveness and follower's purchase intention, is supported because the value of p, which is equal to 0.003 is less than 0.05. The direct effect H4

is significant and indirect effect H5 is also significant, which indicates partial mediation. Thus, the relationship between attractiveness and follower's purchase intention is partially mediated by consumer attitude.

Table 8
Mediation analysis

Hypotheses	Path	B	Significance	Support
H5	*Attractiveness -> Consumer attitude-> Follower's purchase intention*	0.169	0.003	yes

Since the values are greater than 0.1, therefore, both the constructs are following the criteria (Lu et al., 2024). The R^2 value of consumer attitude is 0.42 which is considered as weak; however, the other construct i.e., follower's purchase intention, has R^2 value of 0.72 that is moderate as per (Hair et al., 2019) as shown in Table 9.

Table 9
Access the value of R^2

Variables	R-square	R-square adjusted
Consumer attitude	0.42	0.418
Follower's purchase intention	0.72	0.716

As shown in the Table 10, the value of f^2 ranges between 0.002 to 0.724. The value 0.002 shows if expertise, which is an exogenous construct, is excluded then there will be a minimal effect on R^2 value. The values that are above 0.02 and below 0.15 suggests there is a small effect on R^2 value if consumer attitude and trustworthiness get excluded. Further, removing the constructs of similarity and attractiveness significantly affects the coefficient of determination, as f^2 is greater than 0.35 (Cohen, 1988).

Table 10
Access the value of f^2

	A	CA	E	FPI	S	T
Attractiveness		0.724				
Consumer attitude				0.048		
Expertise				0.002		
Follower's purchase intention						
Similarity				0.397		
Trustworthiness				0.038		

A= Attractiveness, CA=Consumer Attitude, E=Expertise, FPI= Follower's purchase intention, S=Similarity, T=Trustworthiness

6.   Discussion and Conclusion

6.1   Discussion

This research examines the effect of four different dimensions of the source credibility i.e., expertise, similarity, trustworthiness, and attractiveness, on the purchase intention of followers and the impact of mediator i.e. consumer attitude, between attractiveness and purchase intention of followers. Upon finding, the results were aligned and significant almost for all hypotheses except one which suggested that there is a positive effect of expertise on the follower's purchase intention. Additionally, there is partial mediation between attractiveness and follower's purchase intention.

Results indicate that the expertise of SMIs does not have a significant impact on consumer's purchase intention and therefore our first hypothesis is not supported. This means that the expertise of SMIs is not indicative of whether the consumers are more inclined to purchase. The results are aligned with the study conducted by Yuan and Lou (2020) and Daradinanti and Kuswati (2025) which shows no impact of expertise on follower's purchase intention. Similarly, study conducted by Widyanto and Agusti (2020) also shows the similar results that there is no significantly positive influence between expertise and purchase intention. However, our study contradicts the previous study taken place in Pakistan by Ashraf et al. (2023). In that study, expertise positively affects the purchase intention of the followers.

Moreover, the trustworthiness was successful in influencing the follower's purchase intention. Our results show that there is a positive impact of trustworthiness on followers' purchase intention, thus, supporting our second hypothesis. That means the respondents consider trustworthiness an important factor while making decisions of purchase and the influencer must be trustworthy. Our findings are aligned with the study executed by Hanin (2024), Ashraf et al. (2023), and AlFarraj et al. (2021). However, our results contradict the results of the study by Yuan and Lou (2020); which shows that trustworthiness had no influence on purchase decisions.

As per our analysis, there is a positive impact of similarity on the followers' purchase intention since the results are significant and the hypothesis is supported. The results are aligned with the study conducted by Ashraf et al. (2023) and Yuan and Lou (2020). It shows that similarity can enhance the influence of the message on the followers. The results match with the study of Al-Darraji et al. (2020).

The attractiveness, which is the fourth dimension of SMI's source credibility, significantly impacts follower's purchase intention, supporting the hypothesis. Respondents believe in the looks and physical attraction of SMIs. As per the study of Weismueller et al. (2020); attractiveness significantly impacts the follower's purchase intention which is similar to the results of our study. Our results are also consistent with Hanin (2024), Ashraf et al. (2023) and Yuan and Lou (2020).

The result shows that consumer attitude acts as the mediator between attractiveness of SMIs and follower's purchase intention, and a partial mediation exists between them, thus, supporting the hypothesis. Respondents believe that consumer attitude has an essential role in affecting the decision to purchase, which is aligned with the results of Ramos (2025) and Amitay et al. (2020).

6.2   Conclusion

Social media influencers' credibility plays a significant role in shaping followers' purchase decisions. While expertise may not be a top priority, trustworthiness, similarity, and attractiveness can make or break an influencer's impact. Followers value influencers who are relatable, trustworthy, and authentic. Ultimately, an influencer's credibility can influence consumer attitudes and drive purchase intentions. By understanding these dynamics, brands can make informed decisions when partnering with social media influencers and maximize their marketing efforts.

6.3   Implications

6.3.1   Theoretical implications

This study addresses and fills various gaps in previous researches, thus contributing to the existing literature. At first, we conducted research on SMIs and selected one of their characteristics, which is source credibility, with four success determinants i.e., expertise, trustworthiness, similarity, and attractiveness, to validate their influence on the purchase intention of followers in Pakistan. Previous studies including SMIs were mostly conducted in advanced countries like France, Australia, the United Kingdom, the United States, Germany, Belgium, the Netherlands, Austria, and Portugal (Vrontis et al., 2021). The results of these researches conducted in developed countries may not be applicable in the context of Pakistan due to various reasons such as cultural differences, economic disparities, audience demographics, and local trends (Ashraf et al., 2023)

Conducting more research like this can increase the chance of generalization of results.. In this technological-driven era, every industry needs to act smartly to grab and increase its market share. This research makes another contribution to the existing literature by studying SMI's influence on follower's purchase intention in the food industry.

