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Feasibility analysis of Digital marketing for SMEs using ISM

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Abstract

This study examines digital marketing as a marketing tool for Indian Small and Medium Enterprises (SMEs) and identifies the key challenges affecting its adoption and implementation. Based on a literature review and inputs from industry experts, thirteen challenges were identified and analysed using Interpretive Structural Modelling (ISM) to establish their interrelationships. MICMAC analysis was further employed to classify the challenges based on their driving and dependence powers. The findings identified six significant challenges influencing the effective adoption of digital marketing: organizational culture and management support, budget constraints, inadequate access to technology, ineffective selling techniques, lack of qualified IT personnel, and inadequate organizational infrastructure. These findings suggest that managerial support, financial resources, technological accessibility, skilled IT personnel, and appropriate infrastructure are essential for SMEs to successfully implement digital marketing strategies. The study is subject to limitations, as the ISM model relies on inputs from experts and primary data, which may involve subjective judgement and bias. Furthermore, ISM does not provide a statistical ranking of the identified challenges. The study provides useful insights for SME managers and practitioners to understand the barriers to digital marketing adoption and develop appropriate strategies for its effective implementation in the Indian SME context.

Keywords: digital marketing, internet marketing adoption, small and medium enterprises (SMEs), India.

Introduction

“Digital marketing “ the word has benefits but is challenging, it is difficult for many companies to profit from the concept. Difficulties for practicing digital marketing relevant to respective industries are different. Further service providers related to digital marketing and industries have a few gaps in functionalities. Armbrust et al. (2010) explained that a significant factor of cloud computing is the transfer of data. Since the cost is falling faster than the cost of internet communications, marketing on net can represent a significantly lower than expected costing or there is a gap in understanding the impact and ROI on investment.

In many cases, it might be more appropriate to say (Oražem, 2014) we should use move towards cloud usage in large amounts, so that the security should not be a point of discussion, which is a concern of customers (Amma et al., 2012).

Internet marketing has the range of benefits to customers and organizations. It allows customer the knowledge access, positive behavioral calculation, and set alignment of the requirement and the facilities provided by organizations(Mujinga, 2013). Bakshi & Hemachandran (2011) identified some of the benefits of Internet marketing as- reduced time and cost benefit which address business changes rapidly with respect to the pace of the world.

Indian statistics indicate that 54% small business own their website (Vyas, A. 2018), while 40% of the world population has an internet connection. There are more than 3 billion internet users in the world. Younger generations are growing in the digital world who prefer to shop and order online. 2 out of 3 retail sales occur online. 58% online shopping revenue generated from mobile website, as opposed to native apps. It is also observed that 80% online users make research using their mobile phones before

making any purchase by while 88% of purchase influence by online reviews before making a purchase. It may be noted that Indian organizations are interested in harnessing the cloud for more crucial business applications, such as internet of Things (IoT), data analytics, smart cars, etc., (CSA, 2016). Hence we can say that there are many benefits of adopting digital marketing in the organizations. However, with respect to Indian context Marketing on internet adoption is half the way. So the aim of this study is to identify and model critical challenges in digital marketing in the Indian SMEs.
This paper planned with six primary goals identified with the help of literature review, which set the relationship between tools used in Digital marketing and challenges which in turn contribute to as reasons for success or failure of tool used. The ISM tool was used to establish interrelationship
The paper have major sections, the literature review of digital marketing in India; adoption and challenges, the world-wide studies and theoretical models. Further the research methodology and ISM model development. The data discussion and conclusion of the study are detailed and finally limitations, scope and managerial implications of the research are discussed in the paper.

Literature review

In order to study and understand the current state of knowledge and research, a brief review of the literature in Internet marketing in business had been conducted. The review is also about the papers published using ISM methodology are discussed.

Basics of Internet marketing

Digital content is defined as: 'bit-based objects distributed through electronic channels' (Rowley, 2008), Author argues along with the importance of digital content to business and it is also important seek a holistic perspective on the nature of digital content marketing (DCM). Digital marketing is the use of electronic media by the marketers to promote the products/services into the market (Afrina Yasmin, 2015). The main objective of digital marketing is attracting customers and allowing them to interact with the brand through digital media. Various elements of digital marketing are Email marketing; Social Media; text messaging; affiliate marketing; Search Engine Optimization (SEO); Pay Per Click (PPC). Managing change and innovation in technology and marketing tactics is a challenge for all marketers, but this is particularly true for digital marketers (Chaffey, 2010). The six areas of digital marketing governance are: digital channel strategy development; online customer acquisition; online customer conversion and customer experience; customer development and growth; cross-channel integration and brand development; and overall digital channel governance, including change management.

E-Market plan (Krishnamurthy, 2006) is designed to provide managers interested in using these technologies to market their products and services with a comprehensive plan , enact, and analyze their e-marketing campaign. The Internet has become one of the most competitive retail marketplaces (Piercy, 2009). The key issue in how companies can serve this market is the way in which they internally manage the relationship between the marketing and operations departments of the business.

Entrepreneurial small firm (ESF), if adopt and fully exploit the potential of the Internet, will develop and maintain relationships with its customers (Durkin, 2002). Majority of social media marketing initiatives take the form of communicating sales promotions to already engaged consumers (Don E. Schultz, 2013) Marketers need to find ways to use social media to create lasting brand engagement rather than to merely utilize this communication technology to enhance short-term revenue..

Applications of interpretive structural modeling (ISM) approach

ISM methodology is been published across various spheres across different countries of the world. In this section the discussion is on those published papers which impacted various variables and industries who applied the ISM methodology.

ISM model is applied (Mandal & Deshmukh ,1994) for establishing the relationship between the vendor selection criteria in India. The paper states that variables or factors in management and organization were the most significant. Again in India, Engineering industry and knowledge management towards strategy and knowledge in been mapped using ISM model (Singh et al. 2003) .

It was found that a variable namely IT system break down and IT security was critical (Jharkharia and Shankar ,2005) while applying ISM model to establish supply chain and IT-barriers. The low IT awareness supply chain was proved to be the driving force in the map.

The detailed causes of Khadi Village and Industry Commission, the business expansion and increase market share was explained (Thakkar et al. ,2006) using ISM approach. Common causes were quality monitoring and customer service were identified as prominent factors causing an overall effect in this case study. ISM tool identified the relationship between information risks and also model found the projection of IT awareness – supply chain system—IT infrastructure (Faisal et al.,2007) were significant enough in the analysis.

On the basis of experts' opinion (Prateek Maheshwari et al., 2017), the identification of advertisement effectiveness dimensions specific to Indian mobile phone industry. ISM assisted in the development of linkages among these identified dimensions based on their interrelations and attention, relevance, excitability, liking and consumer preference turned out to be premier measuring advertisement effectiveness in the Indian mobile phone industry.

Table No 1

	Author –year – country	Industry	Variables/criteria/factors
1	Mandal and Deshmukh (1994) , India	Vendor management	communications convenience, after-sales service, willingness, and labour relations, Quality, delivery, price, financial position, technical capability, management and organization, transport
2	Singh et al. (2003) , India	Engineering Industries	Culture, leadership, strategic planning, knowledge resources, financial resources, technological infrastructure, innovation and knowledge creation, integration of systems, and knowledge capture.
3	Jharkharia and Shankar (2005), India	IT- Information technology	Disparity in trading capability, resistance towards IT, IT enabled SCM, threats of IT security, lack of trust in supply chain linkage, fear of IT system breakdown, low priority by the management, lack of funds, poor IT infrastructure, lack of IT awareness in supply chain management
4	Thakkar et al. (2006) , India	Khadi and village industries	Recover investment, improve customer service, identify new farmers, maintain and monitor quality, motivate government, business expansion, motivate sales outlet, and increase market share
5	Faisal et al. (2007), India	Cloud-Supply Chain	awareness about information risks, information sharing, supply chain strategies, level of supply chain integration, collaborative relationships, support to partners, reliable IT infrastructure, management commitment, availability of funds
6	Thakkar et al. (2008), Indian	SME	Technical/financial assistance from government and other bodies like UNIDO, inter-firm competition, impact of IT on competitiveness of firm, overall penetration of IT in SME cluster, understanding on benefits of IT, internal culture, availability of SME-specific e-commerce packages, complexity of managing network relationships and need for collaborating planning, expectations raised by

			customer/OEM, entrepreneurial/owner orientation and commitment.
7	Kannan et al. (2009) , India	Battery manufacturing industry	Quality, delivery, reverse logistics cost, rejection rate, technical/engineering capability, inability to meet future requirement, willingness and attitude.
8	Amma et al. (2012) , India	Cloud Inhibitors	Lack of sufficient security, lack of reliability, lack of portability, lack of privacy, lack of standardization, lack of comprehensive management tool, weak access control, lack of data confidentiality, ineffective back up management, cost/ time barrier, network management barrier, legal issues, infrastructure security –at network level, infrastructure security –at host level, infrastructure security –application level, data security, data integrity, and data availability.
9	Panahifar et al. (2014) Ireland	High-tech Industry	No shared-targets, lack of visible and effective leadership, management support obstacles, lack of forecasting, fear of losing competitive information, difficulties with real-time coordination, lack of compatibility, lack of commitment, and lack of trust
10	Bhadani et al. (2016a) India	Mobile Service Sector	Conducive policy, context awareness, convergent services, global MVAS leader, community identification, quality of service, Indian language support, information security concerns, low VAS usage , R&D in M-services, VAS prioritization over voice, sales of devices,telecom data analytics, and upgraded telecom infrastructure.
11	Poduval et al. (2015) India	Product Maintenance	Management, culture, cost, knowledge and skill, maintenance, and modification.
12	Dubey et al. (2015), India	Ubiquitous Manufacturing	Manufacturing flexibility, training, UM culture, UM leadership, secondary technology, pervasive technology, product quality, and Teamwork
13	Bhadani et al. (2016), India	Telecom	Adoption of mobile-based services, cost associated with services, low usage, inadequate basic infrastructure, installation and operation cost, digital and technical skill, limited or sub-standard technical infrastructure, purchasing power of customer is low, lack of source of income, sense of insecurity among trained technical staff, inertia to change the mindsets of customers, misalignment between the customers need and services offered, lack of customer awareness, and commitment from government

14	Jena et al. (2016) , India	Telecommunication Industry	Customer willingness to pay, growth in export market, application store specific to Indian requirements, growing data usage, supplier network, global competitiveness, large handset market potential, product design, physical infrastructure, innovation and technological know-how, R&D funding, foreign direct investment (FDI), trained manpower, government and legislative support, and large consumer base.
15	Prateek Maheshwari et al. (2017), India	Indian mobile phone industry	attention, relevance, excitability, liking and consumer preference, advertisement effectiveness

Table No 2 Identification of the challenges of digital marketing

Sl.No	Challenging factors	References
1	Organizational culture & Management Support	Chris O'Leary, Sally Rao, Chad Perry, (2004) "Improving customer relationship management through database/Internet marketing: A theory-building action research project", European Journal of Marketing, Vol. 38 Issue: 3/4, pp.338-354
2	Budget	ZHU, L. Z. (2010). Internet Marketing budget allocation :from practitioner's perspective. International Journal of Information Technology & Decision MakingVol. 09, No. 05, 779-797
3	Inadequate access to technologies, ineffective selling techniques	Laosethakul, K., & Boulton, W. (2007). Critical Success Factors for E-commerce in Thailand: Cultural and Infrastructural Influences. The Electronic Journal of Information Systems in Developing Countries, 30(1), 1–22
4	Security of information	Karen A. Forcht, (1996) "Doing business on the Internet: marketing and security aspects", Information Management & Computer Security, Vol. 4 Issue: 4, pp.3-9,
5	lack of qualified IT personnel to develop and maintain	Laosethakul, K., & Boulton, W. (2007). Critical Success Factors for E-commerce in Thailand: Cultural and Infrastructural Influences. The Electronic Journal of Information Systems in Developing Countries, 30(1), 1–22
6	imbalance between investment costs and return on investment;	Gangeshwer, D. K. (2013). E-Commerce or Internet Marketing: A Business Review from. International Journal of u- and e- Service, Science and Technology, Vol.6, No.6, 187-194
7	unavailability of a proper infrastructure in the company	Laosethakul, K., & Boulton, W. (2007). Critical Success Factors for E-commerce in Thailand: Cultural and Infrastructural Influences. The Electronic Journal of Information Systems in Developing Countries, 30(1), 1–22
8	Complexity	Gary L. Geissler Ph.D., George M. Zinkhan Ph.D. & Richard T. Watson Ph.D. (2006) The Influence of Home Page Complexity on Consumer Attention, Attitudes, and Purchase Intent, Journal of Advertising, 35:2, 69-80,
9	Building and managing website	Kenneth A. SAban & Stephen E. Rau (2005) The Functionality of Websites as Export Marketing Channels for

		Small and Medium Enterprises, Electronic Markets, 15:2, 128-135
10	Valuable content on NET	Hagel, J. (1999). Net gain: Expanding markets through virtual communities. Journal of Interactive Marketing, 13(1), 55–65
11	Social media management	Rosemary Thackeray, B. L. (October 2008). Enhancing Promotional Strategies Within Social Marketing Programs: Use of Web 2.0 Social Media. Health Promotion Practice Vol.9 No.4, 338-343.
12	Engage in email marketing	PHELPS, J., LEWIS, R., MOBILIO, L., PERRY, D., & RAMAN, N. (2004). Viral Marketing or Electronic Word-of-Mouth Advertising: Examining Consumer Responses and Motivations to Pass Along Email. Journal of Advertising Research, 44(4), 333-348. doi:10.1017/S0021849904040371
13	Lead generation/Web traffic	Sarah Quinton, Mohammed Ali Khan, (2009) "Generating web site traffic: a new model for SMEs", Direct Marketing: An International Journal, Vol. 3 Issue: 2, pp.109-123

Research gap

From the notable good list of literatures study on Internet marketing adoption, it is found, not much work has been out in the area of challenges or limitations or obstacles to its implementation, especially in the SME's. Hence, in the present investigation, a research of identifying and modeling the critical limitations or challenges in the internet marketing practices in Indian SMEs scenario is presented by opting an interpretive structural modeling (ISM) methodology. ISM model helps in bringing up the interrelationship among the challenges and to identify the most significant limitation based on variables used.

Research methodology

What is ISM methodology? and how the ISM is adopted is discussed in detail in the subsequent section.

Introduction to ISM methodology

Interpretive structural modeling- ISM is a known model for finding out the relationships between factors and in hierarchy (Warfield, 1974; Sage, 1977; Jharkharia and Shankar, 2005). ISM is a structure in which the factors are mapped to describe the direct or indirect relationship between items. The variables in the selected research case are identified, and then the interrelationship is established based on the case or situation. Based on the pair-wise comparison of these factors, a structural self-interaction matrix (SSIM) will be drawn from the element table. Transitivity is checked, and the matrix model is obtained. In the ISM model, theoretical and computational powers meet each other and describe the contextual relationship among a group of variables.

Based on the expert's judgement and input, ISM uses an interpretive approach for establishing the contextual relationship among the different related factors, which may solve the problem definition (Warfield, 1974; Sage, 1977; Mudgal et al., 2009). ISM model use simple notations of graph theory to describe the give a composite relationships map (Malone, 1975; Singh et al., 2003; Ravi et al., 2005).

The ISM approach helps in formulating ambiguous model into visible, correctly defined model useful for defining the direction to the complex relationships (Mandal and Deshmukh, 1994; Sage, 1977; Diabat et al., 2013). This is the methodology widely used by the researchers for exploring the direct and indirect association among the identified factors in various industries in a simplified way. ISM modeling is carried out as follows:

Step 1: the challenges in adoption of Internet marketing in SME are listed.
Step 2: an interrelationship is established among all the identified factors
Step 3: self–interaction matrix (SSIM) is formulated - to develop a pair-wise relationship among factors

Step 4: from the SSIM matrix, check for the transitivity. ISM tool defines if a factor ‘X1’ is related to ‘X2’ and ‘X2’ is related to ‘X3’ then ‘X1’ is similar to ‘X3’.
Step 5: From the final reachability matrix from step 4 is now portioned into different levels.
Step 6: output of step5, a directed graph (digraph) is drawn, and transitive links are removed from the same.
Step 7: replacing the nodal elements with the statements, the developed digraph is transformed into ISM model of critical factors.
Step 8: the developed model is reviewed and verified for any conceptual anomalies.
Figure-01 is the flow chart explaining the steps of ISM model, towards challenges identified through survey and experts and thus the subsequent model is elaborated and used in this paper.

