

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

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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	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																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		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 digraph. This digraph is the graphical representation of the challenges of impact funds, including their transitivity links, presented in Figure 3.

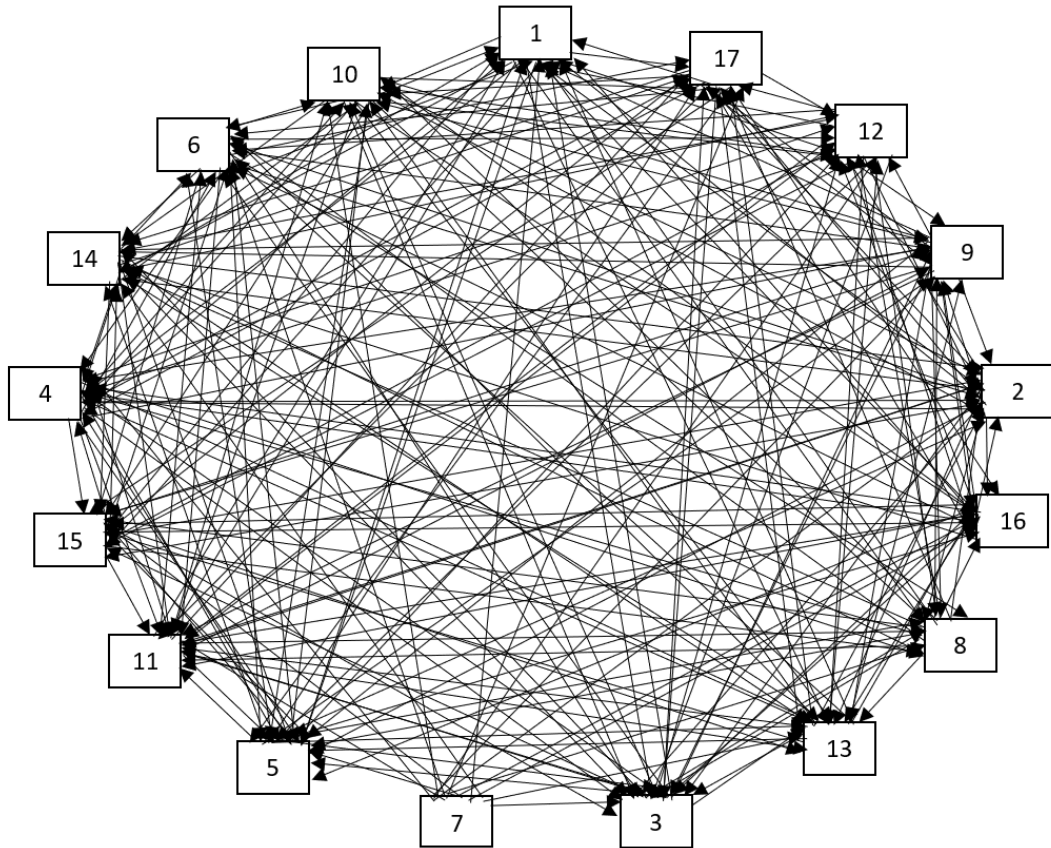


Figure 3: Diagram of the Relations of the Challenges of Impact Funds

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.

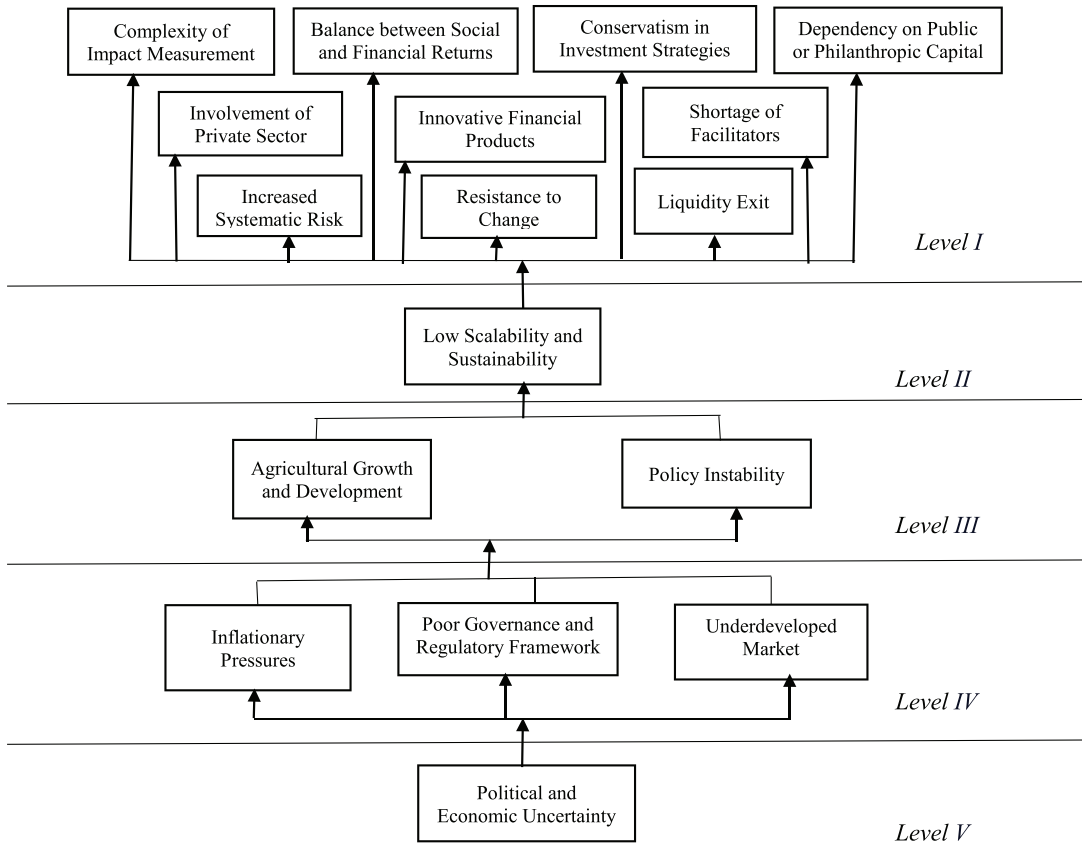


Figure 4: Hierarchical Representation of the Challenges of Impact Funds

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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