SMIs endorsement is increasing drastically in Pakistan and most companies are using it as an effective source to grab a customer base (Qamar, 2022). Out of all the industries in Pakistan, the technology industry has shown dominance in utilizing SMIs in the endorsement of their products (Privateer, 2021). Adding to this, Vrontis et al. (2021) discovered that majority of the previous studies which included social media influencers were not focused on any specific type of industry, apart from beauty and fashion, and their results may not be applicable to other industries.

6.3.2   Practical implications

For brand managers of food companies, this study reveals some critical insights and key takeaways along with clearing some misunderstandings as well. Firstly, if an SMI is attractive from the perspective of physical and facial aspects, it will greatly increase the purchase intention of the followers and can easily convince them to do a certain task that he/she wants them to do. Brand managers can use this effectively to market their brand by endorsing attractive SMIs to increase their product sales as followers' purchase intention is easily induced by it.

Furthermore, consumers like to listen to people they can relate to and are easily convinced by them (Al-Darraji et al., 2020). This connection of relatedness gives them a feeling of belonging and acceptance. This aspect can be cultural, political, racial, or ethnic. Consumers tend to do alike actions and follow people who are similar to them in some aspect. The similarity of followers with their SMIs significantly impact their actions. The results also reveal that selecting a suitable and similar social media influencer for brand endorsement can be a crucial part of a marketing campaign as they should feel similar to their target consumers.

In addition, the trustworthiness of SMIs has a slight influence on consumers' purchase intention. Brand managers must keep this aspect in view, while weighing it low, during the selection of an SMI for their brand endorsements. Lastly, the expertise of any SMI does not have any influence to the purchase intention of consumers or followers. This might be due to the reason that other aspects of an SMI have a much higher weightage in the view of consumers and they ignore expertise or do not consider it as an influencing aspect of source credibility.

6.4   Limitations and future research

This research also has various limitations which can be helpful for other researchers. Firstly, the sample size taken for this study is 284 therefore for better results a greater sample size can be obtained for future studies. Secondly, in this study, we have only taken a single mediator. In future studies, multiple mediators and an addition of a moderator can be done. Thirdly, due to time constraints, only certain exogenous constructs were taken into the account. In future, more source factors such as fairness with its dimensions, can be used for better results. Fourthly, most of the respondents were from Karachi, hence, we suggest that in the future, respondents from different regions and cities can be taken for better results and to increase generalizability. Lastly, in this study, we have considered multiple platforms like Facebook, YouTube, TikTok, and Instagram. As these platforms have different audiences and different kinds of offerings for the interaction, therefore, in the future, we recommend that researchers can target a particular social media platform when replicating the study.

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Appendix A
Questionnaire along with factor loading of all items.

Items	Factor Loadings
Attractiveness	
I think my selected SMI is good looking.	0.829
I consider my selected SMI is very stylish.	0.894
I consider my selected SMI is very attractive.	0.933
I think my selected SMI is sexy.	0.898
Expertise	
I consider my selected SMI is an expert on his/her area.	0.899
I feel my selected SMI is competent to make assertions about things she/he good at.	0.894
I feel my selected SMI knows a lot about their areas.	0.875
I consider my selected SMI have sufficiently experienced to make assertions about his/her area.	0.890
Trustworthiness	
I consider my selected SMI is earnest.	0.799
I feel my selected SMI is truthful.	0.920
I consider my selected SMI is trustworthy.	0.937
I feel my selected SMI is honest.	0.875
Similarity	
I can easily identify with my selected SMI.	0.874
My selected SMI and I am lot alike.	0.885
My selected SMI and I have a lot in common.	0.932
Consumer Attitude	
Attitude towards my selected SMI is Bad – Good.	0.927
Attitude towards my selected SMI is Negative – Positive.	0.911
Attitude towards my selected SMI is Unfavorable – Favorable	0.908
Purchase intention	
Brands endorsed by my selected SMI draw my attention easily.	0.875
If my selected/favorite SMI endorses a brand, I will definitely buy a product.	0.914
I buy a brand because I like the SMI endorsing it.	0.915
I am willing to buy the product promoted by the influencer.	0.917
I am happy to buy a brand endorsed by my selected SMI.	0.929
Brands endorsed by my selected SMI easily come to mind whenever I make a purchase.	0.858

Cognitive and Emotional Drivers of Risk Perception and Financial Success: Pakistan Stock Market Perspective

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Abstract

    This study investigates the impact of cognitive and emotional biases; herding behavior, loss aversion, cognitive biases, and overconfidence on risk perception and financial performance in the Pakistani stock market. Employing Structural Equation Modeling (SEM) to analyze data from 248 individual investors, the findings reveal that herding behavior, cognitive biases, and overconfidence significantly influence risk perception, whereas loss aversion has an insignificant effect. Risk perception mediates the relationship between psychological factors and financial performance, highlighting its critical role in investment outcomes. The study underscores the importance of addressing behavioral biases to improve decision-making and economic success. Practical implications include the need for investor education and strategies to mitigate biases, thereby promoting rational investment behavior in emerging markets like Pakistan. This research contributes to the behavioral finance literature by providing localized insights into the psychological drivers of investor behavior and their implications for financial performance.

Keywords: Herding behavior; overconfidence; risk; financial performance.