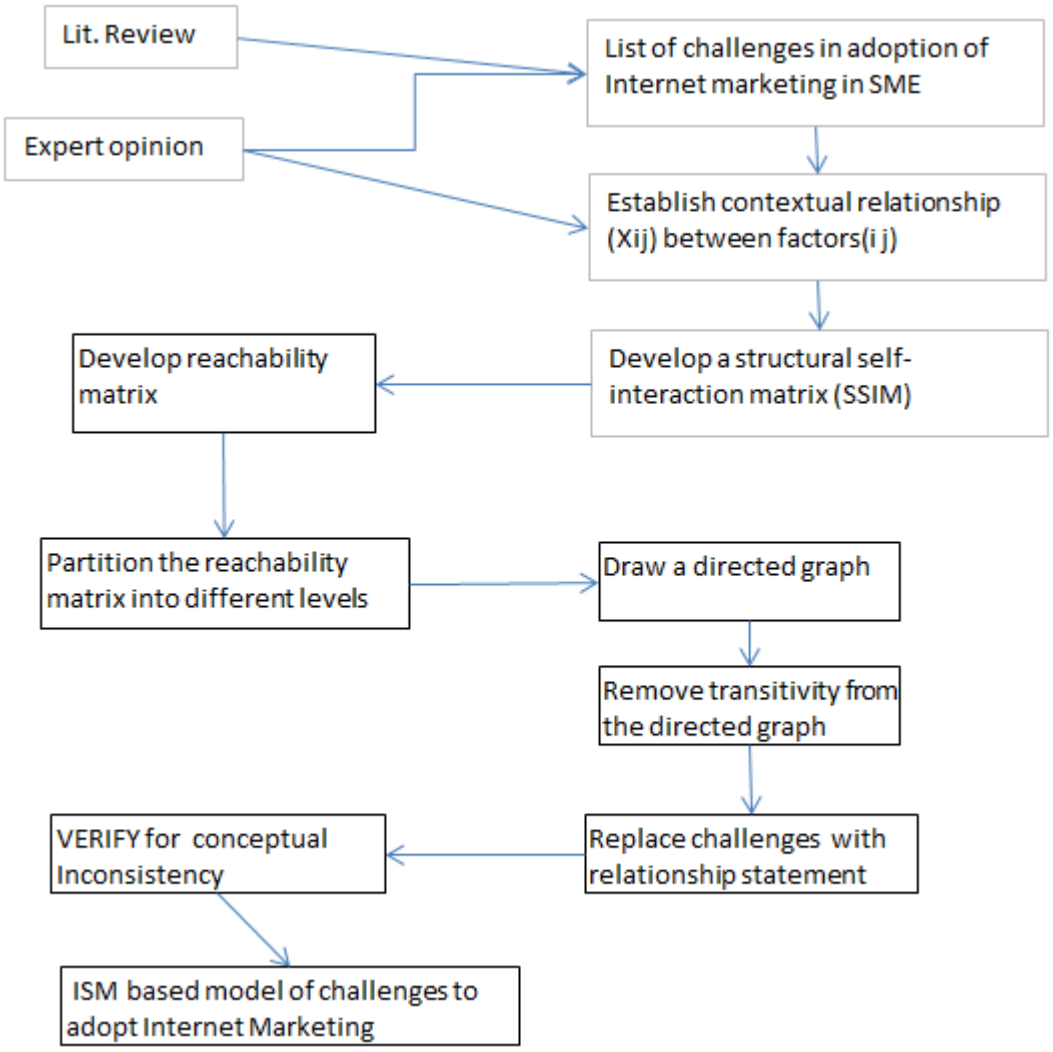


Figure -01: SM model general structure

ISM model development

In this paper, the challenges of Internet Marketing are identified and modeled, by the help of literature and industry experts. The ISM methodology is applied to the study area. Following are the various processes towards formulation of the ISM model.

Table No 3 Challenges of Internet Marketing

Sl.No	Challenging factors	Sl.No	Challenging factors
1	Organizational culture & Management Support	8	Complexity
2	Budget	9	Building and managing website
3	Inadequate access to technologies, ineffective selling techniques	10	Valuable content on NET
4	Security of information	11	Social media management
5	lack of qualified IT personnel to develop and maintain	12	Engage in email marketing
6	imbalance between investment costs and return on investment;	13	Lead generation/Web traffic
7	unavailability of a proper infrastructure in the company		

4.1 The structural self-interaction matrix (SSIM)

The structural self-interaction matrix (SSIM) is formulated from the relationship among the significant variables identified through literature review and experts from the study area. Following are the symbols which guide to build the relationships among variables.

O- No relation between variables

X- If variables help to achieve each other

V- factor i will contribute to making factor j.

A- factor j will help to make element i

4.2 Formulation of Reachability matrix

The initial reachability matrix shown in Table 4 is developed from the SSIM using the following rules

a. If the entry of (i, j) in the SSIM is 'V' then the (i, j) value in the reachability matrix will be '1' and the (j, i) value becomes '0'.
b. If the entry of (i, j) in the SSIM is 'A' then the value of (i, j) in the binary matrix becomes '0' and the value of (j, i) will be '1'.
c. If the entry of (i, j) in the SSIM is 'X' the value of (i, j) and (j, i) in the reachability matrix will be '1'.
d. If the entry of (i, j) in the SSIM is 'O' then the value of (i, j) and (j, i) in the binary matrix becomes '0'.

The final reachability matrix is obtained from the initial reachability matrix by adding transitivity to the latter manually, and is shown in Table 03.

Table 04 Structural self-interaction matrix (SSIM)

Sl.No	Factors	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Organizational culture & Management Support		V	V	V	V	V	V	V	V	V	V	V	V
2	Budget			V	V	V	V	V	O	V	O	V	V	O
3	Inadequate access to technologies, ineffective selling techniques				V	O	X	X	O	V	V	V	V	V
4	Security of information					O	O	A	X	O	O	A	A	O
5	lack of qualified IT personnel to develop and maintain						V	O	X	V	V	V	V	V
6	imbalance between investment costs and return on investment;							A	X	A	A	A	A	V
7	unavailability of a proper infrastructure in the company								V	V	V	V	V	O
8	Complexity									V	V	O	O	O
9	Building and managing website										X	V	V	V
10	Valuable content on NET											X	V	V
11	Social media management												V	V
12	Engage in email marketing													V
13	Lead generation/Web traffic													

Table 05: Initial reachability matrix of factors

Sl.No	Factors	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Organizational culture & Management Support	1	1	1	1	1	1	1	1	1	1	1	1	1
2	Budget	0	1	1	1	1	1	1	0	1	0	1	1	0
3	Inadequate access to technologies, ineffective selling techniques	0	0	1	1	0	1	1	0	1	1	1	1	1
4	Security of information	0	0	0	1	0	0	0	1	0	0	0	0	0
5	lack of qualified IT personnel to develop and maintain	0	0	0	0	1	1	0	1	1	1	1	1	1
6	imbalance between investment costs and return on investment;	0	0	1	0	0	1	0	1	0	0	0	0	1
7	unavailability of a proper infrastructure in the company	0	0	1	1	0	1	1	1	1	1	1	1	0
8	Complexity	0	0	0	1	1	1	0	1	1	1	0	0	0
9	Building and managing website	0	0	0	0	0	1	0	0	1	1	1	1	1
10	Valuable content on NET	0	0	0	0	0	1	0	0	1	1	1	1	1
11	Social media management	0	0	0	1	0	1	0	0	0	1	1	1	1
12	Engage in email marketing	0	0	0	1	0	1	0	0	0	0	0	1	1
13	Lead generation/Web traffic	0	0	0	0	0	0	0	0	0	0	0	0	1

Table 06: Final reachability matrix of factors

Sl.No	Factors	1	2	3	4	5	6	7	8	9	10	11	12	13	D.P
1	Organizational culture & Management Support	1	1	1	1	1	1	1	1	1	1	1	1	1	13
2	Budget	0	1	1	1	1	1	1	0	1	0	1	1	0	9
3	Inadequate access to technologies, ineffective selling techniques	0	0	1	1	0	1	1	0	1	1	1	1	1	9
4	Security of information	0	0	0	1	0	0	0	1	0	0	0	0	0	2
5	lack of qualified IT personnel to develop and maintain	0	0	0	0	1	1	0	1	1	1	1	1	1	8
6	imbalance between investment costs and return on investment;	0	0	1	0	0	1	0	1	0	0	0	0	1	4
7	unavailability of a proper infrastructure in the company	0	0	1	1	0	1	1	1	1	1	1	1	0	9
8	Complexity	0	0	0	1	1	1	0	1	1	1	0	0	0	6
9	Building and managing website	0	0	0	0	0	1	0	0	1	1	1	1	1	6
10	Valuable content on NET	0	0	0	0	0	1	0	0	1	1	1	1	1	6
11	Social media management	0	0	0	1	0	1	0	0	0	1	1	1	1	6
12	Engage in email marketing	0	0	0	1	0	1	0	0	0	0	0	1	1	4
13	Lead generation/Web traffic DEPENDANCE	01	02	05	08	04	011	04	06	08	08	08	09	19	183

Level partitions

Final reachability matrix of factors, the reachability set and antecedent set are obtained. Reachability set of factor consists of element itself and other elements to which it may help to achieve.

The antecedent set contains, the element itself and other elements which assist in achieving it. Derive the intersection set for all factors. The elements same in columns reachability set & intersection set is the top-level element in the ISM hierarchy.

Now, The top-level elements are separated out from the other elements, and the procedure repeats for Level -02 and so on. This will help building the digraph (Singh and Kant, 2008) and the final ISM model. Following tables are the process of all the thirteen factors for six levels of partitions.

Level partition -01 **Table No 7**

Sl.No	Reachability set	Antecedent Set	Intersection set	Level
1	1,2,3,4,5,6,7,8,9,10,11,12,13	1	1	
2	2,3,4,5,6,7,9,11,12	1,2	2	
3	3,4,6,7,9,10,11,12,	1,2,3,6,7	3,6,7	
4	4,8,11,12	1,2,3,4,7,8,11,12	4,8,11,12	
5	5,6,8,9,10,11,12,	1,2,5,8,	5,8	
6	3,6,8,	1,2,3,5,6,7,8,9,10,11,12	3,6,8	
7	3,4,6,7,8,9,10,11,12	1,2,3,7	3,7	I
8	4,5,6,8,9,10	1,4,5,6,7,8	4,5,6,8	
9	6,9,11,12,	1,2,3,5,7,8,9,10	9	
10	6,9,10,12,	1,3,5,7,8,9,10,11	9,10	
11	4,6,10,11,12,	1,2,3,5,7,9,10,11	10,11	
12	4,6,12,	1,2,3,5,7,9,10,11,12	12	
	13	1,3,5,6,9,10,11,12,13	13	

Level partition -02 **Table 8**

Sl.No	Reachability set	Antecedent Set	Intersection set	Level
1	1,2,3,4,5,6,7,8,9,10,11,12	1	1	II
2	2,3,4,5,6,7,9,11,12	1,2	2	
3	3,4,6,7,9,10,11,12	1,2,3,6,7	3,6,7	
4	4,8,11,12	1,2,3,4,7,8,11,12	4,8,11,12	
5	5,6,8,9,10,11,12	1,2,5,8,	5,8	
6	3,6,8	1,2,3,5,6,7,8,9,10,11,12	3,6,8	
7	3,4,6,7,8,9,10,11,12	1,2,3,7	3,7	
8	4,5,6,8,9,10	1,4,5,6,7,8	4,5,6,8	
9	6,9,11,12	1,2,3,5,7,8,9,10	9	
10	6,9,10,12	1,3,5,7,8,9,10,11	9,10	
11	4,6,10,11,12	1,2,3,5,7,9,10,11	10,11	
12	4,6,12	1,2,3,5,7,9,10,11,12	12	

Level partition -03 Table 9

Sl.No	Reachability set	Antecedent Set	Intersection set	Level
1	1,2,5,7,9,10	1	1	III
2	2,5,7,9	1,2	2	
3	7,9,10	1,2,7	7	
5	5,9,10	1,2,5	5	
7	7,9,10	1,2,,7	7	
8	5,9,10	1,5,7	5	
9	9	1,2,5,7,9,10	9	
10	9,10	1,5,7,9,10,	9,10	
11	10	1,2,5,7,9,10	10	

Level partition -04 Table 10

Sl.No	Reachability set	Antecedent Set	Intersection set	Level
1	1,2,5,7	1	1	IV
2	2,5,7	1,2	2	
3	7	1,2,7	7	
5	5	1,2,5	5	
7	7	1,2,7	7	
8	5	1,5,7	5	

Level partition -05 Table 11

Sl.No	Reachability set	Antecedent Set	Intersection set	Level
1	1,2	1	1	v
2	2	1,2	2	

Level partition -06 Table 12

Sl.No	Reachability set	Antecedent Set	Intersection set	Level
1	1	1	1	vi

Formation of the ISM Model

By the process of iterations of level of partitions on final reachability matrix, helps building the digraph (Singh M. D., 2008) and the final ISM model. ISM is achieved by removing transitivity from original digraph and hence transformed into a ISM model for challenges internet marketing as illustrated below.

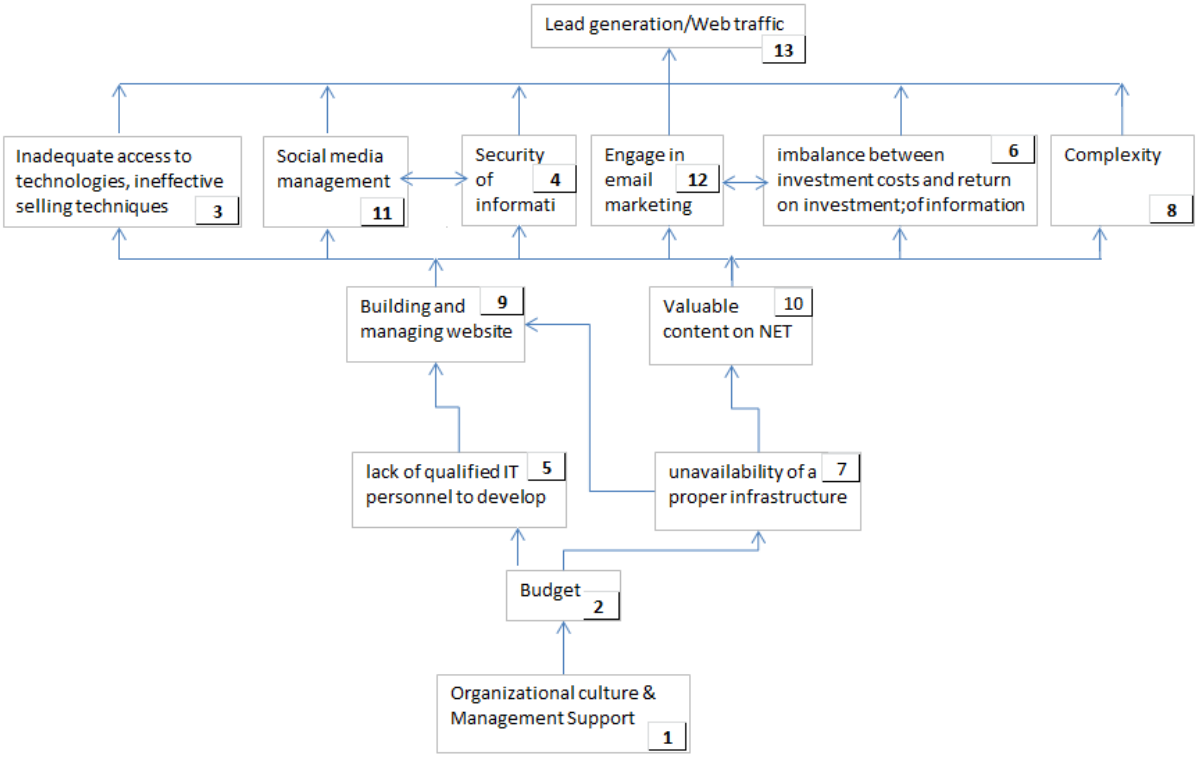


Figure 02: ISM model of challenges for Internet marketing

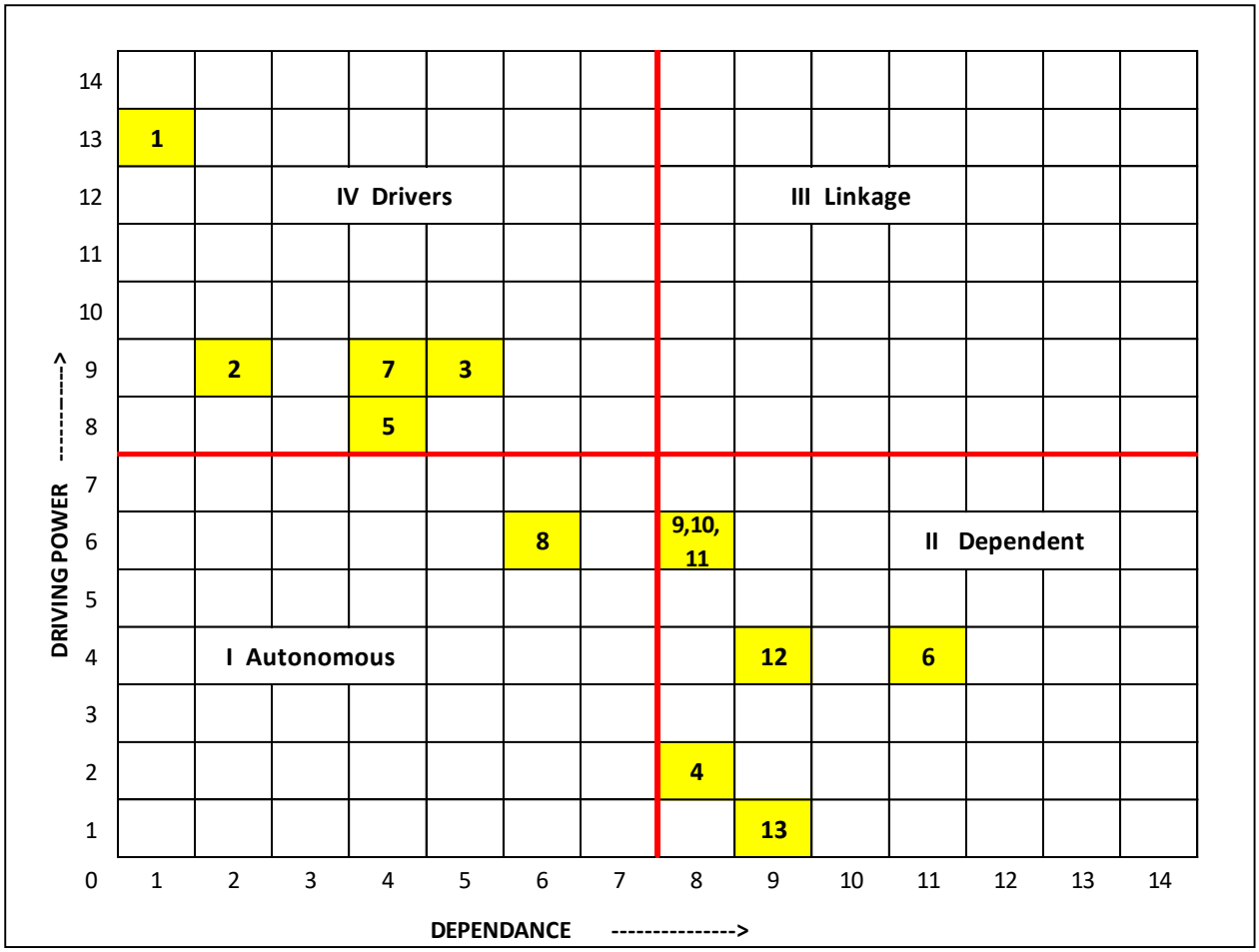
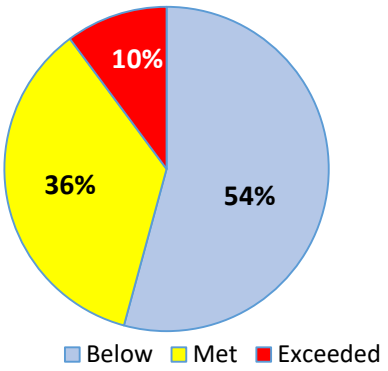


Figure 03: Driving poser and dependence diagram

Demographics and primary detailed data

From the primary data of sample size 120, following are the demographic details, with respect to internet marketing. A large majority (54%) of the SME respondents to the survey mentioned that they 'Met below their Expectations' related to their digital marketing performance in 2018. An amount of the minority marked 10% Exceed expectation' and 36% only met expected results .



Source : primary data

Figure 04 : SME's 2018 digital marketing performance

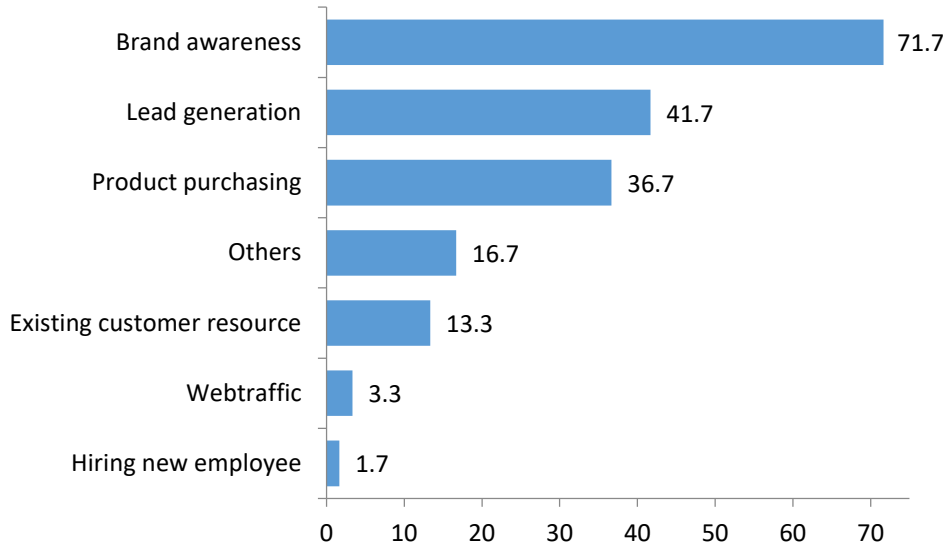
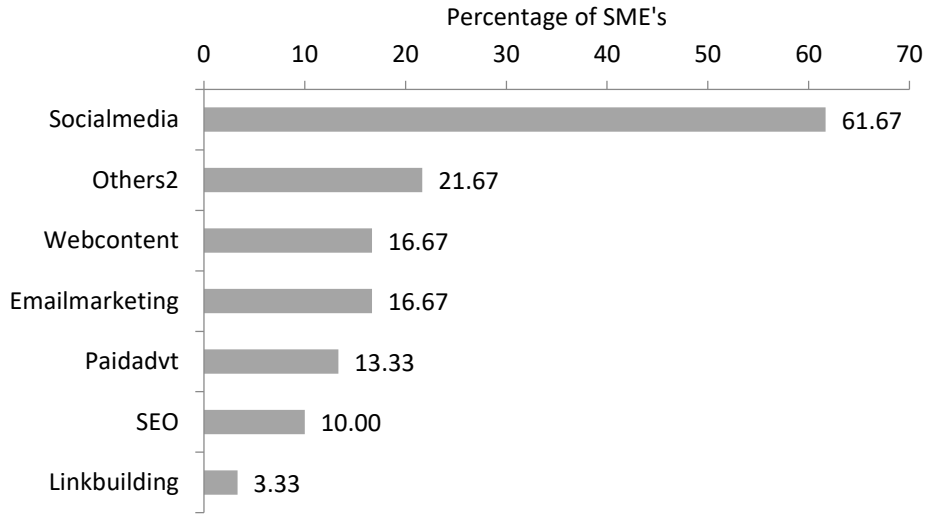


Figure 05: Primary goals of digital marketing efforts

Source : primary data

Almost 72% of the SME owners marked Brand Awareness as their primary goal for digital marketing. Lead Generation is ranked among the goal of the digital marketing for nearly 42%. It can likely be concluded that product purchase (36.7%) [sales] is the third major ranked goal of the SME's.[sample size 120]



Source : primary data

Figure 06: Most effective digital methods

Social media is king, right? Our primary survey also depicts the same. Social media is the clear winner in the most effective methods in digital marketing. Surprisingly, Web content and email-marketing is almost 17% effective method. SEO was effective only for about 10% ,while 13.33% only feel Paid Advertising effective. [sample size 120]

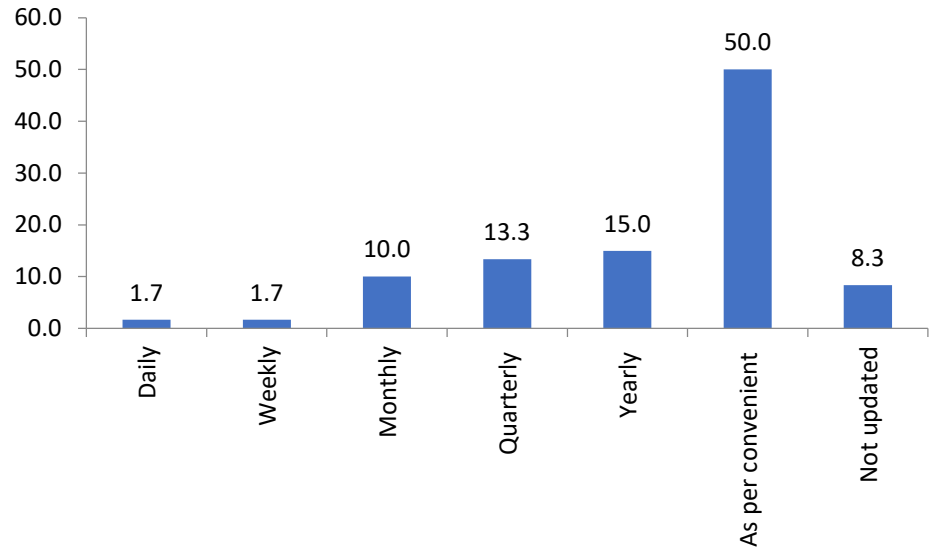


Figure 07: Updating of content on your website

Source : primary data [sample size 120].

Earlier we noted that social media is the most effective method that our SME respondents used. That same vein carried through into the frequency in which organizations were adding or updating their social media marketing. 50% of the responses noted that they updated their content as per convenience. Daily and weekly updates are less than 2% of responses, 10% of them update their social page once a month.

Interesting, but not surprising, was that of the organizations that marked themselves as performing "Below Expectations", almost all of the respondents also noted updating content regularly.

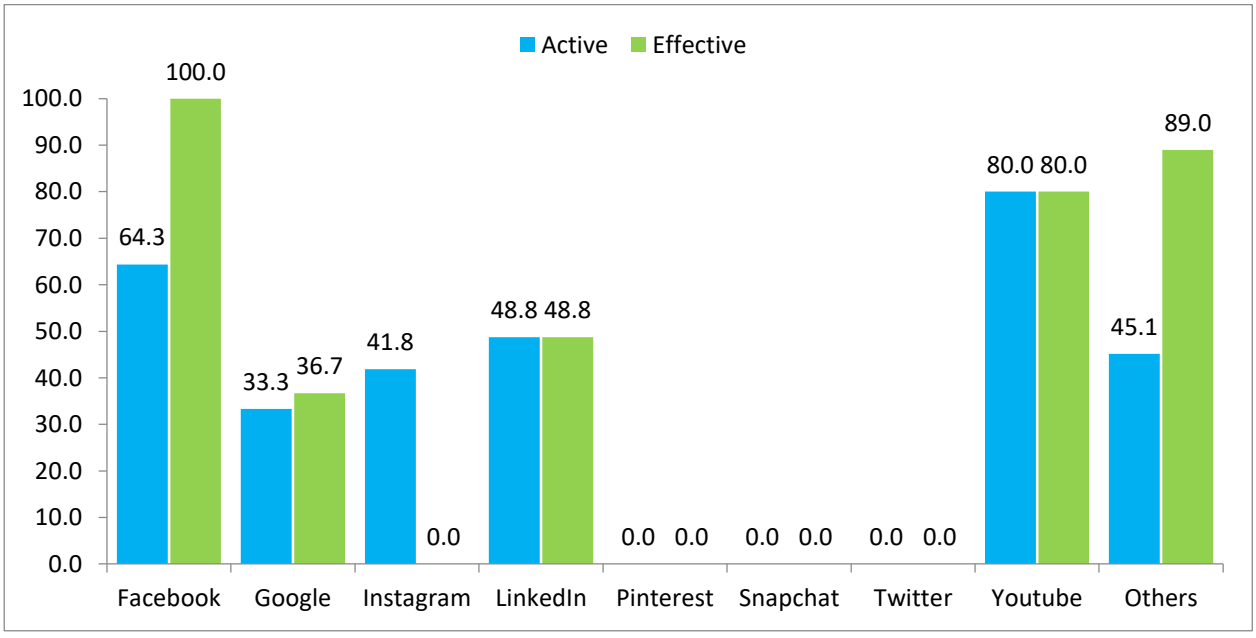


Figure 08: What social media platforms active? And which are effective?

Table 13: Active social media & which are effective

	Active	Rank	Effective	Rank
Face book	64.35	2	100.00	1
Google	33.33		36.67	4
Instagram	41.82		00.00	
LinkedIn	48.75	3	48.75	
Pinterest	00.00		00.00	
Snapchat	00.00		00.00	
Twitter	00.00		00.00	
YouTube	80.00	1	80.00	3
Others	45.13	4	89.00	2

Source : primary data [sample size 120].

When it comes to social media, Facebook was the big winner in terms of activity and effectiveness. Youtube seemed to be the social media platform that most people used, and equally effective. Very few of SME's have opined the respondents found Google to be effective.

Instagram, LinkedIn and others are all being used, but don't appear to be in the "standard" package of social media platforms that were adopted. For marketers looking to try out a new platform, it appeared that YouTube was having some level of success, the value for time.

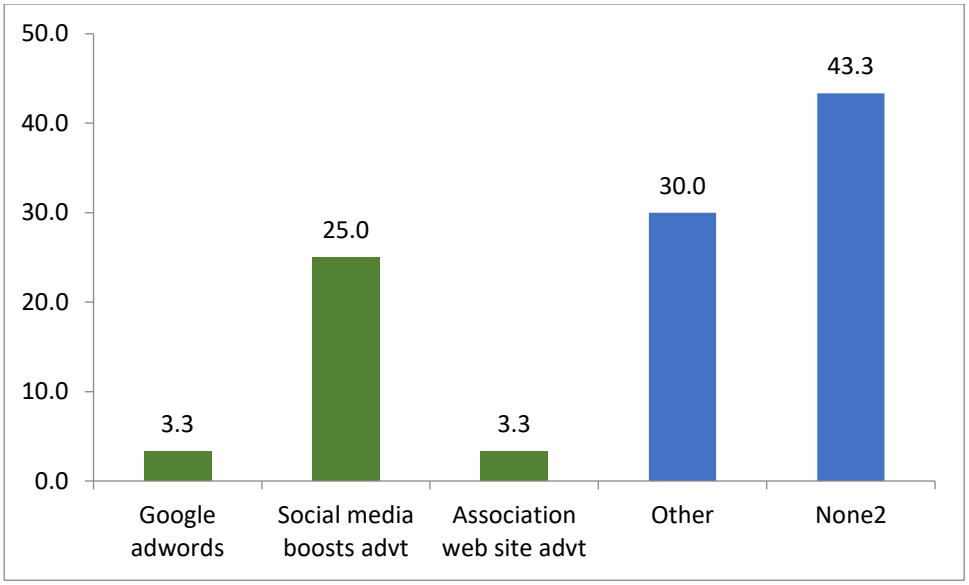


Figure 09: Paid Digital Advertising in practice

Source : primary data

Almost 25% of the organizations surveyed are doing paid social media advertising. After Facebook changed it's algorithm, reaching audiences organically became more and more difficult. Additionally, paid social media advertising has a low cost to get started. These factors would lead to believe that paid social media advertising will only increase over time.

Google Adwords also seemed to be a next popular channel for paid advertising. Unlike social media adversiting, Adwords is more technical to setup, and often much more costly. More than 43% of those surveyed are doing no paid advertising [sample size 120].



Figure 10: How are you making your digital strategy more effective?

Source : primary data sample size 120

The most important question, what next? Almost 40% of the respondents marked that they are going to do better planning to help with their digital strategy of. Based on the responses relating to current "challenges", these responses were not all too surprising.

What was interesting though, was that only 53% of the survey respondents were planning on increasing their digital marketing budget. It seems the issue for many marketers is not how much they are spending, but *where* they are planning and spending their resources.

Data discussion and conclusion

By the MICMAC analysis is opted in this study to identify the critical challenges of internet marketing based on the driving power and dependence, which is calculated from the final reachability matrix.

These critical factors are classified into four categories such as – (I) autonomous, (II) dependent, (III) Linkage and (IV) Drivers.

I- Autonomous- These factors appear as weak driver as well as weak dependent and are relatively disconnect from the system i.e these factors do not have much influence on the other factors of the system.
II- Dependent- these are the factors with a weak driving power and a high reliance power.
III- Linkage- these are the factors with a great driving and dependence power.
IV- Drivers - these are the factors, with high driving and weak relationship power (Kannan, 2007).

From figure 03 quadrant –I Autonomous elements are to develop and maintain –The challenge – Complexity (8) is mapped in the figure 03, which is weak drivers as well weak dependent and relatively disconnected from the system.
But on the other Quadrant II- seven Dependent factors –Security of information(4) imbalance between investment costs and return on investment(6) Building and managing website(9) , Valuable content on NET(10), Social media management(11), Engage in email marketing(12) and Lead generation/Web traffic(13) having high reliance and weak driving power. There are no linkage factors in quadrant III , while in quadrant IV has five Driver factors, with high driving and weak relationship power and demand the maximum attention of the decision makers are Organizational culture & Management Support(1),

Budget (2), Inadequate access to technologies, ineffective selling techniques (3), lack of qualified IT personnel (5) and unavailability of a proper infrastructure in the company(7)

The ISM model made of thirteen challenges from the inputs of industry and academic experts is shown in Figure 02 indicating their levels. The major challenge is lead generation / web traffic (13). Hence, remaining are the challenges (Twelve) to achieve the challenge –LEAD GENERATION. In the next level Inadequate access to technologies(3), Social media management(11), Security of information (4), engage in email marketing (12), Imbalance between cost & ROI (6) and complexity(8). These challenges of second level influence the challenges of the first level. Further, building managing website(9) and valuable content on Net(10) are the challenges which support the level two challenges. But, challenges such as, Lack of qualified IT personnel (5) and unavailability of proper infrastructure (7) substantiate the challenges. Budget (2) is the base challenge for all the tree up challenges and budget is depends on the challenge organization culture and management support(1). So the organization culture and management support(1) followed by Budget(2) are the uproot and solve probably web traffic and lead generation.

Depending on the dynamic scenario of small business, it is very important for the SME to be competitive by adopting the Internet marketing. The efficient and effective internet marketing campaign leads to considerable ROI, increases lead generation or web traffic and provides the image of the SME.

In this study, the critical challenges for internet marketing the Indian SME's were identified through the literature survey and expert opinions. The experienced academicians and industry were involved and thirteen significant challenges for Internet marketing were identified. Then, an ISM- interpretive structural modeling approach was employed for establishing the association between challenges and to identify the most significant by the MICMAC analysis.

The resultant of MICMAC analysis and ISM model highlighted that significant challenges are Organizational culture & Management Support(1), Budget (2), Inadequate access to technologies, ineffective selling techniques (3), lack of qualified IT personnel (5) and unavailability of a proper infrastructure in the company(7) .

Scope, Managerial implications and limitation

First and foremost limitation, the ISM model developed has the challenges listed by inputs of the experts, and which could be biased and may influence and reliability of the model. This is a first scope and direction for further research. The ISM methodology does not provide the ranking of the variables identified in the research. An ISM model considers only the binary digits, 0 and 1 which is having a limited scope. Ranking of variable can be solved by the analytical hierarchical process (AHP).

Implications: Indian SME's have made lots of IT adoption in the last decades, very specifically in the field of social media. However, there is a plenty of scope for improvement. No doubt, technology adoption, will play a key role in the Indian SMEs.

The challenges are extremely complex, Internet marketing may help the organizations gain competitive advantage and gain of web traffic, in future. Generally social media is used for brand development, but for SME's it's the lead generation activity, so in total internet marketing is the tool to reach out to socially and environmentally to conscious customers and build the SME business.