JEL Classification: G41, D81, G11, G15

1.   Introduction

    Stock exchanges and other financial markets are important barometers of a country's economic status as they are important channels of resource mobilization and wealth creation (Hossain & Siddiqua, 2022). The PSX has great potential for investors but is very volatile in response to economic changes (Almansour et al., 2023). It is agreed that investor behaviors in the stock markets are inclined through such behavioral biases that include herding behavior

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overconfidence and loss aversion that impact the risk perception section and financial performance (Quaicoe & Eleke-Aboagye, 2021). Heuristic and affective biases affect the investor's capacity to make rational decisions on risks hence resulting in low investment returns (Hossain & Siddiqua, 2022). These biases relate to the Prospect Theory that (Ruggeri et al., 2020) developed to show that human beings do not make rational investment decisions as they are subjected to psychological factors. These psychological factors in the trading environment of Pakistan are important to understand investment behavior and the market.

Behavioral finance has emerged as an important factor in investment decisions through research done in the recent past (Alrabadi et al., 2018). For instance, Almansour et al. (2023) explain that psychological factors of behavioral finance including herding or overconfidence influence risk perception that influences investment performance. However, most of the prior research has been conducted in developed countries. Hence, there is a lack of knowledge about how these biases work in emerging economies such as Pakistan (Alshebami & Aldhyani, 2022). Due to the peculiarities of the socio-economic and cultural environment of Pakistan, it is crucial to examine the local investors' behavior. This is in concordance with other papers such as that of Quaicoe and Eleke-Aboagye (2021) which establish that cultural and economic factors distort investor preferences, which require context-specific examination.

In addition, the fluctuation of the Pakistan Stock Exchange (PSX) also supports the rationale for this research. The PSX has shown volatility over the period and most specifically the downturn in the period of 2017 up to 2019 and the recovery after the pandemic has had impacts on the investors (Alshebami & Aldhyani, 2022). Unlike the developed markets where standard setting authorities and market stability adjust minor bias, the emerging markets, for example, Pakistan is highly susceptible to cognitive and emotional factors. While previous works have investigated investor biases in Bangladesh (Hossain & Siddiqua, 2022) and Ghana (Quaicoe & Eleke-Aboagye, 2021), there is not abundant literature on the Pakistani context. This study aims to fill this gap by evaluating the impact of several behavioral heuristics such as herding behaviour, loss aversion, cognitive biases and overconfidence on risk perception and PSX's financial performance.

Furthermore, whereas first-order effects of those behavioral biases on investment decisions have been investigated in prior studies, second-order sequences like the risk perception Victorian as a moderator have been paid little attention to in the Pakistan stock market (Eaton et al., 2022). To this extent, this research will fill this gap by providing a systematic synthesis of the processes through which risk perception influences the impact of cognitive/emotional bias on business returns.

This study is a new contribution to the literature on emerging markets by using the behavioral finance theory as well as contribution to knowledge will help in the understanding of investor behavior in Pakistan as well as provide a comparison with various similar economies like

India, Malaysia and Bangladesh thereby extending the knowledge base of behavioral finance in emerging economies.

2.   Literature Review

2.1   Herding Behavior

Herding behavior is defined as investors' tendency to follow the actions of other investors without engaging in their analysis (Sewando, 2022). This results in market inefficiencies, asset mispricing, and high volatility especially in the emerging markets where there is low financial awareness and less regulatory environment (Zafar et al., 2024). Three modules that are specific to Pakistan include peer effects, speculation, and inefficient information generation and use which leads to herding behaviour due to inefficiency in investment decision-making (Awais et al., 2016).

It has been found that various cultural and social factors are responsible for the herding behaviour lately. For example, Callero (2023) explains how social influence influences financial decisions, which is in concordance with the study done in Pakistan where investors use word of mouth instead of fundamental analysis. The study also indicates that due to the collectivist culture of Pakistan, herding behavior may be even more prominent and hence, needs context-based solutions to reduce irrationality in investment.

2.2   Loss Aversion and Cognitive Biases

According to Ruggeri et al. (2020), investors are risk-seekers concerning losses and gain, thus making decisions that are irrational in the financial domain. Loss-averse investors also tend to hang on to their losing stocks in the hope that they will recover, which is not good for the portfolio (Malik et al., 2024). In Pakistan, economic and regulatory risks heighten loss aversion, making investors more risk-averse and reluctant to exit positions.

In addition, there are other cognitive biases that affect risk assessment including the anchoring effect, availability heuristics, and confirmation bias (Cao et al., 2021). In Pakistan, such biases are more eminent due to the few numbers of stock exchange companies providing consistent and accurate financial information as well as low investor knowledge, which results in major inefficiencies (Malik et al., 2024). Some of the other strategies identified in these theories include the use of noxious incentives, use of financial literacy and behavioral interventions among them (Rojo et al., 2020).

2.3   Overconfidence and Risk Perception

Overconfidence where the investors tend to be overoptimistic about information and prediction ability results in speculation frequent trading, and increased fluctuations in the prices of

securities (Ngene & Mungai, 2022). Research shows that overconfident investors fail to consider negative information, engage in herding, and underestimate risks, which is more evident among retail investors in Pakistan (Zafar et al., 2024).

Risk perception is therefore another parameter that moderates the main relationship between behavioural biases and financial performance as posited by (He & Strub, 2022). Risk perception is a function of cultural, social and economic factors that are associated with investors. For example, in Pakistan, there are perceptions different from what can be experienced in developed countries such as high inflation, political instability and regulation factors (He & Strub, 2022). Pakistani investors are more likely to act emotionally rather than logically when it comes to risk as compared to developed markets (Holliday, 2020; Babajide & Adetiloye, 2012).

Although there is a vast literature on investor biases in developed countries, research on Pakistan and other emerging markets is scarce. Most of the existing studies do not incorporate cultural factors and do not consider how social and governance factors affect investors. This paper intends to enhance this literature by presenting a more localized investigation of herding behavior, overconfidence, cognitive bias and loss aversion, risk perception and performance of PSX.