This research contributes a substantial insight to the researchers and practitioners. This study guides the SME's and decision makers for better strategic planning and for eliminating unwanted challenges to ease in the effective implementation of Internet marketing.

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Investment Behaviour of Doctors and Engineers Towards Mutual Funds: A Comparative Study of Belagavi City, India

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Abstract

Despite rising financial literacy and the expansion of mutual fund products in India, many high-income professionals continue to favour conventional instruments such as fixed deposits, gold, and real estate. This study examines the investment behaviour of two prominent professional groups doctors and engineers towards mutual funds in Belagavi, a rapidly developing Tier-2 city in Karnataka, India. Using a quantitative, descriptive research design, primary data were collected from 203 respondents (98 doctors and 105 engineers), selected through purposive sampling and a structured questionnaire administered both online and offline. Descriptive statistics, cross-tabulation, Chi-square tests of association, and Spearman rank correlation were employed to analyse demographic influences, awareness levels, perception, risk preference, and decision-making factors. Results indicate that while awareness of mutual funds is high (86.2%), active participation remains moderate (51.7%). Gender, age, income, and employment type significantly influence investment behaviour, whereas profession alone does not. Doctors allocate a higher proportion of income to mutual funds and adopt longer investment horizons, while engineers monitor their investments more frequently. Risk preference significantly shapes allocation, monitoring frequency, and investment horizon, and liquidity together with past fund performance emerged as the strongest behavioural drivers. The findings offer practical implications for asset management companies, financial advisors, and policymakers seeking to expand mutual fund penetration among professional segments in emerging urban markets.

Keywords: Mutual Funds; Investment Behaviour; Financial Literacy; Risk Preference; Professional Investors

Introduction

Personal financial management the disciplined handling of income, expenditure, saving, and investment underpins long-term financial security and the achievement of individual life goals. While saving alone provides a buffer against unforeseen contingencies, idle funds are gradually eroded by inflation and therefore cannot generate substantial wealth. Investment, by contrast, allows capital to grow through returns generated by productive assets such as equities, bonds, and mutual funds, enabling individuals to pursue financial independence and resilience against economic fluctuations.

Among the various instruments available to Indian investors, mutual funds have emerged as one of the most efficient and professionally managed avenues for wealth creation. By pooling capital from numerous investors and allocating it across diversified portfolios of equity, debt, and money-market instruments, mutual funds provide risk diversification and professional management even to investors with modest capital. Relative to traditional alternatives, fixed deposits typically yield returns that fail to outpace inflation, while real estate demands substantial capital outlay and offers limited liquidity. Mutual funds, in comparison, combine reasonable returns with liquidity, flexibility, and transparency, and a growing range of schemes caters to varying risk appetites and financial objectives. Rising financial

literacy, digital investment platforms, and the regulatory oversight of the Securities and Exchange Board of India (SEBI) have further accelerated the growth of the industry.

Notwithstanding these advantages, a considerable segment of high-income Indian professionals including doctors and engineers continues to favour conventional investment avenues over mutual funds. Several explanations have been advanced for this pattern. Conventional instruments are widely perceived as safer and more predictable. The demanding schedules typical of medical and engineering professions leave limited time for active market monitoring, reinforcing a preference for familiar, low-effort options. Furthermore, market-linked instruments are frequently associated with unpredictability, and a combination of limited financial literacy, loss aversion, and distrust of market intermediaries sustains the preference for traditional assets, even where mutual funds could plausibly generate comparable or superior returns over a shorter horizon.

This study investigates these behavioural patterns within the specific context of Belagavi, a Tier-2 city in Karnataka characterised by an expanding professional class and a developing financial ecosystem. Doctors and engineers were selected as the focal groups because both possess considerable disposable income and high educational attainment, yet typically follow distinct career trajectories and financial orientations. Physicians, who are often self-employed or engaged in private practice, tend to prioritise liquidity and financial stability, whereas engineers, generally employed within corporate structures, may gravitate towards structured or employer-linked savings mechanisms while remaining comparatively cautious about market-based instruments.

Accordingly, this study sets out to examine and compare the investment behaviour of doctors and engineers in Belagavi with specific reference to mutual funds, and to identify the demographic, psychological, and experiential factors awareness, risk perception, financial literacy, and professional context that shape their investment decisions. In doing so, the study contributes to a nuanced understanding of how well-educated, high-earning professionals in economically emerging urban centres engage with market-linked financial instruments.

Background of the Study

Investment decisions are shaped by an interplay of personal, psychological, and contextual factors. Financial literacy an individual's understanding of investment products and market mechanisms strongly influences the choice between complex instruments such as mutual funds and simpler alternatives such as fixed deposits, gold, or real estate, with higher financial literacy consistently associated with greater participation in market-linked investments (Fong, 2025). Risk tolerance similarly conditions investment choice: individuals with lower risk appetite tend to favour stable, guaranteed-return instruments even when market-linked alternatives offer superior potential yields (Noviarini, 2021). Age and life stage also matter, as younger investors are typically more willing to explore market-linked products, while older individuals tend to prioritise capital preservation (Bonsang, 2015). Income level and liquidity needs exert a further influence: while higher earnings expand the range of feasible investment options, an immediate need for liquidity can still push investors towards conventional instruments (Kumar, 2025). Finally, psychological biases including herd behaviour, overconfidence in familiar choices, and loss aversion often impede the adoption of newer or less familiar investment products (Ahamed, 2024). For time-constrained professionals such as doctors and engineers, limited opportunity for active market engagement compounds these tendencies, reinforcing reliance on established, low-effort investment avenues.

The Indian mutual fund industry has expanded considerably over the past two decades, propelled by rising investor awareness, digital distribution platforms, and robust regulatory oversight by SEBI (Kale, 2012). Indian mutual funds are broadly categorised into equity funds (oriented towards long-term capital growth), debt funds (investing in government securities, bonds, and money-market instruments for greater safety), and hybrid funds (blending equity and debt exposure to balance risk and return). Despite the availability of these options and their potential for higher risk-adjusted returns relative to fixed

deposits over comparable horizons, many professionals remain hesitant, owing to perceived market volatility and unfamiliarity with the underlying instruments.

Literature Review

The investment behaviour of individuals has been extensively examined across demographic groups, national contexts, and time periods, with prior research consistently linking risk perception, demographic characteristics, financial literacy, and behavioural tendencies to investors' preferences for mutual funds and other financial instruments.

Kale (2012) examined the Indian mutual fund industry and identified persistent challenges alongside emerging opportunities, arguing that limited financial literacy among retail investors continues to constrain broader market participation and that greater transparency and product innovation are required to strengthen the industry. Rathnamani (2013), studying investor preferences in Trichy, found that mutual funds are increasingly regarded as a safe and rewarding investment avenue that not only offers diversification and professional management but also channels household savings into capital markets. Jatana and Barodawala (2015), in an empirical study of Indian investors, identified monetary returns as the dominant determinant of mutual fund investment decisions, alongside regulatory policy, customer service, promotional activity, and perceived market risk, indicating that both financial and non-financial considerations shape investor choice.

Demographic determinants of investment behaviour have received particular attention. Shinde and Zanvar (2015), analysing 670 investors in Pune, found that age, education, and income significantly shape risk tolerance and investment preference, concluding that demographic profiling should inform personalised financial advice. Dahiya and Chaudhary (2016) similarly reported that income, tax considerations, and perceived safety strongly influence the investment behaviour of the salaried class across mutual funds, equities, and insurance products. Narsis (2022) extended this line of enquiry, showing that age, gender, education, occupation, and income jointly shape investor attitudes towards risk, safety, and return, with implications for the design of investor-specific financial strategies.

Fund-selection behaviour has also been examined cross-nationally. Amiri and Gil-Lafuente (2016), applying factor analysis and multinomial logistic regression across investors in Iran, Malaysia, Turkey, and the United States, identified seven determinants of mutual fund selection fund characteristics, reputation, investment flexibility, performance, popularity, transparency, and non-cash benefits and classified investors into five behavioural segments ranging from professional to cautious. Sharma (2019), studying 100 investors in Delhi/NCR, identified fund characteristics, credibility, convenience, performance, and fund-family reputation as the principal drivers of investor decisions, underscoring the importance of transparency and investor engagement for fund houses. Gaurav, Ray, and Pradhan (2023), focusing specifically on corporate professionals, identified risk perception, return expectations, tax benefits, diversification, liquidity, and professional management as key determinants, noting that this segment increasingly regards mutual funds as a balanced vehicle combining growth and safety.

The psychological and cognitive dimensions of investment behaviour have received growing attention in recent literature. Ahamed (2024) demonstrated that social comparison orientation shapes financial management behaviour, with individuals who frequently benchmark themselves against others tending towards emotionally driven, less rational financial decisions. Bonsang (2015) linked risk attitude to cognitive ageing, finding that older investors become progressively more risk-averse, favouring capital preservation over growth. Noviarini (2021) established that financial literacy and risk tolerance jointly predict more effective debt management and more consistent retirement saving, while Fong (2025) showed that higher financial literacy improves both investment participation and the self-directed management of pension assets. Kumar (2025), examining mutual fund performance during the COVID-19 pandemic, found that fund management quality, diversification, and sectoral allocation were central to risk-adjusted performance persistence amid market volatility.

Collectively, this body of research indicates that investment behaviour whether among salaried employees, corporate professionals, or the general investing public is shaped by an interaction of demographic characteristics, financial literacy, psychological orientation, and fund-specific attributes such as reputation, transparency, and performance. Investors across contexts appear to seek a balance between return, safety, and convenience, with regulatory trust and product transparency reinforcing confidence in market-linked instruments. As the Indian mutual fund industry continues to expand, understanding these behavioural and demographic dimensions remains central to improving investor engagement, product design, and financial advisory practice.

Research Gap

Although national-level studies provide valuable insight into general patterns of investment behaviour, direct comparative research on the investment choices of doctors and engineers remains scarce. Fewer studies still examine these dynamics at the city level, particularly within rapidly developing Tier-2 cities such as Belagavi, where expanding urbanisation, rising professional incomes, and improving access to financial products intersect with entrenched conventional investment habits. Understanding why financially capable, well-educated professionals continue to favour traditional instruments despite the comparable or superior return potential of mutual funds over shorter horizons remains both a scholarly and a practical imperative. This study addresses this gap by offering a comparative, city-level analysis of mutual fund investment behaviour among doctors and engineers in Belagavi, with a view to informing targeted strategies by financial advisors and asset management companies to address the behavioural, attitudinal, and informational barriers to mutual fund adoption within these professional segments.

Problem Statement

Despite possessing high incomes and strong educational qualifications, doctors and engineers in Belagavi remain underexamined in empirical research on mutual fund investment behaviour. Many professionals within these occupations continue to favour conventional instruments such as fixed deposits, gold, and real estate, even where mutual funds could offer comparable or superior returns within a shorter time frame. This pattern highlights the need to investigate the underlying demographic, informational, and psychological factors that shape investment decisions within these professional groups, and to understand how professional background specifically influences key investment choices such as scheme selection, risk perception, investment horizon, and reliance on financial advice.

Research Objectives

1. To evaluate the influence of demographic factors on investment decisions among doctors and engineers in Belagavi city.
2. To analyse the mutual fund investment habits of doctors and engineers in Belagavi city.
3. To examine the perception of doctors and engineers in Belagavi city regarding mutual funds.
4. To determine the factors influencing mutual fund investment decisions among doctors and engineers in Belagavi city.

Hypotheses

Five sets of hypotheses were formulated in line with the study objectives and questionnaire structure, addressing professional differences in awareness and behaviour, perception, risk preference, and decision-making factors.

H1 — Awareness and Behaviour

H_{01}: There is no significant difference in awareness and investment behaviour towards mutual funds between doctors and engineers.

H_{11}: There is a significant difference in awareness and investment behaviour towards mutual funds between doctors and engineers.

H2 — Perception

H_{02}: There is no significant difference in perception of mutual funds between doctors and engineers.

H_{12}: There is a significant difference in perception of mutual funds between doctors and engineers.

H3 — Risk Preference

H_{03}: Risk preference has no significant influence on investment behaviour towards mutual funds. H_{13}: Risk preference has a significant influence on investment behaviour towards mutual funds.

H4 — Decision-Making Factors

H_{04}: Return, tax benefit, liquidity, and professional advice do not significantly influence investment decisions.

H_{14}: Return, tax benefit, liquidity, and professional advice significantly influence investment decisions.

Research Methodology

Research Design

The study adopts a quantitative, descriptive research design aimed at analysing the investment behaviour of doctors and engineers towards mutual funds, with particular attention to preferences, patterns, and influencing factors.

Population and Sample Design

The target population comprises practicing doctors and engineers residing and working in Belagavi city, Karnataka, India, selected on the basis of three considerations: (i) professional relevance, given the generally stable, higher-income profile of both groups and their significance as potential mutual fund investors; (ii) geographic focus, Belagavi being a Tier-2 urban centre exhibiting growing financial awareness and expanding investment opportunity; and (iii) comparative relevance, enabling analysis of investment behaviour across two professional groups with differing educational and income trajectories.

Sampling Frame and Method

The sampling frame comprised registered doctors and engineers in Belagavi city, drawn from local professional associations, government directories, and recognised professional networks. Purposive sampling was employed as the primary sampling technique, with the population divided into two strata by profession (doctors and engineers) and further sub-stratified by age, experience, and income bracket. This design improves representational balance and estimation precision

Sample Size Determination

The sample size was determined using the standard formula for an initial sample size under a 95% confidence level, error margin is 7%, population proportion is 50%.

Step 1 — Initial sample size: $n_0 = (Z^2pq) / e^2$, where Z = 1.96, p = 0.5, q = 0.5, and e = 0.07 (7% margin of error), giving $n_0 = (1.96^2 \times 0.5 \times 0.5) / 0.07^2 \approx 196$.

The final sample size was therefore fixed at **203** respondents, distributed equally across the two strata.

Data Collection

Primary data were collected through a structured, self-administered questionnaire comprising closed-ended items, 5-point Likert-scale measures, and one open-ended question, distributed through both online (Google Forms) and paper-based channels to maximise reach. Secondary data were drawn from peer-reviewed journals and academic databases (e.g., ScienceDirect and institutional library resources) to support the theoretical framing and contextual interpretation of the primary findings. The questionnaire instrument, comprising demographic items and adapted Likert-scale constructs on awareness, perception, risk preference, and decision-making factors (adapted from Rathnamani, 2013; Sharma, 2019; Mahmood, 2024; Sourirajan, 2021; Annapurna, 2024; Quang et al., 2023; Kumari, 2024), is provided in the Appendix.

Data Analysis Techniques

Descriptive statistics (frequencies, percentages, and mean values) were used to summarise demographic profiles and Likert-scale responses, supported by graphical representation (bar charts, pie charts, and histograms). Inferential analysis employed the Chi-square test of association to examine categorical relationships between demographic and behavioural variables, and Spearman rank correlation to assess the association between risk preference and investment behaviour. All analysis was conducted in Microsoft Excel.

Data Analysis and Results

The achieved sample marginally exceeded the planned target of 194 (Section 7.4), with a final usable sample of **N = 203** (98 doctors, 105 engineers) after data collection closed. All descriptive, cross-tabulation, and hypothesis-testing results reported below are based on the achieved sample of 203.

8.1 Demographic Profile of Respondents

Table 2 *Demographic Profile of Respondents (N = 203)*

Category	n	%
Gender		
Male	126	62.1%
Female	77	37.9%
Age Group		
Below 30	123	60.6%
31–40	37	18.2%
41–50	25	12.3%
Above 50	18	8.9%
Profession		
Doctors	98	48.3%
Engineers	105	51.7%
Employment Type		
Private	133	65.5%
Self-employed	70	34.5%
Monthly Income		
₹50,001–₹1,00,000	158	77.8%

Category	n	%
₹1,00,001–₹1,50,000	19	9.4%
Above ₹1,50,000	26	12.8%

The sample is predominantly male (62.1%) and below 30 years of age (60.6%), with an almost even split between doctors (48.3%) and engineers (51.7%). Most respondents are privately employed (65.5%) and earn between ₹50,001 and ₹1,00,000 monthly (77.8%).

Mutual Fund Awareness and Participation

Table 3 ***Mutual Fund Awareness and Current Participation***

Measure	n	%
Awareness of mutual funds		
Yes	175	86.2%
No	28	13.8%
Current mutual fund investment		
Yes (Investors)	105	51.7%
No (Non-investors)	98	48.3%

Awareness of mutual funds is high (86.2%), yet active participation remains considerably lower (51.7%), indicating a meaningful awareness–action gap.

Investor Habits (Investors Only, n = 105)

Table 4 summarises review frequency, income allocation, investment horizon, and product choice among current investors, including their use of Systematic Investment Plans (SIPs), a facility allowing periodic, fixed-amount investment into a mutual fund scheme.

Table 4 ***Investment Habits Among Current Investors (n = 105)***

Item	n	%
Review frequency		
Weekly	21	20.0%
Monthly	56	53.3%
Quarterly	14	13.3%
Annually	14	13.3%
Income allocation		
Below 5%	7	6.7%
5–10%	56	53.3%
11–15%	14	13.3%
16–20%	14	13.3%
Above 20%	14	13.3%
Investment horizon		
< 1 year	7	6.7%
1–3 years	28	26.7%
3–5 years	7	6.7%

Item	n	%
> 5 years	63	60.0%
Fund type used (multi-select)		
SIP	77	73.3%
Equity funds	35	33.3%
Debt funds	7	6.7%
Hybrid funds	0	0.0%

Among investors, monthly review is most common (53.3%) and 5-10% of income is the modal allocation band. Long-term horizons dominate, with 60.0% investing for more than five years, and Systematic Investment Plans (SIPs) are the most widely used product (73.3%).

Non-Investor Responses (Non-Investors Only, n = 98)

Table 5 ***Non-Investor Responses (n = 98)***

Item	n	%
Main reason for not investing		
Lack of awareness	35	35.7%
Fear of risk/loss	21	21.4%
Prefer traditional investments	7	7.1%
Insufficient income	35	35.7%
Willingness to invest in future		
Yes	63	64.3%
Maybe	35	35.7%
Belief: mutual funds riskier than traditional options		
Yes	49	50.0%
No	21	21.4%
Not sure	28	28.6%
Would invest with proper guidance		
Yes	49	50.0%
No	14	14.3%
Maybe	35	35.7%
Motivators to invest (multi-select)		
Better awareness	28	28.6%
Financial advice	63	64.3%
Higher returns	70	71.4%
Government incentives	14	14.3%
Peer influence	7	7.1%
Preferred alternative investment		
Fixed deposits	49	50.0%
Real estate	28	28.6%
Gold	14	14.3%

Item	n	%
Savings	7	7.1%

Lack of awareness and insufficient income are cited equally as the dominant barriers to investment (35.7% each), yet a majority of non-investors (64.3%) express willingness to invest in future, motivated primarily by expectations of higher returns (71.4%) and access to financial advice (64.3%).

Cross-Tabulation Analysis

Table 6 ***Profession and Preferred Investment Avenues***

Profession	Fixed Deposits	Gold	Real Estate	Savings A/C	Stock Market
Doctors	34	11	7	10	36
Engineers	36	24	7	4	34

Both professions show a strong inclination towards fixed deposits and the stock market, with engineers displaying comparatively greater interest in gold and doctors marginally favouring equities.

Table 7 *Profession and Awareness of Mutual Funds*

Profession	Not Aware	Aware
Doctors	9	89
Engineers	19	86

Awareness is high across both professions, with a marginally larger unaware segment among engineers.

Table 8 ***Profession and Current Investment Behaviour***

Profession	Not Investing	Investing
Doctors	41	57
Engineers	57	48

Doctors are more likely than engineers to convert awareness into active investment, whereas engineers display greater reluctance to invest despite comparable awareness.

Table 9 ***Awareness and Investment Status***

Awareness Status	Not Investing	Investing
Not aware	28	0
Aware	70	105

All investors fall within the aware category, confirming awareness as a necessary (though not sufficient) precondition for participation.

Table 10 ***Gender and Current Investment***

Gender	Not Investing	Investing
Female	49	28
Male	49	77

Non-investor counts are similar across genders, but male investors substantially outnumber female investors, pointing to a possible gender gap in risk appetite or financial autonomy.

Table 11 ***Age Group and Current Investment***

Age Group	Not Investing	Investing
Below 30	65	58
31–40	20	17
41–50	11	14
Above 50	2	16

Middle-aged and older respondents show relatively higher investment participation, while respondents below 30 are more likely to be non-investors, suggesting a cautious stance among younger adults and stronger pre-retirement adoption of mutual funds.

Table 12 ***Employment Type and Current Investment***

Employment Type	Not Investing	Investing
Private	56	77
Self-employed	42	28

Privately employed respondents show a higher proportion of investors, whereas self-employed respondents show a higher proportion of non-investors, possibly reflecting income volatility or a preference for alternative investment vehicles among the self-employed.

Table 13 ***Profession and Income Allocation Among Investors***

Profession	11–15%	16–20%	5–10%	Above 20%	Below 5%
Doctors	6	10	24	14	3
Engineers	8	4	32	0	4

Doctor investors are distributed across both moderate and higher allocation brackets, while engineer investors are concentrated in the 5–10% range, indicating a comparatively more conservative allocation strategy.

Table 14 ***Profession and Investment Horizon Among Investors***

Profession	1–3 Years	3–5 Years	< 1 Year	> 5 Years
Doctors	6	4	7	40
Engineers	22	3	0	23

The majority of doctor investors adopt horizons exceeding five years, consistent with long-term wealth accumulation, while engineer investors are more evenly split between medium- and long-term horizons.

Table 15 ***Non-Investors and Reasons for Non-Participation***

Profession	Fear of Risk/Loss	Insufficient Income	Lack of Awareness	Prefer Traditional Investments
Doctors	8	18	13	2
Engineers	13	17	22	5

Insufficient income and lack of awareness dominate as barriers among non-investor doctors, while lack of awareness and a stronger preference for traditional investments are more pronounced among engineers.

Hypothesis Testing

Table 16 ***Profession-Wise Differences in Awareness and Investment Behaviour (H1)***

Aspect	Doctors (mean code)	Engineers (mean code)	p
Awareness vs Participation	—	—	< .001
Mutual Fund Awareness	—	—	.1018
Current Investment Status	—	—	.1024
Allocation (% Income)	3.14	2.25	.0006
Monitoring Frequency	2.49	1.85	.0015

H_{01} is rejected for awareness-vs-participation ($p < .001$), income allocation ($p = .0006$), and monitoring frequency ($p = .0015$), indicating significant profession-based differences in these aspects: doctors allocate a higher proportion of income to mutual funds and monitor their investments differently from engineers. H_{11} is not rejected for basic mutual fund awareness ($p = .1018$) or current investment status ($p = .1024$), indicating no significant difference between the two professions on these measures. Overall, the results provide partial support for H_{12}, contingent on the specific behavioural aspect examined.

Table 17 ***Chi-Square Test Results for Perception of Mutual Funds (H2)***

Group	p	Significance (α = .05)	Interpretation
Investors	.9844	Not significant	No perception difference
Non-investors	.0666	Not significant	No perception difference

For both investors and non-investors, p-values exceed .05, and H_{02} is therefore not rejected. Doctors and engineers hold statistically indistinguishable perceptions of mutual funds, regardless of investor status.

Table 18 ***Spearman Rank Correlation Between Risk Preference and Investment Behaviour (H3, Investors Only)***

Outcome	Spearman's ρ	p
Allocation category	−.250	.0103
Monitoring frequency (lower code = more frequent)	−.424	< .001
Investment horizon	.231	.0178

All three correlations are statistically significant, leading to rejection of H_{03} in favour of H_{13}. Risk preference is negatively associated with allocation category and (inversely coded) monitoring

frequency, and positively associated with investment horizon, indicating that investors' risk orientation meaningfully shapes how much they allocate, how often they monitor, and how long they remain invested. All three correlations are small-to-moderate in magnitude by Cohen's (1988) convention, and should be interpreted as indicative rather than strongly deterministic relationships.

Table 19 ***Association Between Decision-Making Factors and Income Allocation (H4, Investors Only)***

Factor	M (1–5 scale)	p (association with allocation)
Liquidity and flexibility	4.067	.0118
Advice from financial advisors	3.867	.2320
Past performance of the mutual fund	3.600	.0193
Tax benefits	3.467	.0572

H_{04} is rejected for liquidity and flexibility (p = .0118) and past fund performance (p = .0193), indicating that both significantly influence allocation decisions. H_{04} is not rejected for advice from financial advisors (p = .2320) or tax benefits (p = .0572, marginally above the conventional .05 threshold), indicating no statistically significant influence on allocation at the .05 level. The tax-benefit result should nonetheless be interpreted cautiously given its proximity to the significance threshold, and may warrant replication with a larger sample.

Discussion

The findings indicate a pronounced awareness–participation gap: although 86.2% of respondents are aware of mutual funds, only 51.7% actively invest, corroborating prior evidence that awareness is necessary but insufficient for market participation (Kale, 2012; Fong, 2025). This gap aligns with the cross-tabulation finding that all current investors are drawn from the "aware" segment, while none of the "unaware" respondents invest, reinforcing awareness as a structural precondition rather than a guarantee of participation.

Consistent with prior demographic research (Shinde & Zanvar, 2015; Narsis, 2022), gender, age, income, and employment type were found to significantly shape investment behaviour, while profession alone was not. This suggests that broad occupational identity is less predictive of mutual fund engagement than the demographic and structural conditions such as income stability and employment type that accompany it. The observed gender gap, wherein male investors substantially outnumber female investors despite comparable non-investor counts, echoes prior findings on gendered risk appetite and financial autonomy, and points to a specific opportunity for targeted outreach.

Where profession did matter was in the finer-grained behavioural aspects captured under H1: doctors allocate a larger share of income to mutual funds and adopt markedly longer investment horizons (60% investing for more than five years), consistent with the relatively stable, cash-generative nature of private medical practice, while engineers monitor their investments more frequently, potentially reflecting a more analytically engaged, corporate-influenced approach to portfolio management. This nuanced pattern refines the broader finding of Gaurav et al. (2023) that corporate professionals view mutual funds as a balanced growth-and-safety instrument, suggesting that even within similarly resourced professional groups, occupational context shapes not whether but how individuals engage with mutual funds.

The absence of a significant perception gap between doctors and engineers (H2) is notable, indicating that differences in behaviour are not attributable to differing attitudes towards mutual funds as a product category, but rather to differences in circumstance, liquidity needs, and monitoring style. This is consistent with the view that behavioural intention and actual financial behaviour can diverge substantially even where underlying attitudes are similar (Ahamed, 2024).

The significant associations between risk preference and allocation, monitoring frequency, and investment horizon (H3) reinforce the centrality of risk tolerance in shaping portfolio behaviour (Noviarini, 2021), while the prominence of liquidity and past performance as significant decision-making factors (H4) relative to the non-significant influence of financial advisor input and tax benefits suggests that this investor segment relies more heavily on directly observable fund characteristics than on external advisory input, a pattern that has implications for how financial intermediaries position their advisory services to this population.

Limitations of the Study

This study is subject to several limitations. First, the findings are geographically confined to Belagavi city and may not generalise to other regions with differing economic or financial-literacy profiles. Second, the study focuses exclusively on doctors and engineers, excluding other high-income professional groups that may exhibit different investment behaviours. Third, resource and time constraints limited data collection to selected areas within the city, which may not fully capture the diversity of the target population. Finally, as with all self-reported survey data, the findings may be subject to response bias, with some participants potentially providing socially desirable rather than fully accurate responses.

Scope for Future Research

Future research could extend this study by incorporating additional professional groups such as lawyers, academicians, and business owners to enable broader cross-occupational comparison. Longitudinal designs tracking investment behaviour over time would help disentangle life-stage effects from cohort effects within the observed age-related patterns. Further, qualitative or mixed-methods approaches could probe the psychological mechanisms underlying the observed awareness participation gap in greater depth, while replication across other Tier-2 and Tier-3 Indian cities would help establish the generalisability of the demographic and professional patterns identified here.

Conclusion

This study demonstrates that doctors and engineers in Belagavi exhibit strong awareness of mutual funds, yet only about half translate this awareness into active investment. Demographic factors gender, age, employment type, and income significantly shape participation, while profession alone does not. Among investors, doctors allocate larger shares of income to mutual funds and adopt longer investment horizons, while engineers monitor their investments more frequently but more conservatively. Non-investors display substantial latent willingness to invest, indicating considerable untapped potential that could be unlocked through targeted financial education and simplified entry pathways. Risk preference significantly shapes allocation, monitoring behaviour, and investment horizon, and liquidity together with past fund performance emerge as the most influential decision-making factors, outweighing financial-advisor input and tax considerations. Collectively, these findings offer both theoretical insight into professional investment behaviour in an emerging Tier-2 urban context and practical guidance for financial advisors and asset management companies seeking to expand mutual fund penetration among high-income professional segments in India.

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Appendix A: Survey Instrument

The structured questionnaire comprised four sections: (A) Demographic Details gender, age group, profession, employment type, and monthly income (adapted from Rathnamani, 2013; Sharma, 2019); (B) Investment Awareness and Behaviour preferred investment avenues, awareness of mutual funds, and current investment status (adapted from Mahmood, 2024; Sourirajan, 2021); (C) items administered to current investors only, covering fund type held, review frequency, income allocation, investment horizon, and Likert-scale batteries on perception, risk preference, and decision-making factors (adapted from Annapurna, 2024; Quang et al., 2023; Mahmood, 2024; Sourirajan, 2021; Kumari, 2024); and (D) items administered to non-investors only, covering reasons for non-participation, willingness to invest in future, risk beliefs, and motivating factors. The complete instrument is available from the author upon request.

Financial Sustainability Study of Manufacturing Unit at Belagavi

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Abstract

Financial sustainability is a defining condition for the long-term growth of manufacturing enterprises operating in competitive, capital-intensive environments. This study examines the financial sustainability and long-term growth trajectory of Manufacturing Unit, manufacturer based in Chakan, Pune, India, using five years (2020–21 to 2024–25) of secondary financial data drawn from the firm's audited financial statements. A descriptive, quantitative research design was adopted, employing year-wise growth-rate analysis, compound annual growth rate (CAGR), profitability and solvency ratio analysis, and correlation-regression analysis to evaluate the relationship between profitability growth and sales growth. The results indicate a positive long-term revenue CAGR of 5.6 percent alongside a marginally negative profit CAGR of −1.12 percent, reflecting recovery-driven but uneven earnings performance. The debt-equity ratio declined substantially, from 0.96 in 2020 to 0.25 in 2024, indicating a marked improvement in solvency and reduced financial risk. Gross-profit growth and sales growth were strongly correlated ($r = .933$), with gross-profit growth explaining approximately 87 percent of the variance in sales growth ($R^2 = .871$); however, given the very small number of paired observations ($n = 4$), this relationship should be treated as indicative rather than statistically conclusive. The findings suggest that Manufacturing Unit has achieved improving capital structure and revenue resilience but continues to face volatility in profitability that warrants stronger cost-control and asset-utilisation strategies. The study contributes a firm-level empirical account of financial sustainability in the Indian Manufacturing Unit , an industry under-represented in the sustainability-finance literature relative to energy, banking, and large listed manufacturing firms, and offers managerial and policy-relevant implications for small and medium manufacturing enterprises pursuing sustainable long-term growth.

Keywords
Financial sustainability; long-term growth; compound annual growth rate; financial ratio analysis; Manufacturing Unit; India

Introduction

Financial sustainability and long-term growth are widely regarded as central indicators of an organisation's competitiveness and strategic resilience (Kovalenko, 2019). For manufacturing firms operating in capital-intensive, technology-driven segments, the ability to convert revenue into consistent profitability, manage leverage prudently, and reinvest in productive capacity is essential to withstanding market volatility and sustaining growth over successive years (Ajayi & Omankhanlen, 2022). This unit serves the automotive, general engineering, aerospace, and defence sectors through CNC and VMC machining, laser cutting, press-shop, forging, and fabrication operations. As market competition

intensifies and input costs fluctuate, an evidence-based understanding of the firm's financial trajectory becomes important for management and stakeholders alike.

This study examines Manufacturing Unit's financial performance over five years (2020–21 to 2024–25) to assess whether its revenue, profit, and asset trends indicate sustainable long-term growth or emerging financial risk. The analysis draws exclusively on the firm's audited financial statements and applies descriptive and quantitative financial-analysis techniques — year-wise growth rates, compound annual growth rate (CAGR), profitability and solvency ratios, and correlation-regression analysis — to characterise the relationship between financial sustainability indicators and long-term growth.

Literature Review

Research on financial sustainability and corporate growth spans energy, manufacturing, financial-inclusion, and SME contexts, and consistently identifies profitability, capital structure, and resource-utilisation efficiency as central determinants of sustainable performance.

Studies of the energy sector illustrate how policy dependence undermines financial sustainability: Paun (2017) found that renewable-energy firms in Romania experienced financial instability once government subsidies were withdrawn, while conventional energy firms remained comparatively stable, underscoring the importance of independent financial resilience rather than reliance on external support. In a related vein, Orazalin et al. (2019) showed that sustainability reporting and responsible practice reduced financial distress among Russian oil and gas firms, while Mukhiyayeva et al. (2024) linked financial resilience in the energy sector to regulatory frameworks, market volatility, and technological disruption.

Within manufacturing specifically, firm-level financial drivers have received sustained attention. Kant (2018) found that profitability among NYSE-listed manufacturing firms was positively associated with R&D investment, growth rate, productivity, and current ratio, while firm age and size showed no significant effect. Xu and Wang (2018) demonstrated that intellectual capital — particularly relational capital — positively influenced financial performance and sustainable growth among Korean manufacturing firms. Şahin and Ergün (2018) reported that Turkish manufacturing firms experiencing over-growth exhibited lower profitability, suggesting that balanced, internally financed growth is more sustainable than rapid expansion. Zhang et al. (2021) identified a nonlinear, inverted-U relationship between financial flexibility and sustainability among Chinese manufacturers, while Ajayi and Omankhanlen (2022) found that operational efficiency — through cost management and asset utilisation — positively influenced the financial sustainability of Nigerian listed manufacturing firms.

A second stream of research connects financial sustainability to capital structure and risk management. Kovalenko (2019) characterised financial sustainability as encompassing stable cash flow, efficient capital structure, and optimal risk management, while Alhadhrami and Nobanee (2019) emphasised that CSR integration, risk disclosure, and efficient resource utilisation jointly strengthen long-term financial growth. Guillamón et al. (2021) showed that an excessive short-term financial focus can hinder R&D-driven innovation and future competitiveness, reinforcing the value of a balanced, long-term orientation.

Financial-inclusion and SME-focused studies extend the discussion to smaller and developing-economy firms. Magu and Muturi (2018) found that financial literacy — particularly budgeting, investment, and credit-management knowledge — significantly enhanced the sustainability of Kenyan SMEs, while Khan et al. (2022) found a strong long-run positive relationship between financial inclusion and sustainability across G20 economies. Asaleye et al. (2018) reported both short- and long-run relationships between financial-sector development and manufacturing output in Nigeria using a Vector Error Correction Model.