2.4   Prospect Theory

The theory that best explains the decision-making process of investors under risk is Prospect Theory advanced by (Ruggeri et al., 2020). While the neoclassical theories of economics assume that people are rational in their decision-making, Prospect Theory posits that people make different evaluations of gains and losses, hence making irrational decisions in their financial decisions (Baddeley et al., 2010).

Another aspect of the Prospect Theory that proves crucial is that people undergoing losses are carried more intensely than gains (Bekiros et al., 2017). This bias is the reason why investors in Pakistan continue to invest in stocks that are in the red, waiting for a market rebound that may never come (Malik et al., 2024). In addition, the framing effect indicates that the way investment options are presented affects the decision-making process (Bashir et al., 2013). For instance, Pakistani investors may be more risk seeking when they are in the process of making up for their losses, which may lead to speculation and thus high volatility in the market (Bekiros et al., 2017).

Further, recent studies reveal how cultural and, in particular, economic factors worsen these biases in emerging markets. According to Rojo et al. (2020), the cultural factors like uncertainty avoidance and collectivism influence the investor behavior and are especially significant in the high-risk market of Pakistan. Thus, incorporating these cultural dimensions, this research provides a better understanding of the application of Prospect Theory to the Pakistani stock market (He & Strub, 2022).

2.5   *Behavioral Finance Theory*

Behavioral Finance Theory is a theory that embraces the fact that ideas such as implied in the EMH theory are not valid in the real world since people are not always rational and therefore markets do not fully incorporate all the available information (Cao et al., 2021). However, behaviour of the investors in the stock market is influenced by such psychological factors and emotions and these are generally referred to as behavioural anomalies, which create inefficiency (He & Strub, 2022).

2.6   *Behavioral Biases and Market Instability*

The behavioral factors are a major cause of inefficiency and volatility in the stock exchange in Pakistan. This concept, known as herding, which involves investors mimicking the actions of other investors has been associated with bubbles and crashes in the markets; research on the emerging markets (Zafar et al., 2024). Overconfidence, which is another systematic error, makes the investors over-estimate their information and forecasting effectiveness and in the process engage more in frequent trading that tends to increase the transaction costs, hence lowering the total return (Malik et al., 2024). Besides, other cognitive biases like the anchoring and the availability heuristics make risk assessments to be off target, thus incorrect investment decisions are made (Cao et al., 2021). Based on these challenges, it is important for policymakers and investors to come up with measures that reduce these biases. Overconfidence can be checked through investor education and regulation that reduces the impact of herds due to increased knowledge and enhanced transparency (Hasan et al., 2023). Herding. It is crucial to eliminate these behavioral biases to increase market stability and the efficiency of investors' decisions in the Pakistan stock exchange.

2.7   *Cultural Dimensions and Investor Behavior*

By emphasizing certain aspects of Hofstede's cultural dimensions and the importance of cultural and economic measures in investor behavior, the role of investor cultural factors in the Pakistani context has been established (Cassidy, 2010). According to the Hofstede's cultural dimensions, Pakistan has a high uncertainty avoidance index, which makes investors avoid risks and opt for conventional and less risky investments even though they can get higher returns from risky investments (Rojo et al., 2020). Moreover, another key reason in the case of Pakistan is the high power of herd behavior resulting from her country's collectivistic culture, which depicts investors making decisions based on gossip, relatives, friends, colleagues, and rumors rather than analysts (Scott et al., 2024). In addition, the country's social structure is highly polarized, and this is evident in the way that financial information is controlled and only a few institutional investors are able to access such information (Sewando, 2022). While the Western theories presuppose rationality and efficiency of markets, knowledge of these cultural factors offers a broader view of Pakistani investors (Combrink & Lew, 2020). Thus, by including cultural and psychological

aspects in behavioral finance theory, this work provides a more context-sensitive approach to studying investment decision-making biases in emerging markets (Albertsen et al., 2020).

2.8   *Hypotheses Development*

Herding behavior is a significant factor that influences the risk perception of investors especially in emerging markets such as Pakistan where information asymmetry is a major issue. Zafar et al. (2024) note that Pakistani investors rely on the market information instead of conducting their research, which results in over- or under-estimation of risks. It amplifies the decision-making, which makes herding behavior affirm the volatility that characterizes investment risk perception and decision making (Kartini & Nahda, 2021). It is important to understand these dynamics in order to find out where the inefficiencies and behavioral biases are in the market that affects the financial performance. Therefore, H1 is designed as:

H1: There is a significant relationship between herding behavior and risk perception.

The overestimation of losses as compared to gains that is postulated by Loss Aversion (Ruggeri et al., 2020) shows that people are more sensitive to losses than to gains. In the context of the Pakistani stock market, it has been observed that investors are highly sensitive to risk and tend to avoid it and they also tend to hold on to their losing stocks for a longer period. Malik et al. (2024) also pointed out that loss aversion increases the perceived risk and thus results in over-conservative investment decisions. This implies that loss-averse investors tend to exhibit higher uncertainty even in non-transitory turbulences and can therefore probably be discouraged from participating in higher return investments (Fiet, 2022). Therefore, H2 is designed as:

H2: Loss aversion has a large effect on the risk perception.

The presence of other biases known as cognitive biases like the anchoring effect, availability heuristics, and confirmation biases greatly interferes with the risk assessment process by investors. According to (Cao et al., 2021), all these biases have a systematic effect on the risk and thus lead to the making of wrong decisions. In Pakistan, the level of financial literacy is still low and the information about the market is not always available, so investors may use heuristics instead of rationality. Zafar et al. (2024) affirm that such biases contribute towards the mispricing of assets as well as increase an exaggerated risk perception thus making investors to develop irrational reactions towards oscillation in the market. These biases could be changed through educating people on personal financial management and modifying their behavior to enhance the performance of the market (Dahlquist et al., 2017). Therefore, H3 is designed as:

H3: Cognitive biases have a strong impact on risk perception.