More recent contributions incorporate digitalisation, ESG, and Industry 4.0 considerations. Jamwal et al. (2021) identified supply-chain and environmental factors as the most influential enablers of sustainable manufacturing under Industry 4.0, while Zhang and Wang (2023) found that digital transformation strengthened financial management and resilience among Chinese enterprises. Giurgea and Delcea (2023) showed that European renewable-energy firms integrating innovation and balanced capital management achieved higher financial sustainability, and Mietule et al. (2025) found that Latvian manufacturing firms with stronger ESG integration outperformed peers financially, supporting a synergy view of sustainability and profitability. At the review level, Baby et al. (2024) synthesised 289 empirical studies (1987–2022) and concluded that internal firm factors — innovation, governance, and technology — exert a greater influence on manufacturing financial performance than external market or policy forces.

Collectively, this body of work establishes that financial sustainability is shaped by an interaction of profitability, capital structure, operational efficiency, and, increasingly, non-financial factors such as ESG integration and digitalisation. However, the overwhelming majority of these studies rely on multi-firm panel data drawn from listed companies, larger economies, or specific high-visibility sectors such as energy and banking. Comparatively little empirical work examines financial sustainability at the level of an individual, privately held, small-to-medium manufacturing enterprise in an emerging-market Manufacturing Unit context.

Research Gap

Existing literature on financial sustainability is concentrated in three areas namely large listed manufacturing firms subject to panel-data analysis (e.g., Kant, 2018; Xu & Wang, 2018), the energy sector (e.g., Paun, 2017; Orazalin et al., 2019; Mukhiyayeva et al., 2024), and macro-level or cross-country financial-inclusion studies (e.g., Khan et al., 2022). Privately held Manufacturing Unit in emerging economies, despite their significant contribution to automotive, aerospace, and defence supply chains remain under-represented in this literature, and firm-level, single-entity financial-sustainability studies using audited secondary data are comparatively rare in Scopus-indexed finance and management outlets. This study addresses that gap by providing a detailed, ratio- and trend-based financial-sustainability assessment of a single manufacturing enterprise, contributing an empirical case that can inform both academic understanding and managerial practice in this under-studied segment.

Problem Statement

Financial sustainability is essential for any organisation seeking long-term growth and continued competitiveness. In the case of Manufacturing Unit, year-wise fluctuations in revenue, profit, and asset levels raise questions about the consistency of the firm's financial trajectory and its capacity to sustain future expansion. Despite continued operation and investment, inconsistent year-to-year performance suggests potential risks that may affect the firm's long-term financial health; however, no systematic, ratio- and trend-based evaluation of the firm's financial sustainability existed prior to this study. The central research problem addressed here is, therefore, whether Manufacturing Unit's financial performance over the 2020–21 to 2024–25 period reflects sustainable long-term growth or whether observed fluctuations in revenue, assets, and profitability signal underlying risks that require managerial and strategic attention.

Research Objectives

1. To examine **Manufacturing Unit's** financial sustainability by analysing its financial performance and capacity to maintain long-term growth.
2. To analyse long-term trends in the firm's overall financial position, including revenue, profitability, and asset behaviour.
3. To examine the relationship between financial sustainability indicators and long-term growth outcomes.
4. To identify the challenges affecting financial sustainability and their implications for long-term growth.

Hypotheses

The following hypotheses were formulated on the basis of the study objectives and the quantitative relationships examined in the original analysis. [Author note: the source internship study did not pre-register formal hypotheses; these have been derived post hoc from its stated objectives and analytical design, consistent with a descriptive financial-analysis study, and should be reviewed and, if necessary, reframed by the author before submission.]

H01 (null): There is no significant relationship between financial-sustainability indicators (profitability and growth) and the long-term growth of Manufacturing Unit.

Ha1 (alternative): There is a significant positive relationship between financial-sustainability indicators and the long-term growth of Manufacturing Unit.

H02 (null): Manufacturing Unit's capital structure (debt–equity position) has not improved materially over the study period.

Ha2 (alternative): Manufacturing Unit's capital structure has improved materially over the study period, reflecting stronger long-term financial sustainability.

Research Methodology

Research Design

The study employs a descriptive, quantitative research design appropriate for analysing historical financial data, computing growth rates, and interpreting long-term trends. The quantitative component supports numerical analysis of revenue, profit, and asset behaviour using CAGR, year-wise growth rates, ratio analysis, and correlation-regression analysis.

Population, Sampling, and Sample Size

The population comprises the financial statements and annual reports of Manufacturing Unit. The sample frame consists of five years of audited financial data (2020–21 to 2024–25) covering revenue, net profit, and total assets. A judgmental (non-probability) sampling method was used, as the study

relies on the specific years for which complete and reliable financial data were available. The resulting sample size is five annual observations per financial parameter (revenue, profit, assets); the correlation and regression analysis of gross-profit growth against sales growth is based on four year-on-year growth observations (n = 4, derived from the five annual data points).

Data Sources

No primary data were collected. Secondary data sources included Manufacturing Unit's audited financial statements, annual reports, internal financial documents shared by the company, and published records.

Tools and Techniques of Analysis

- Year-wise growth-rate analysis (revenue, profit, assets)
- Compound annual growth rate (CAGR) analysis and short-horizon forecasting
- Financial ratio analysis: net profit ratio, return on assets, gross profit ratio, debt–equity ratio, total debt ratio
- Descriptive statistics (mean, standard deviation)
- Pearson correlation and simple linear regression, with significance testing

For presentation consistency, the available five-year financial figures have been standardised to ₹ crores and rearranged into summary income-statement and balance-sheet formats. The presentation does not infer unavailable line items from ratios.

Data Analysis and Results

Revenue Growth

Table 1 presents Manufacturing Unit's year-wise sales growth rate. Revenue declined by 5.32 percent in 2021–22 before recovering sharply (+20.50 percent) in 2022–23, followed by more moderate growth of 5.69 percent and 3.18 percent in the subsequent two years.

Particulars	2020–21	2021–22	2022–23	2023–24	2024–25
Revenue / Sales	19.23	18.21	21.94	23.18	23.92
Net Profit	0.84	0.74	0.85	0.73	0.81
Net Profit Ratio (%)	4.38	4.05	3.89	3.16	3.37

The five-year revenue CAGR was calculated as follows:

CAGR = (Final Revenue / Initial Revenue)^(1/n) − 1 = (239,199,370 / 192,287,388)^(1/4) − 1 = 0.0561, or approximately 5.6% per annum.

Applying this CAGR to project near-term revenue yields approximate forecasts of ₹25.26 crore (2025–26), ₹26.67 crore (2026–27), and ₹28.17 crore (2027–28), on the assumption that the underlying growth pattern remains stable — an assumption that should be treated cautiously given the volatility observed within the historical series.

Asset Growth

Particulars	2020–21	2021–22	2022–23	2023–24	2024–25
Total Assets	11.79	11.15	11.07	12.55	12.72
Return on Assets (%)	7.15	6.61	7.70	5.84	6.34

Note: The supplied dataset contains total assets as the available balance-sheet figure; full line-item balance-sheet components were not provided. This standardized extracted summary therefore avoids inventing unavailable accounting line items. All monetary values are presented in ₹ crores.

Total assets declined in 2021–22 and 2022–23, consistent with a period of restrained investment activity or constrained liquidity, before rising sharply in 2023–24 and stabilising in 2024–25. The corresponding asset CAGR is 1.9% per annum: CAGR = (127,160,400 / 117,899,327)^(1/4) − 1 ≈ 0.019. This modest but positive rate indicates cautious, incremental asset growth rather than aggressive capital expansion.

Profit Growth

Net profit fluctuated markedly across the period, with a long-term (five-year) profit CAGR of approximately −1.12%, indicating a slight overall decline in profitability despite intermittent recoveries in 2022–23 and 2024–25. This pattern points to inconsistency in cost management and operational efficiency rather than a structural growth trend.

8.4 Financial Ratio Analysis

Table 4 summarises key profitability and solvency ratios for 2020–24.

Ratio	2020–21	2021–22	2022–23	2023–24	2024–25
Net Profit Ratio (%)	4.38	4.05	3.89	3.16	3.37
Return on Assets (%)	7.15	6.61	7.70	5.84	6.34
Gross Profit Ratio (%)	7.02	7.99	6.43	6.66	7.29
Debt–Equity Ratio	0.96	0.83	0.81	0.27	0.25
Total Debt Ratio	0.34	0.34	0.36	0.16	0.15

The Net Profit Ratio declined from 4.38% (2020) to 3.16% (2023) before recovering slightly to 3.37% (2024), indicating pressure on the firm's ability to convert sales into net profit. Return on Assets and the Gross Profit Ratio show a similarly uneven pattern, with a dip in 2023 followed by partial recovery in 2024. In contrast, the Debt–Equity Ratio and Total Debt Ratio both show a clear, sustained decline across the five years — most notably a fall in the Debt–Equity Ratio from 0.96 to 0.25 — indicating a substantial and consistent improvement in the firm's solvency and long-term capital structure.

8.6 Correlation and Regression Analysis

8.5 Trend Analysis

The five-year trend analysis provides a visual assessment of the firm's financial trajectory. The Debt-to-Equity Ratio declined from 0.96 in 2020–21 to 0.25 in 2024–25, confirming sustained deleveraging. Revenue recovered from ₹18.21 crore in 2021–22 to ₹23.92 crore in 2024–25, while net profit remained comparatively volatile. Total assets increased from ₹11.79 crore to ₹12.72 crore, indicating modest long-term asset expansion.

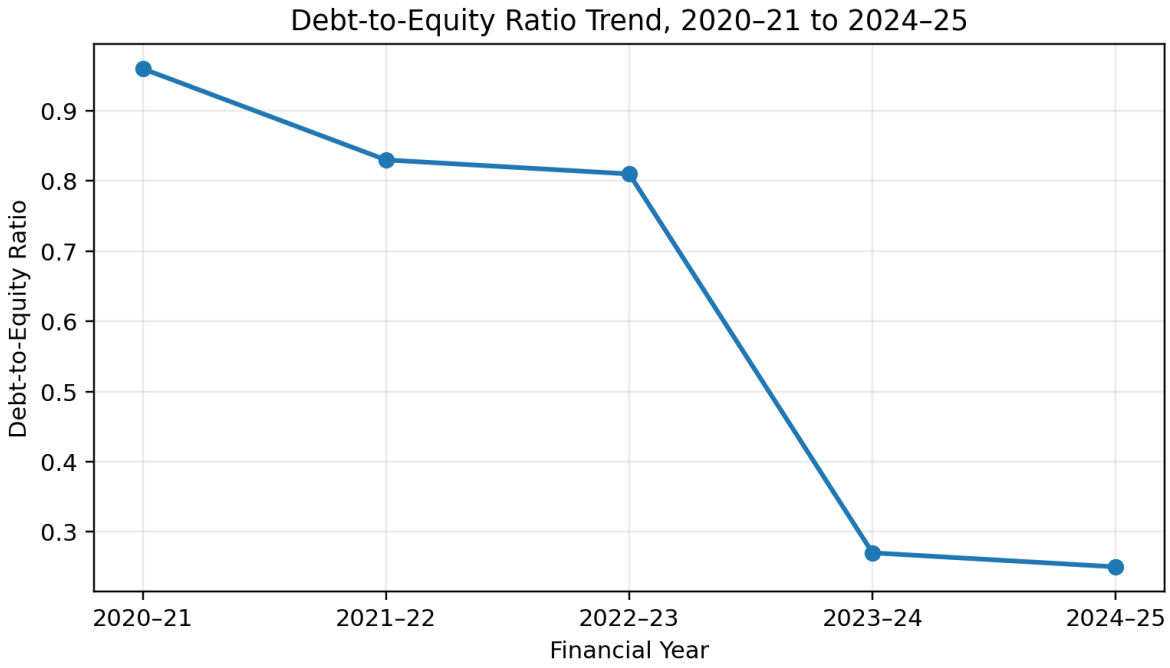


Figure 1. Five-year Debt-to-Equity Ratio trend

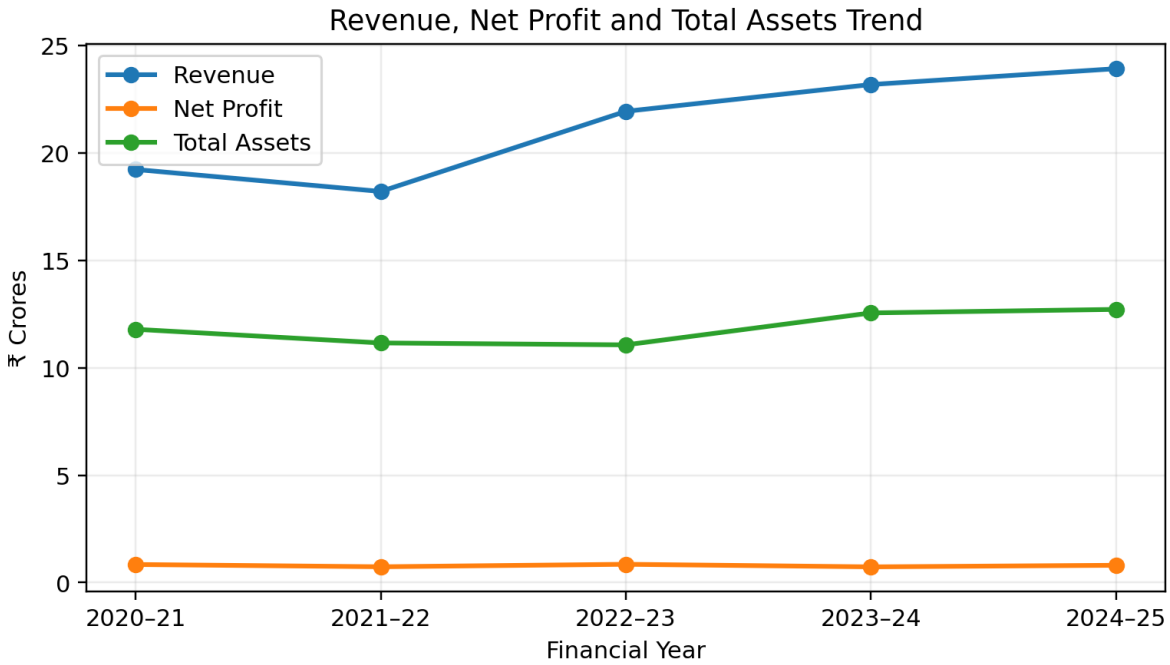


Figure 2. Revenue, Net Profit and Total Assets trend (₹ Crores)

Interpretation: Solvency improved consistently, whereas revenue growth was accompanied by uneven profitability. The divergence between the upward revenue trajectory and fluctuating net profit highlights the need for margin protection, working-capital discipline and productivity rather than relying on sales growth alone.

To examine the relationship between profitability growth and revenue growth, gross-profit growth rate (X) and sales growth rate (Y) were compared across the four year-on-year growth observations available in the dataset (Mean X = 14.72, SD = 8.79; Mean Y = 8.67, SD = 6.90).

Statistic	Value
Pearson correlation (r)	0.933
R^2	0.871
Adjusted R^2	0.806
Regression intercept	−2.11
Regression slope (β1)	0.732
n (paired observations)	4

The correlation between gross-profit growth and sales growth is strong and positive (r = .933), with the regression model indicating that gross-profit growth explains approximately 87.1% of the variance in sales growth (R^2 = .871). The slope coefficient (β1 = 0.732) suggests that, on average, sales growth increases by 0.732 percentage points for each one-percentage-point increase in gross-profit growth.

A formal significance test was conducted on this correlation, which was not reported in the original analysis. With n = 4 (df = 2), the t-statistic is $t = r\sqrt{(df)} / \sqrt{(1 - r^2)} \approx 3.67$, which corresponds to a two-tailed p-value of approximately .067. This falls short of the conventional 5% significance threshold (critical t = 4.303 at df = 2), although it is significant at the 10% level. Given the very small number of observations, this result should be interpreted as a suggestive association rather than a statistically confirmed causal relationship, and the regression model's practical use for prediction is correspondingly limited. This constitutes the principal statistical caveat of the study and directly qualifies the strength of the conclusions drawn regarding Hypothesis 1.

Discussion

The findings present a mixed but broadly constructive picture of Manufacturing Unit's financial sustainability. Revenue demonstrates a clear recovery-and-growth pattern following an initial decline, consistent with a firm rebuilding market position after a period of disruption, and the resulting 5.6% revenue CAGR is a reasonably healthy outcome for a young manufacturing enterprise. Asset growth, while modest (1.9% CAGR), reflects a cautious investment posture rather than aggressive capacity expansion, which may be appropriate given the firm's recent incorporation (2024) and evolving operational scale.

Profitability, however, tells a more concerning story: a marginally negative long-term profit CAGR (−1.12%) alongside a declining Net Profit Ratio suggests that revenue growth has not been matched by proportionate improvements in cost control or operating leverage. This is broadly consistent with Şahin and Ergün's (2018) finding that firms experiencing rapid revenue growth can simultaneously see profitability pressured if growth outpaces internal efficiency gains, and with Ajayi and Omankhanlen's (2022) emphasis on operational efficiency as a determinant of financial sustainability.

The most unambiguous positive finding is the marked improvement in capital structure: the Debt–Equity Ratio fell from 0.96 to 0.25 over five years, a trend that aligns with Kovalenko's (2019) view of financial sustainability as resting on efficient capital structure and reduced risk exposure. This deleveraging trend materially strengthens the firm's resilience to external shocks and its capacity to finance future growth without excessive reliance on debt. On this basis, the null hypothesis H02 is rejected in favour of Ha2: Manufacturing Unit's capital structure improved materially over the study period. The strong association between gross-profit growth and sales growth ($r = .933$) offers preliminary support for Hypothesis 1, though, as noted above, the small sample means this should be treated as directional evidence pending validation on a longer time series. Given the marginal statistical significance ($p \approx .067$ at the 5% threshold) and the very small sample, H01 cannot be confidently rejected on the present evidence; Ha1 is therefore tentatively, rather than conclusively, supported.

Managerial Implications

1. Working-capital optimisation.

Although working-capital ratios were not available in the supplied dataset, profitability volatility and modest asset growth indicate a need for tighter cash-conversion discipline. Management should establish monthly receivables ageing reviews, customer-wise collection targets, risk-based credit terms and slow-moving inventory monitoring. Supplier payment terms should be aligned with operating cash inflows without weakening supplier relationships. A rolling 13-week cash-flow forecast should be used to identify liquidity gaps early.

2. Protect operating margins.

Revenue increased at a 5.6% CAGR while profit CAGR was approximately −1.12%. Management should introduce product/customer-level contribution-margin reviews, variance analysis for material and labour costs, and periodic pricing reviews. Persistently weak-margin orders should be renegotiated or redesigned rather than pursued solely for volume.

3. Disciplined CapEx planning.

The 1.9% asset CAGR indicates cautious asset expansion. Future capital expenditure should be prioritised through formal appraisal covering expected capacity utilisation, payback period, return on invested capital, maintenance savings and customer-demand visibility. Capacity-creating projects should be sequenced so that cash generation and utilisation of existing assets improve before major expansion.

4. Preserve the deleveraging advantage.

The Debt-to-Equity Ratio declined from 0.96 to 0.25 and the Total Debt Ratio from 0.34 to 0.15. Management should preserve this stronger capital structure by matching new borrowing to clearly identified cash-generating projects, maintaining debt-service buffers and avoiding debt-funded expansion without demonstrable returns.

5. Strengthen asset utilisation.

Return on Assets fell to 5.84% in 2023 before recovering to 6.34% in 2024. Management should track machine utilisation, production downtime, rejection/rework rates and revenue generated per major asset. Under-utilised equipment should be reassigned, scheduled more efficiently or considered for disposal/lease decisions where economically justified.

6. Integrate risk monitoring into financial planning.

A quarterly financial-risk dashboard should monitor revenue concentration, customer receivables, inventory ageing, gross margin, cash conversion, debt service, CapEx commitments and utilisation.

Scenario analysis should be conducted for adverse movements in input costs, demand and collection periods, creating an early-warning system rather than a retrospective assessment.

1) **Monitor receivables and collection risk:** Review receivables ageing regularly and identify delayed or high-risk customer accounts to reduce the possibility of cash-flow pressure.
2) **Monitor cost and margin risk:** Track changes in raw-material, labour and operating costs and compare them with revenue and gross-profit trends to identify early margin deterioration.
3) **Monitor debt and liquidity risk:** Periodically review debt obligations, interest burden, cash availability and debt-service capacity, particularly before undertaking additional borrowing or major expenditure.
4) **Use scenario-based risk assessment:** Assess the likely financial impact of changes in demand, input costs, collection periods and other major business conditions, and prepare corrective measures in advance.

Practical Implications

For Manufacturing Unit and comparable small and medium Manufacturing Unit manufacturers, the findings suggest that pursuing revenue growth alone is insufficient for long-term financial sustainability; complementary attention to cost structure, working-capital management, and capital-structure discipline is required. The improvement in solvency indicators demonstrates that such firms can meaningfully de-risk their balance sheets even while still expanding revenue, offering a practical model for other early-stage manufacturing enterprises balancing growth ambitions against financial prudence. For industry stakeholders such as OEM customers and lenders, the analysis illustrates how ratio-based and trend-based financial diagnostics can be applied to assess supplier financial health in the absence of extended public financial histories.

Limitations of the Study

1. Single-firm case design: findings are specific to Manufacturing Unit and are not generalisable to the wider manufacturing sector without further comparative research.
2. Short time horizon: The analysis is based on five years of financial data, which may not fully capture longer economic or industry cycles.
3. Very small sample for inferential statistics: correlation and regression analysis relied on only four paired growth observations, substantially limiting statistical power and the generalisability of the regression model; the association reported ($r = .933$) achieved only marginal statistical significance ($p \approx .067$).
4. Reliance on secondary data: the study depends entirely on Manufacturing Unit's financial statements, with no independent verification or triangulation against external audited benchmarks.
5. Absence of industry benchmarking: without peer or industry-average comparison, it is not possible to assess whether Manufacturing Unit's financial sustainability is strong or weak relative to sector norms.
6. Exclusion of macroeconomic and qualitative variables: external factors (inflation, input-cost cycles, policy change) and qualitative determinants (management quality, customer concentration, employee performance) were outside the scope of this analysis.
7. Assumption-based forecasting: CAGR-based revenue projections assume a stable growth pattern that may not hold under real market conditions.

Scope for Future Research

Future research could extend this analysis using a longer financial time series (ten years or more) to validate the growth and profitability trends identified here with greater statistical confidence. Comparative, multi-firm studies across several Manufacturing Unit or certified manufacturers would allow benchmarking of financial sustainability within the sector and enable panel-data regression with adequate statistical power. Incorporating qualitative and non-financial determinants of sustainability, such as customer concentration, workforce productivity, and ESG-related practices — alongside financial ratios would also provide a more holistic account of long-term growth capacity, consistent with recent literature on ESG-integrated financial sustainability (Mietule et al., 2025).

Conclusion

This study assessed the financial sustainability and long-term growth of Manufacturing Unit over the period 2020–21 to 2024–25. The firm demonstrated a positive revenue CAGR of 5.6% and a markedly improved capital structure, with the debt–equity ratio falling from 0.96 to 0.25, indicating strengthening solvency and reduced financial risk. However, profitability remained volatile, with a slightly negative long-term profit CAGR (−1.12%) and a declining Net Profit Ratio, pointing to unresolved cost-management and efficiency challenges. The strong positive association between profitability growth and revenue growth (r = .933) offers preliminary, though not statistically conclusive, support for the view that financial sustainability underpins long-term growth. Overall, Manufacturing Unit exhibits the financial characteristics of a recovering, deleveraging, and cautiously expanding enterprise; sustaining this trajectory will require deliberate attention to profitability consistency, asset utilisation, and structured financial planning alongside its evident progress in capital-structure management. Going forward, the strongest financial-sustainability priority is to convert the firm's improved solvency position into consistent earnings and cash generation through tighter working-capital controls, evidence-based CapEx selection and structured risk monitoring.

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Recruitment Challenges in the Indian Real Estate Sector:

An Exploratory Study of Human Resource Practices at Real Estate company

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Abstract

Recruitment remains one of the most critical yet challenging functions of human resource management, particularly in sectors experiencing rapid growth and intense competition for talent, such as real estate and construction. This study examines the recruitment challenges faced by human resource (HR) professionals at one of the real estate companies, a leading real estate and construction organisation in India, with a focus on sourcing difficulties, candidate–employer expectation gaps, and the role of technology in the hiring process. A descriptive, cross-sectional research design was employed, and primary data were collected through a structured questionnaire administered to 36 HR professionals including recruiters, executives, associates, talent acquisition specialists, and managers selected through purposive (judgment) sampling. Responses were analysed using descriptive statistics (frequencies and percentages). The findings indicate that talent shortage and intense market competition are the most significant barriers to effective hiring, while internal coordination between HR and hiring managers, interview scheduling, and candidates' understanding of job roles are comparatively well managed. Recruitment technology, including applicant-tracking systems and video-based assessments, is perceived positively, with a large majority of respondents reporting that it improves screening efficiency and reduces bias in shortlisting. Salary mismatches, extended candidate notice periods, and occasional skill gaps were identified as moderate but manageable challenges. The study contributes to the limited empirical literature on recruitment practices within the Indian real estate sector and offers practical recommendations for strengthening sourcing strategies, internal coordination, and technology adoption. As an exploratory, single-organisation study with a modest, non-probability sample, the findings should be interpreted as indicative rather than statistically generalisable, and directions for future research using larger, multi-organisational, and probability-based samples are proposed.

Keywords

Recruitment challenges; Talent acquisition; Human resource management; Real estate industry; Purposive sampling; Recruitment technology; India

Introduction

Recruitment is among the most consequential functions of human resource management, as it directly determines the quality, capability, and long-term competitiveness of an organisation's workforce. In an increasingly dynamic business environment, attracting and securing suitable talent has become progressively more difficult, driven by evolving job roles, rapid technological change, and a persistent gap between the competency's organisations require and those candidates can readily offer (Zinyemba, 2014; Rozario et al., 2019).

Organisations across sectors continue to encounter difficulties in attracting suitable applicants, evaluating candidates fairly and efficiently, managing recruitment costs, and completing hiring cycles within acceptable timeframes (Swapna Rani et al., 2025; Khan & Dasha, 2024). From the candidate perspective, ambiguous role expectations, prolonged decision timelines, and inconsistent communication frequently discourage engagement with prospective employers (Ahmed, 2025). These twin pressures — organisational and candidate-side — indicate that effective recruitment today requires deliberate planning, appropriate technology, and a clear understanding of both organisational needs and candidate experience.

The growing adoption of digital recruitment tools, including applicant-tracking systems, artificial-intelligence-assisted screening, and online assessments, has reshaped how organisations source and evaluate candidates. While such tools offer efficiency gains, their implementation is frequently constrained by limited training, resistance to change, and budgetary considerations, leading some organisations to continue relying on traditional methods that may not reliably attract high-quality talent (Mori et al., 2025; Dadaboyev et al., 2025).

These challenges are particularly salient in the Indian real estate and construction sector, which has experienced sustained growth alongside a persistent shortage of skilled professionals and intensifying competition for talent (Talari & Tawalare, 2026). Real estate company, one of India's most prominent vertically integrated real estate developers, provides an instructive organisational context in which to examine how HR professionals experience and manage these recruitment pressures in practice. This study accordingly investigates the recruitment challenges encountered by Real estate company's HR function, drawing on first-hand practitioner perspectives to identify the factors that most significantly shape hiring outcomes, and to offer evidence-informed recommendations for strengthening recruitment practice.

Literature Review

Talent Shortage, Market Competition, and Candidate Expectations

A substantial body of literature identifies talent shortage and intensifying market competition as central and recurring obstacles to effective recruitment. Skill shortages, limited access to qualified candidates, and intense competition among employers for scarce talent have been identified as persistent constraints on hiring effectiveness (Ghazala & Ishrat, 2013; Ongori & Temtime, 2010; Suresh et al., 2013, as cited in Swapna Rani et al., 2025). Rising skill shortages and increasingly competitive labour markets have similarly been shown to extend hiring timelines, dampen candidate interest, and, combined with weak workforce planning, reduce overall recruitment efficiency (Anika, 2024; Karanja et al., 2018, as cited in Prathipa & Vanitha, 2024). Samwel (2018) extends this argument to smaller and resource-constrained organisations, finding that they struggle disproportionately to compete for qualified applicants against larger, better-resourced employers — a dynamic also visible in India's rapidly consolidating real estate sector.

Screening, Selection, and the Role of Technology in Recruitment

Technology occupies an increasingly central position in contemporary recruitment scholarship. Mori et al. (2025), in a systematic review of 120 studies, frame the debate on artificial intelligence (AI) in recruitment and selection around three ethical perspectives: utilitarian (efficiency gains), justice (fairness and bias), and rights-based (candidate autonomy and transparency). They conclude that no single perspective is sufficient in isolation and that responsible adoption requires balancing all three. Dadaboyev et al. (2025), synthesising 49 peer-reviewed studies, similarly find that AI-enabled tools can improve recruitment productivity and candidate-job fit through automated screening and predictive analytics, while cautioning that algorithmic bias remains a legitimate concern when systems are trained on historically skewed hiring data. Earlier work had already flagged the difficulty organisations face in

selecting and adapting to rapidly changing recruitment technologies, and the operational risk of system failures during online hiring (Schmit et al., 1995, as cited in Ahmed, 2025; Jackson, 2010, as cited in Swapna Rani et al., 2025). Govinda Solai and Vishnupriya (2025), examining recruitment challenges in India's IT industry, report that although technology adoption has broadened sourcing reach, organisations continue to struggle with integrating new tools into legacy recruitment workflows, a tension consistent with the moderate, rather than uniformly high, confidence in technology-assisted skills evaluation observed in the present study (Section 8.2). Taken together, this literature suggests that while practitioners generally perceive recruitment technology as a positive force for efficiency and objectivity, its benefits are conditional on careful implementation and ongoing evaluation.

Coordination, Process Efficiency, and Internal Recruitment Practices

Beyond external market conditions, internal organisational factors shape recruitment outcomes. Poor coordination, delayed scheduling, and weak communication between HR and hiring managers have been identified as significant sources of recruitment inefficiency (Lievens & Chapman, 2019, as cited in Ahmed, 2025). Baron et al. (2018) emphasise that clarity, structured planning, and procedural fairness are essential to reliable candidate evaluation, and show that unclear procedures and inconsistent recruitment governance reduce the accuracy of selection decisions. Rozario et al. (2019) further note that inconsistent evaluation methods and embedded biases in selection processes compromise both fairness and efficiency, underscoring the importance of standardised, well-coordinated internal recruitment processes. Comparable coordination and process-governance weaknesses, including delays linked to unclear role definition and retention-linked recruitment failures, have been documented in other organisational contexts (Kitila et al., 2018; Letam et al., 2022; Mishra et al., 2023). Roshni and Reena (2024) reach a similar conclusion, linking inconsistent internal selection procedures to reduced recruitment effectiveness across organisational settings.

Recruitment and HR Challenges in the Real Estate and Construction Sector

Sector-specific evidence on recruitment challenges in real estate and construction remains comparatively limited. Talari and Tawalare (2026), drawing on interviews and a quantitative survey of civil engineering professionals across Indian construction companies, identify persistent shortages of skilled professionals and highlight the impact of current HR strategies on employee attraction, retention, and productivity within the sector. This study is among the few to examine HR practice specifically within the Indian construction and real estate context, and its findings — a sustained talent shortage coupled with the need for stronger HR strategy — closely mirror the concerns raised by HR practitioners in the present study.

Research Gap

Although recruitment challenges have been widely studied across sectors such as information technology, healthcare, and education (Vinod & Hemanth Kumar, 2018; Prathipa & Vanitha, 2024; Sharma & Goyal, 2014), empirical research specific to the Indian real estate and construction industry remains scarce, with Talari and Tawalare (2026) representing one of the few directly comparable studies — and even this focuses on broader HR strategy (attraction, retention, and productivity) rather than the operational recruitment process itself. Furthermore, existing studies on recruitment technology largely address bias and ethics at a conceptual or systematic-review level (Mori et al., 2025; Dadaboyev et al., 2025) rather than capturing how practitioners within a single, large, vertically integrated real estate organisation experience and evaluate these tools in day-to-day use. This study addresses that gap by providing organisation-specific, practitioner-reported evidence on recruitment challenges — spanning sourcing, screening, technology use, and internal coordination — within a leading Indian real estate firm.

Problem Statement

Despite recruitment being fundamental to organisational performance, real estate companies such as Real estate company face persistent obstacles in attracting, screening, and securing suitable talent amid intensifying market competition, an accelerating shift toward technology-enabled hiring, and evolving candidate expectations regarding compensation and notice periods. Limited empirical evidence exists on how HR professionals directly engaged in recruitment within this sector perceive and manage these challenges. This study addresses that problem by empirically examining recruitment challenges from the perspective of Real estate company's HR practitioners.

Research Objectives

- To identify the key factors that make recruitment difficult for organisations in the real estate sector.
- To examine the gap between organisational hiring expectations and the candidates available in the market.
- To assess the perceived role and effectiveness of recruitment technology in the hiring process.
- To examine candidate-related and HR-related issues affecting the recruitment process at Real estate company.

Research Questions

Note on hypotheses: *The original internship project did not formulate statistically testable hypotheses, and the data available — aggregated frequency/percentage responses from a purposive sample of 36 respondents — do not permit valid inferential hypothesis testing (e.g., chi-square, correlation, or regression analysis) without access to raw, respondent-level data, which was not provided. Fabricating test statistics or p-values not actually computed from the underlying data would misrepresent the study's findings. Consistent with its exploratory, descriptive design, the study is therefore framed around research questions (RQs) rather than formal statistical hypotheses.*

- RQ1: What factors most significantly contribute to perceived recruitment difficulty at Real estate company?
- RQ2: To what extent do candidate-related factors (salary expectations, notice periods, skill mismatches) affect recruitment outcomes?
- RQ3: How effective is recruitment technology perceived to be in improving screening accuracy and reducing bias?
- RQ4: How well-coordinated are HR and hiring-manager processes in supporting timely recruitment?

Research Methodology

7.1 Research Design

The study adopts a descriptive, cross-sectional research design. No experimental manipulation was undertaken; rather, the study describes the recruitment process as currently practised at Real estate company and the difficulties reported by HR staff. Data were collected once, during a defined internship period (6 October 2025 – 6 December 2025), and the study is predominantly quantitative, supplemented by informal discussions with HR employees.

Population and Sampling

The population comprised HR employees involved in the recruitment process at Real estate company. A non-probability, purposive (judgment) sampling technique was used to select 36 respondents occupying recruitment-related roles, including HR Recruiters, HR Executives, HR Associates, Talent Acquisition Specialists, HR Specialists, and HR Managers. Purposive sampling was considered appropriate given the study's focus on practitioners with direct, first-hand involvement in recruitment activity, though it inherently limits statistical generalisability (see Section 12).

Data Collection

Primary data were collected using a structured questionnaire covering sourcing, screening, interview scheduling, coordination, and technology use, supplemented by direct interaction and informal discussion with HR professionals. Secondary data were drawn from company documents, HR manuals, the organisation's website, and industry publications, providing contextual and benchmarking information.