Overconfidence bias makes investors overemphasize their knowledge and skills in

making decisions hence underestimating risks. Malik and his colleagues conducted a study and they revealed that overconfidence makes an investor trade more frequently, overlook warning signs, and minimize losses; this distorts the risk perception of the investor (Malik et al., 2024). This bias is most evident in Pakistan's retail investor segment where self- perceived knowledge takes precedence over sound financial analysis (Yu & Huang, 2023). Therefore, overconfidence is not only a factor that influences the individual's risk perception but also a factor that leads to market fluctuations and speculation. Therefore, H4 is designed as:

H4: Overconfidence significantly influences risk perception.

Although psychological biases can influence financial performance, risk perception serves as a mediator in the relationship between them. According to He and Strub (2022), the perceived risk has a direct impact on the financial performance of the investors. As it is widely known, behavioral biases play a significant role in the decision-making process in Pakistan and risk perception moderates the influence of herding behaviour, loss aversion, cognitive bias, and over confidence on the financial returns according to Zafar et al. (2024). For instance, investors with a high-risk sensitivity may miss high return opportunities and thus, their returns will be low while investors with biased risk estimates will make wrong investment decisions (Ruggeri et al., 2020). It, thus, posits that risk perception serves as a psychological mechanism that mediates between investor biases and the financial performance in the stock market of Pakistan. Therefore, H5 is designed as:

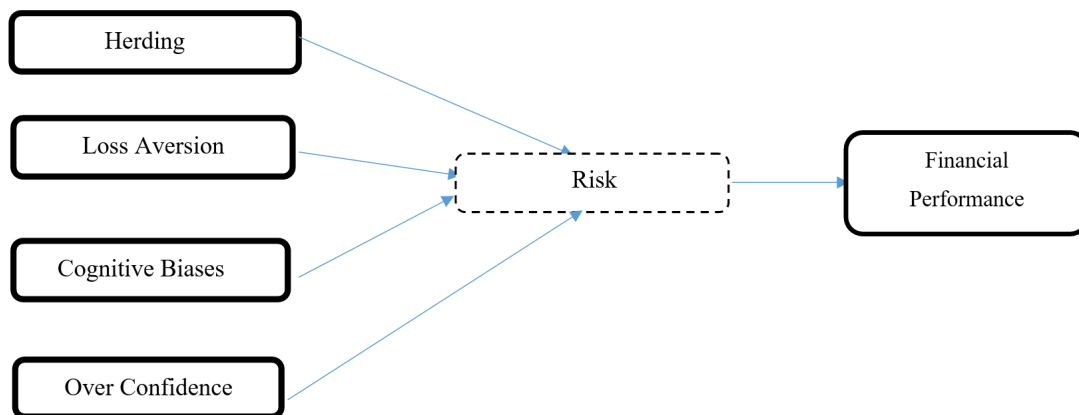*H5*: Risk perception will moderate the relationship between psychological factors and financial performance.

Figure 1: Conceptual Framework

3.   Methodology

This research has been designed to use a quantitative research method to find out the effects of psychological factors such as herding behaviour, overconfidence, cognitive biases and loss aversion on risk perception and financial performance of the Pakistan Stock Exchange (PSX). SEM is a suitable analytical tool for this research because it allows for the evaluation of multiple relationships, including the mediating variable, risk perception.

3.1   Data Collection and Preprocessing

The study utilizes a descriptive and correlational type of research since the research objectives seek to establish the relationship existing between cognitive and emotional biases and financial performance. This design is suitable for detecting the nature and strength of the relationships between the variables and for testing hypotheses (Malik et al., 2024). Since investor decision, making biased by cognitive distortions and market characteristics this research design provides a detailed idea about psychological factors that influence investors at an emerging market as Pakistan. The target population is the individual investors involved in trading in the Pakistan Stock Exchange (PSX). Participants are recruited from different demographic, socio-economic, and investment status to increase the external validity of the study. According to the literature review, education, experience, and income level are some of the factors that affect market participation in Pakistan (Zafar et al., 2024). Such variations make it possible to make a comparison and determine how one investor group holds or views risks compared to other investor groups.

3.2   Sample Size

The study adopts Cochran's formula to estimate the sample size of 248 investors, which is standard in behavioral finance research to guarantee an adequate sample size. The variables used in the formula include a 95% confidence level, which is common in behavioral research and a 5% margin of error to ensure accurate estimation. In addition, the population proportion is fixed at 0.5, a conservative measure that ensures maximum variation in the sample. This sample size is adequate to reduce the likelihood of Type II errors while at the same time enabling comparisons to be made between subgroups. Moreover, to analyze the impact on the sample, to consider market heterogeneity, the sample has been drawn from investors of different experiences, risk taking, and trading activities and kept as diverse as possible to get the comprehensive result from the Pakistan Stock Exchange (PSX).

3.3   Sampling Technique and Bias Mitigation

The study uses a stratified random sampling technique to ensure that all the major categories of investors are included in the sample. The population is divided into strata according

to age, income, and experience in investments to ensure that all the different market players are well represented. This approach increases the validity and transferability of the results, especially in the context of an emerging economy such as Pakistan, where investors' characteristics differ (Rojo et al., 2020). Nevertheless, obtaining samples through stratified sampling may be affected by several types of bias, including selection bias where some of the variables are not considered in the process, lower participation rates of some groups in the study, and misclassification of the investors in their respective classes. The following measures are used to deal with these risks: (1) the use of weights to increase the number of respondents to the proportion of the population in each of the categories, (2) non-response weights that are used to increase the number of respondents within the different categories that have low responses, and (3) adjustment of classification to reduce chances of an inaccurate classification which may lead to misclassification errors. These measures increase validity and reliability, which means that the sample used in the study is a good representation of the investors in the PSX.

To construct the primary data, the authors use a self-administered structured questionnaire that was developed from previously validated scales found in the literature to assess the variables used in the study. The questionnaire measures psychological biases including herding, overconfidence, and cognitive biases, risk perception based on the investor's attitude towards risk taking and risk return, and financial performance, self-reported investment performance. To eliminate any chances of measurement bias, the content validity and measurement of the questionnaire is checked through pre-testing and expert validation. Since behavioral biases are self-report measures, responses are collected using Likert-scale based instruments that are widely used in behavioral finance studies (Holliday, 2020). Standardized scales help to increase the reliability of the response, thus making it easier to compare results and conduct statistical analysis.

The research hypotheses are tested using Structural Equation Modeling (SEM) because it is a suitable technique for analyzing the interrelations between psychological biases, risk perception, and financial performance. Using SEM, the above relationships can be tested in the same model, and as a result, the mediating effect of risk perception in investment decision making will be achieved. Moreover, SEM has the advantage of providing a good control of measurement errors, which enhances the validity of the results. However, to maintain statistical validity, assumptions of SEM are checked out. Normality is checked by skewness and kurtosis tests to ensure that the distribution of the data is suitable for analysis. Multicollinearity is tested using the VIF test to ensure that there is no high correlation between the independent variables. Last, CFI, RMSEA, and SRMR are used to assess the fit of the model to the data to ensure that the structural model is a good fit for the data.

4.   Results Analysis

According to the results of this study, herding behavior, working cognitive biases, and overconfidence predictably determine risk perception and financial performance. However, loss

aversion does not show any effect, which is contrary to behavioral finance theory. Such a result may call for looking into cultural factors, competitive forces, or issues related to measurement. Besides, the strengthening relationship between herding and overconfidence necessitates the elimination of multicollinearity issues. The findings help in explaining the behavioral biases in the PSX and how they influence investment decisions.

4.1   Profile of Respondents: Their profiles include demographic information presented in Table 1

Table 1
Profile of Respondents

Parameters	Items	Frequency
Investment	No	55
	Yes	248
Gender	Female	43
	Male	205
Age	Below 30	23
	30 to 40	76
	41 to 50	117
	51 and above	42
Education Level	Graduate	20
	Masters	159
	M Phil / PhD	33
	Other	36
Monthly Salary	Below 50,000	42
	50,000 to 100,000	120
	101,000 to 150,000	71
	151,000 and above	15

This table presents the demographic and behavioral characteristics of the study's participants, categorized by key parameters. Among the 303 total participants, 248 (82%) reported making investments, while 55 (18%) did not. In terms of gender, 205 participants (68%) were male, and 43 (14%) were female. Age distribution shows that the majority (117 participants, 39%) For monthly salary, most participants (120, 40%) earned between 50,000 to 100,000 PKR, with fewer earning 101,000 to 150,000 PKR (23%), below 50,000 PKR (14%), and above 151,000 PKR (5%). These distributions reflect the diverse socio-economic and educational backgrounds of the sample.

Table 2
Outer Loading Values

Variable	Indicator	Outer loadings
HB	HB 1	0.844
	HB 2	0.835
	HB 3	0.876
	HB 4	0.882
	HB5	0.743
LA	LA1	0.900
	LA2	0.931
	LA3	0.903
	LA4	0.831
CB	CB 1	0.875
	CB 2	0.873
	CB 3	0.892
	CB 4	0.821
	CB 5	0.788
OC	OC 1	0.856
	OC 2	0.871
	OC 3	0.892
	OC 4	0.868
	OC 5	0.769
RK	RK 1	0.872
	RK 2	0.883
	RK 3	0.789
	RK 4	0.852
	RK 5	0.752
FP	FP 1	0.865
	FP 2	0.853
	FP 3	0.892
	FP 4	0.811
	FP 5	0.768

The table highlights the reliability and validity of various constructs used in the study. Outer loadings indicate the correlation between an indicator and its respective latent construct. All indicators (HB1-HB5) show strong loadings, with values ranging from 0.743 to 0.882, suggesting that the measurement items reliably reflect the construct of herding behavior. The indicators (LA1-LA4) demonstrate high outer loadings, all exceeding 0.831. This indicates that the items strongly measure the construct, ensuring its validity in capturing loss aversion. CB1 to CB5 exhibit loadings between 0.788 and 0.892, signifying that these indicators robustly represent.

The outer loadings for OC indicators are between 0.769 and 0.892, and OC5 is slightly lower than the others but still higher than the acceptable level, which indicates that the indicators are consistent in measuring the construct. The outer loadings of RK1 to RK5 range from 0.752 to 0.883, which supports the conclusion that the risk perception construct is well captured by these indicators. The loadings of the indicators (FP1-FP5) are high and range from 0.768 to 0.892, which indicates that the indicators are reliable in measuring the construct of financial performance.

Cronbach's Alpha and Composite Reliability should be greater than 0.7 for a construct to be considered as reliably measured. The construct's validity is established by the Average Variance Extracted (AVE) value being greater than 0.5. The values of Composite Reliability, Cronbach's Alpha, & AVE are presented in Table 4.3 below.

Table 3
Values of Composite Reliability, Cronbach's Alpha, AVE

	Cronbach's alpha	**Composite reliability (rho_a)**	**Composite reliability (rho_c)**	**Average variance extracted (AVE)**
HB	0.898	0.903	0.925	0.711
LA	0.914	0.915	0.940	0.796
CB	0.894	0.894	0.922	0.704
OC	0.905	0.911	0.929	0.724
RK	0.905	0.905	0.930	0.726
FP	0.887	0.892	0.918	0.691

Reliability coefficients, Cronbach Alpha for all the constructs are above 0.7, suggesting high internal consistency of the items of each construct. All the Composite Reliability values are above 0.9, which also supports the reliability of the constructs.

AVE values for all the constructs are greater than 0.5, thus indicating a reasonable degree of convergent validity. This shows that the constructs account for a large amount of variance in the measured variables. With a Cronbach's Alpha of 0.898 and an AVE of 0.711, it is clear that the construct is relatively reliable and valid implying that the items used in this study measure the phenomenon of herding behaviour. This construct exhibits the highest AVE (0.796), reflecting that it is particularly well measured by the selected items. Strong reliability (Cronbach's Alpha of 0.905) and an AVE of 0.724 highlights that this construct is accurately represented in the model. As a mediator, this construct also meets all reliability and validity criteria, ensuring its robustness in mediating the relationships in the model. This dependent variable has an AVE of 0.691, indicating that the items sufficiently explain variance in financial performance.

4.2   Discriminant Validity

Table 4
Heterotrait-monotrait ratio (HTMT)

	HB	LA	CB	OC	RK	FP
HB						
LA	0.707					
CB	0.745	0.773				
OC	0.840	0.853	0.787			
RK	0.754	0.684	0.740	0.784		
FP	0.780	0.763	0.893	0.840	0.711	

HB has a strong correlation with Overconfidence (OC) (r=0.840), showing that herding tendencies often accompany overconfidence in decision-making. Its moderate correlation with Financial Performance (FP) (r=0.780) indicates an impact on investment outcomes. LA is highly correlated with OC (r=0.853) and Cognitive Biases (CB) (r=0.773), reflecting interconnectedness. OC correlates strongly with LA (r=0.853) and FP (r=0.840), showing its significant influence on risk perception and financial outcomes.

Table 5
The Fornell-Larcker Criterion

	AT	BA	BF	BI	ID	PT
HB	0.843					
LA	0.826	0.892				
CB	0.669	0.699	0.839			
OC	0.772	0.791	0.717	0.851		
RK	0.680	0.624	0.669	0.714	0.852	
FP	0.707	0.697	0.802	0.774	0.649	0.831

The correlation table is used to show the relationship between Herding behavior (HB), Loss aversion (LA), Cognitive Biases (CB), Overconfidence (OC), Risk (RK), and Financial performance (FP). When tested for correlation, Herding Behavior (HB) has a high positive correlation with Loss Aversion (r = 0.843) and Overconfidence (r = 0.772) confirming our proposition that these psychological influences tend to be complementary. LA is significantly and equally positively related to Overconfidence and moderately related to FP implying important roles in choice and consequences. These results confirm the theoretical model, showing how the effects of psychological factors are associated in terms of increasing and reducing risk perceptions related to performance.

Construct	R-square	Q-square
HB	0.730	0.718
FP	0.462	0.473

The significance of the model is supported by R-squared (R²) and Q-squared (Q²) coefficients illustrating explanatory and predictive abilities. Herding Behavior (HB) has an R² of 0.730, which means that the model, and a Q² of 0.718, which shows good predictive power, can explain 73% of the changes in HB. FP has an R² = 0.462, meaning 46.2% of the variance in FP is accounted by the model; Q² = 0.473 which indicates moderate usefulness in terms of prediction. In general, these results support the model's ability to accurately explain and predict the interdependence of variables.

The assessment of the structural model involves examining the relationships between constructs and their significance, as indicated by the t-statistic or p-value from the PLS output. Table 4.5 displays the path coefficients, and those with a p-value < 0.05 (at a significance level of 5%) are considered statistically significant.

Table 6
Path Coefficient

Hypothesis	Original sample (O)	Sample mean (M)	Standard deviation	T statistics	P values	Results
RK -> FP	0.680	0.681	0.046	14.630	0.000	Significant
HB -> RK	0.537	0.537	0.069	7.783	0.000	Significant
LA -> RK	0.014	0.018	0.069	0.201	0.841	Not Significant
CBI -> RK	0.222	0.219	0.081	2.731	0.006	Significant
OC -> RK	0.150	0.150	0.075	2.000	0.046	Significant

The hypothesis results highlight significant relationships among the variables studied. Risk perception (RK) significantly influences financial performance (FP) confirming its critical mediating role in linking psychological factors to financial outcomes. Herding behavior (HB) significantly affects RK (p<0.001), underscoring the influence of social tendencies on risk assessment. Loss aversion (LA) does not significantly affect RK (T=0.201, p=0.841), suggesting its minimal role in shaping risk perception within the study's context. Cognitive biases (CBI) and overconfidence (OC) significantly influence RK (p=0.046), reflecting their substantial impact on risk evaluation.

These findings validate the theoretical model, showing that cognitive and emotional drivers, except for loss aversion, play pivotal roles in shaping risk perception and financial performance in the Pakistani stock market. The significance of RK as a mediator is further reinforced by its strong influence on FP.

Table 7
Total Indirect Effects

Hypothesis	Original sample (O)	mean (M)	Standard deviation	T stats	P values	Results
HB -> RK	0.365	0.365	0.049	7.441	0.000	Significant
LA -> RK	0.009	0.013	0.047	0.200	0.842	Not Significant
CB -> RK	0.151	0.150	0.058	2.592	0.010	Significant
OC -> RK	0.102	0.102	0.052	1.977	0.048	Significant

Herding behavior (HB) has a significant influence on risk perception (RK) (O=0.365O, T=7.441T = 7.441T=7.441, p<0.001), confirming its critical role in shaping risk assessment. Loss aversion (LA), however, does not show a significant impact on RK (O=0.009, T=0.200, p=0.842), suggesting that it is less relevant to risk perception in this context. Cognitive biases (CB) significantly affect RK (O=0.151, T=2.592, p=0.010), indicating their influence on decision-making under uncertainty. Likewise, overconfidence (OC) also shows a positive influence on RK (O=0.102, T=1.977, p=0.048). Altogether, these results bear out psychological factors, particularly herding, heuristics, and overconfidence in explaining risk assessment by investors.

The findings are useful in understanding the behavioral biases that influence investment decisions in the Pakistani stock market and are consistent with the literature. The fact that herding behavior, cognitive biases, and overconfidence affect risk perception is in line with Hussain et al. (2023) who established that Pakistani investors make decisions based on herding and cognitive heuristics instead of financial analysis. In the same way, Shah and Hussain (2024) noted that overconfidence increases herding behavior, which results in market anomalies and speculation. These findings provide credence to the sentiments that carry out a significant role in the determination of stock prices, especially in the emerging markets since they pose a threat due to low financial literacy levels and information asymmetry (Ngene & Mungai, 2022).

However, the lack of significance of loss aversion is in contrast with the previous studies especially Ahmed et al. (2022) who established a positive correlation between loss aversion and risk perception in emerging markets. Another reason could be that due to the exposure to high risk markets and fluctuating economic conditions in Pakistan, the psychological effect of loss aversion may not be as strong in Pakistani investors (He & Strub, 2022). Furthermore, Zafar et al. (2024) argue that the loss aversion of retail investors may be replaced by risk-seeking behavior especially when trying to recover their losses. Further research should be aimed at cultural aspects, investment experience of individuals, as well as the density of the stock market when analyzing the moderating role of loss aversion.

Such effects are profound when going deeper than probabilities: these findings have theoretical and practical implications. This paper furthers the cause of the behavioral finance theory in relation to the risk perception within the emerging markets regarding the cognitive and the emotional biases that affect the behavior of the investors and integration of the theories within

the particular region. In practical implications, the results imply that more financial literacy and appealing behavioral interventions can be used in helping the investors make better decisions by avoiding herding and overconfidence. Thus, there are recommendations on the adoption of investor protection mechanisms and risk assessment to eliminate biases that negatively influence the efficiency of the market.

Nevertheless, the present study has implications and suggestions for future research as follows. Since herding and overconfidence seem to be related, they may not be entirely separate factors that impact investment decisions, and further analysis needs to be done on this dependence. Therefore, future research should also look at the effects of behavioral biases on the performance in the long run and also the effects of macroeconomic variables such as inflation and interest rates on the investors in Pakistan. This study is significant as it implements cultural and economic factors in behavioral finance theory by adding culture as the social psychological mechanism and framing it in the economic climate of an emerging market nation.

5.   Discussion and Conclusion

This study examines various psychological factors and their impact on risk perception and financial performance in the Pakistan Stock Exchange (PSX) such as herding behavior, overconfidence, and different kinds of cognitive biases. The study re-echoes the fact that these psychological factors play an essential role in determining investment choices but at the same time, denounces the conventional behaviour finance theories where loss aversion see little importance here. Rather than present the results as a set of conclusions, the significance of this study is that it contributes to the work on analyzing the behavior of investors those that operate in the emerging markets characterized by low financial literacy, high fluctuations, and cultural factors. Thus, by pointing out risk perception as a mediator, the study provides practical recommendations for increasing the rationality of investments, stabilizing the market, and developing strategies for financial decision-making in emerging economies.

To mitigate the bias found to exist at the cognitive and emotional levels in this paper, there is a need for policy makers and financial institutions to come up with awareness creation and investors' awareness creating activities that can help investors realize that they are overconfident or are herding. Thus, applying the principles of behavioral finance when providing advisory services could minimize situations in which the client displays irrational behavior in trading. Strengthening market transparency and information access within financial markets instead must be extended in order to lessen the impact of speculative or even manipulative herding mainly influenced by rumors. Also, the sophistication of investment products that responded to the maximum, minimum, and average tolerance of risk of the investors can help in reducing the impact of irrational behavior on performance. These recommendations are intended to establish a more effective and psychologically sensitive financial market for the individual investors and the overall economy.

The study focuses solely on investors in the Pakistan Stock Exchange, which may limit the generalizability of findings to other emerging markets. The research adopts a cross-sectional approach, restricting the analysis of dynamic changes in investor behavior over time. Reliance on self-reported measures may introduce social desirability bias or inaccuracies in responses. The study examines selected psychological factors, potentially overlooking other relevant biases influencing investment behavior.

Therefore, future studies could follow up on these observations with longitudinal designs in order to observe how psychological factors change with time, and how they interact to affect risk perception and financial outcomes. This would give a more detailed and timely insight into the investors' behavior. To support these arguments, comparative research with other emerging and developed countries might be useful to compare these values and discuss their impact of cultural factors on the behavioral biases of investors. The inclusion of regret aversion, mental accounting, and framing effects would be useful in broadening the biases' definition. Besides, in the middle of digital trading facilities, algorithmic systems, and robo-advisors, research that tries to understand how these technologies help decrease (or augment) behavioral biases would be more relevant to current contexts. Last but not least, examining the effects of regulatory changes on investors and financial performance in emerging markets may provide useful information to the policy makers who want to enhance the stability of the markets and investors' confidence.

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