Statistical and Methodological Review

In line with the requirement to verify the statistical soundness of the study, the following observations are noted:

- Research design and sampling: The descriptive, cross-sectional design and purposive sampling technique are appropriate for an exploratory study of practitioner perceptions but preclude causal inference and limit generalisability beyond the sampled organisation.
- Sample size: n = 36 is modest for statistical inference; it is adequate for descriptive profiling but underpowered for robust inferential testing (e.g., chi-square analysis with sparse cells, as in Table 7).
- Statistical methods used: Only descriptive statistics (frequency counts and percentages) were computed in the original report; no inferential tests, cross-tabulations, or p-values were reported, and none are fabricated here.
- Recommendation: Future replications of this study should retain raw, respondent-level data to permit cross-tabulation and inferential testing (e.g., testing whether perceived recruitment difficulty varies significantly by designation or tenure).

Data Analysis and Results

Descriptive statistics (frequencies and percentages) are presented below for the full set of 36 valid responses. Section 8.1 reports the demographic profile of respondents; Section 8.2 reports substantive findings on recruitment challenges and practices.

Demographic Profile of Respondents

Table 1. Age Distribution of Respondents

Age Group	n	%
18–25 years	11	30.6
26–35 years	19	52.8
36–45 years	4	11.1
46–60 years	2	5.6
Above 60 years	0	0.0
Total	36	100.0

The respondent profile skews toward early- and mid-career professionals, with over four-fifths (83.3%) aged 35 or below, consistent with the demographic composition typically observed in HR/talent-acquisition functions.

Table 2. Gender Distribution of Respondents

Gender	n	%
Male	24	66.7
Female	12	33.3
Other	0	0.0
Total	36	100.0

Male respondents outnumbered female respondents by roughly two to one, a composition that should be considered when interpreting perceptual findings, as gender may influence recruiters' assessments of fairness and process effectiveness.

Table 3. Educational Qualification of Respondents

Qualification	n	%
SSLC	0	0.0
Graduate	2	5.6
Post-graduate	34	94.4
Diploma	0	0.0
Total	36	100.0

The sample is highly educated, with almost all respondents (94.4%) holding a postgraduate qualification, indicating a professionally qualified HR workforce.

Table 4. Current Designation of Respondents

Designation	n	%
HR Manager	2	5.6
HR Executive	5	13.9
HR Generalist	2	5.6
HR Associate	3	8.3
HR Specialist	2	5.6
HR Business Partner	2	5.6
HR Administrator	2	5.6
HR Analyst	2	5.6
HR Recruiter	3	8.3
Talent Acquisition (HR)	4	11.1
Senior HR Associate	2	5.6
Senior HR Executive	2	5.6
HR Assistant	2	5.6
TA Specialist	1	2.8
HR Coordinator	1	2.8
Chief People Officer	1	2.8
Total	36	100.0

Respondents were drawn from across the HR function, with HR Executives (13.9%) and Talent Acquisition professionals (11.1%) forming the largest single groups, supporting reasonable role diversity within the purposive sample.

Table 5. Organisational Tenure of Respondents

Tenure	n	%
Less than 1 year	2	5.6
1–3 years	12	33.3
4–5 years	13	36.1
6–10 years	6	16.7
More than 10 years	3	8.3
Total	36	100.0

The majority of respondents (72.2%) had between one and five years of organisational tenure, suggesting the sample reflects the views of an experienced yet not predominantly senior HR workforce.

Recruitment Challenges and Practices

Table 6. Perceived Difficulty of the Recruitment Process

Response	n	%
Very challenging	1	2.8
Challenging	24	66.7
Neutral	11	30.6
Not challenging	0	0.0
Not challenging at all	0	0.0
Total	36	100.0

Nearly two-thirds of respondents (66.7%) described the recruitment process as challenging, and none characterised it as easy, indicating that hiring difficulty is a widely shared perception among HR staff rather than an isolated concern.

Table 7. Factors Contributing to Hiring Difficulty (1 = least severe, 5 = most severe)

Factor	1★	2★	3★	4★	5★	n
Talent shortage	0	5	28	2	1	36
High competition	0	0	13	19	4	36
Slow internal processes	0	26	8	2	0	36
Limited resources	0	18	14	4	0	36
Unrealistic job expectations	21	12	0	1	2	36

High market competition received the highest concentration of severe ratings (23 of 36 respondents rated it 4★ or 5★), followed by talent shortage, indicating that external labour-market conditions are perceived as more constraining than internal process factors. Unrealistic job expectations was rated the least severe factor, with 33 of 36 respondents (91.7%) rating it 1★ or 2★.

Table 8. Satisfaction with Current Recruitment Strategies

Response	n	%
Very satisfied	0	0.0
Satisfied	34	94.4
Neutral	2	5.6
Dissatisfied	0	0.0
Very dissatisfied	0	0.0
Total	36	100.0

Satisfaction with existing recruitment strategies is high (94.4% satisfied), with no respondent reporting dissatisfaction, suggesting that perceived difficulty in Table 6 relates to the inherent demands of the function rather than dissatisfaction with organisational strategy.

Table 9. Frequency with which Candidate Salary Expectations Exceed Budget

Response	n	%
Very frequently	0	0.0
Frequently	3	8.3
Sometimes	24	66.7
Rarely	9	25.0
Never	0	0.0
Total	36	100.0

Salary-budget mismatches occur intermittently for most respondents (66.7% report "sometimes"), indicating a moderate but not chronic constraint on hiring.

Table 10. Proportion of Shortlisted Candidates Declining Job Offers

Response	n	%
Less than 10%	13	36.1
10–20%	22	61.1
21–40%	1	2.8
More than 40%	0	0.0
Total	36	100.0

Offer decline rates remain modest for most respondents, with 97.2% reporting a decline rate below 20%, suggesting the organisation's offers are broadly competitive.

Table 11. Candidates' Understanding of the Job Role Applied For

Response	n	%
Always	0	0.0
Often	31	86.1
Sometimes	5	13.9
Rarely	0	0.0
Never	0	0.0

Response	n	%
Total	36	100.0

Role clarity among candidates was rated positively by the large majority (86.1% "often"), pointing to relatively effective job description and communication practices.

Table 12. Perceived Effectiveness of Technology in Identifying Suitable Candidates

Response	n	%
Very effectively	4	11.1
Effectively	27	75.0
Neutral	5	13.9
Ineffectively	0	0.0
Very ineffectively	0	0.0
Total	36	100.0

A combined 86.1% of respondents rated recruitment technology as effective or very effective for candidate identification, with no negative ratings recorded.

Table 13. Perceived Effectiveness of Technology in Evaluating Candidate Skills

Response	n	%
Very effectively	1	2.8
Effectively	20	55.6
Neutral	15	41.7
Ineffectively	0	0.0
Very ineffectively	0	0.0
Total	36	100.0

Confidence in technology for skills evaluation (e.g., video interviews, online assessments) is more moderate than for candidate identification, with a larger neutral segment (41.7%), suggesting comparatively lower conviction about tools that assess competencies rather than simply filter applications.

Table 14. Perceived Role of Technology in Reducing Human Bias in Shortlisting

Response	n	%
Strongly agree	0	0.0
Agree	32	88.9
Neutral	3	8.3
Disagree	1	2.8
Strongly disagree	0	0.0
Total	36	100.0

The overwhelming majority (88.9%) agreed that technology reduces bias in shortlisting, reflecting strong practitioner confidence in automated screening tools, consistent with the utilitarian efficiency arguments identified in the literature (Section 2.2).

Table 15. Extent to which Unrealistic Salary Expectations Delay Hiring

Response	n	%
Very high extent	1	2.8
High extent	8	22.2
Moderate extent	14	38.9
Low extent	13	36.1
No extent	0	0.0
Total	36	100.0

Perceived delay from unrealistic salary expectations is distributed across moderate and low extent (75.0% combined), indicating a manageable but non-trivial constraint.

Table 16. Frequency of Interview-Scheduling Conflicts

Response	n	%
Very often	0	0.0
Often	11	30.6
Sometimes	10	27.8

Response	n	%
Rarely	13	36.1
Never	2	5.6
Total	36	100.0

Scheduling conflicts between HR, hiring managers, and candidates were reported across the full frequency range, with no single response category dominating, suggesting scheduling coordination is an area with room for standardisation.

Table 17. Satisfaction with Reliability and Performance of Recruitment Technology

Response	n	%
Very satisfied	0	0.0
Satisfied	33	91.7
Neutral	3	8.3
Dissatisfied	0	0.0
Very dissatisfied	0	0.0
Total	36	100.0

System reliability (speed, accuracy, stability) was rated satisfactory by 91.7% of respondents, with no dissatisfaction reported.

Table 18. Frequency of Difficulty Finding Candidates with the Right Skills

Response	n	%
Always	0	0.0
Often	7	19.4
Sometimes	28	77.8
Rarely	1	2.8
Never	0	0.0
Total	36	100.0

Skill-matching difficulty was reported as occasional by most respondents (77.8% "sometimes"), consistent with the moderate talent-shortage ratings observed in Table 7.

Table 19. Extent to which Long Notice Periods Delay Hiring

Response	n	%
Very high extent	0	0.0
High extent	2	5.6
Moderate extent	21	58.3
Low extent	13	36.1
No extent	0	0.0
Total	36	100.0

Long candidate notice periods were most commonly rated a moderate-extent constraint (58.3%), identifying this as a specific, addressable friction point in the hiring timeline.

Table 20. Frequency of Offer Rejection Due to Salary or Benefit Mismatch

Response	n	%
Very frequently	0	0.0
Frequently	3	8.3
Sometimes	20	55.6
Rarely	13	36.1
Never	0	0.0
Total	36	100.0

Consistent with Table 9, compensation-related offer rejection is an intermittent rather than dominant cause of hiring loss.

Table 21. Extent to which Poor HR–Hiring Manager Coordination Contributes to Delays

Response	n	%
Very high extent	0	0.0
High extent	0	0.0
Moderate extent	4	11.1
Low extent	24	66.7
No extent	8	22.2

Response	n	%
Total	36	100.0

Internal coordination between HR and hiring managers was rated as a minor contributor to delay by the large majority (88.9% rating it low or no extent), suggesting this is a relative organisational strength rather than a weakness.

Discussion

The findings collectively address the study's four research objectives. In relation to RQ1, talent shortage and, more prominently, high market competition emerged as the most severely rated barriers to hiring (Table 7), corroborating the broader literature on labour-market constraints in recruitment (Ghazala & Ishrat, 2013; Ongori & Temtime, 2010, as cited in Swapna Rani et al., 2025) and aligning with sector-specific evidence of skilled-talent shortages in Indian construction and real estate (Talari & Tawalare, 2026). By contrast, internal operational factors, slow internal processes and limited resources — were rated comparatively less severe, and HR–hiring-manager coordination was rated a minor contributor to delay by 88.9% of respondents (Table 21), suggesting that, within this organisation, external market pressure outweighs internal process friction as a source of recruitment difficulty.

With respect to RQ2, candidate-related frictions — salary expectations exceeding budget, extended notice periods, and offer rejection due to compensation mismatch — were consistently rated as moderate rather than severe or negligible (Tables 9, 15, 19, 20). This pattern indicates that candidate-side constraints are a real but manageable feature of the hiring environment rather than a dominant obstacle, a nuance that is often understated in organisational narratives that attribute hiring difficulty primarily to external candidates.

On RQ3, respondents expressed strong confidence in recruitment technology, particularly its role in candidate identification (86.1% effective or very effective; Table 12) and bias reduction in shortlisting (88.9% agreement; Table 14). This finding is consistent with the utilitarian efficiency perspective identified by Mori et al. (2025) and the productivity gains reported by Dadaboyev et al. (2025), though the comparatively larger neutral response for skills evaluation via technology (41.7%; Table 13) suggests that practitioner trust in AI-enabled tools is not uniform across recruitment stages, and is more assured for filtering/sourcing tasks than for judgement-intensive skills assessment — a distinction meriting further investigation given the justice and rights-based concerns raised in the AI-recruitment ethics literature (Mori et al., 2025).

Finally, on RQ4, the internal coordination and process-management findings (Tables 16 and 21) indicate a generally well-functioning internal recruitment system, in contrast to the coordination failures documented in some prior studies (Lievens & Chapman, 2019, as cited in Ahmed, 2025). This suggests that, at Real estate company, recruitment difficulty is driven predominantly by external labour-market conditions rather than internal organisational dysfunction — an important distinction for the managerial and practical implications that follow.

Managerial Implications

- Since external competition and talent shortage — not internal coordination — are the dominant constraints, management should prioritise investment in sourcing channel diversification (referrals, campus partnerships, digital platforms) over further internal process re-engineering.
- Given strong practitioner confidence in recruitment technology for sourcing and screening, continued investment in these tools is warranted; however, the lower confidence observed for technology-assisted skills evaluation suggests this application area should be monitored and validated before being expanded further.

- Understanding the persistent, if moderate, gap between candidate salary expectations and budgeted compensation should inform earlier and more transparent compensation communication in the hiring funnel.
- Because coordination between HR and hiring managers was rated a comparative strength, this capability should be formally documented and preserved as the organisation scales its recruitment function.
- Addressing notice-period-related delays through proactive backup-candidate pipelines could meaningfully shorten the effective hiring cycle, given that this was rated a moderate-extent constraint by the majority of respondents.

Practical Implications

- For HR practitioners: the findings offer a benchmark for evaluating whether recruitment technology adoption is delivering the perceived efficiency and fairness gains reported here, and where (e.g., skills evaluation) further validation is warranted.
- For job seekers and candidates in the real estate sector: the relatively high reported role-clarity (86.1%; Table 11) suggests that organisations in this sector are, on balance, communicating job expectations reasonably well, which candidates may factor into their own expectations during the application process.
- For recruitment-technology vendors: the gap between high confidence in sourcing/screening tools and more moderate confidence in skills-assessment tools points to a specific product-development and evidence-generation opportunity.
- For industry bodies and policymakers: the sector-wide talent-shortage pattern identified here and corroborated by Talari and Tawalare (2026) suggests value in coordinated, sector-level skilling initiatives for the Indian real estate and construction workforce.

Limitations of the Study

- Small sample size (n = 36) drawn from a single organisation, limiting statistical power and the generalisability of findings to the wider real estate sector.
- Non-probability, purposive sampling, which may introduce selection bias and does not support formal inferential statistical testing.
- Cross-sectional design, which captures perceptions at a single point in time and precludes causal or longitudinal interpretation.
- Reliance on self-reported, perceptual data, which is subject to social desirability and recall bias.
- Analysis limited to descriptive statistics; no inferential testing (e.g., chi-square, correlation) was possible without raw, respondent-level data.
- No formal reliability or validity assessment (e.g., Cronbach's alpha) of the questionnaire instrument was reported.

Scope for Future Research

- Replicate the study with a larger, probability-based sample across multiple real estate and construction organisations to enable cross-organisational comparison and stronger generalisability.
- Retain raw, respondent-level data to permit inferential statistical testing (e.g., chi-square tests of association between designation/tenure and perceived recruitment difficulty).
- Incorporate the candidate perspective alongside the HR perspective captured here, to triangulate perceived versus experienced recruitment challenges.

- Adopt a longitudinal design to examine how recruitment technology adoption and hiring outcomes evolve over time.
- Employ qualitative or mixed-methods approaches (e.g., in-depth interviews) to explore the mechanisms underlying the moderate confidence observed in technology-assisted skills evaluation.

Conclusion

This study finds that Real estate company's recruitment function operates within a generally well-managed internal system, with strong HR–hiring-manager coordination and high practitioner satisfaction with current recruitment strategies. The principal sources of hiring difficulty identified are external to the organisation: talent shortage and intense market competition for skilled candidates, consistent with broader evidence on the Indian real estate and construction sector. Recruitment technology is perceived positively, particularly for candidate sourcing and bias reduction in shortlisting, although confidence is more moderate for technology-assisted skills evaluation. Candidate-related frictions, salary expectations, notice periods, and offer rejection are present but manageable rather than severe. These findings suggest that incremental improvements, diversified sourcing, earlier compensation transparency, and continued but carefully validated technology investment are likely to yield greater returns than further internal process re-engineering. As an exploratory, single-organisation study, these conclusions should be treated as indicative, with the larger-sample, multi-organisational, and inferentially tested research directions outlined in Section 13 offering a clear path to strengthening the evidence base.

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Investigating the impact of Green Banking initiatives on Private Sector Bank

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Abstract:

This study examines the determinants of profitability in Indian private sector banks using panel data from 13 banks listed on the National Stock Exchange (NSE) and Bombay Stock Exchange (BSE) over the period 2013–2022. Panel Least Squares Regression with Return on Assets as the measure of financial performance. Our analysis reveals that revenue diversification through non-interest income and cost efficiency, measured by operating expenses relative to total funds, are the strongest drivers of bank profitability. Traditional credit-risk variables such as gross non-performing assets and liquidity indicators show limited statistical significance in explaining profitability variations. These findings highlight that Indian private sector banks prioritizing income composition management and cost discipline achieve superior financial performance compared to those relying primarily on asset quality metrics. The results have implications for bank strategy and management in the Indian banking sector, suggesting that operational efficiency and revenue mix warrant greater emphasis in performance optimization.

Keywords: Panel data, banks, ROA, NPL,Performance

Introduction

Understanding the drivers of bank profitability is critical for both managers and regulators in India's rapidly evolving financial sector. While conventional wisdom emphasizes asset quality and risk management, empirical evidence suggests that profitability may be shaped as much by revenue composition and operational efficiency. This study investigates what actually determines profitability in Indian private sector banks.

The data considers 13 private commercial banks listed on the NSE and BSE in India over ten years (2013–2022). India's banking sector has undergone substantial transformation during this period. The

Reserve Bank of India has championed regulatory modernization, digital banking adoption, and inclusive finance initiatives. Meanwhile, private sector banks including HDFC Bank, ICICI Bank, Axis Bank, and Kotak Mahindra Bank have invested heavily in technology, branch networks, and service expansion. Yet questions remain about which business drivers truly move profitability amid this dynamic environment.

Our focus is empirical. Do non-performing assets, liquidity ratios, and interest margins predict returns on assets? Or does profitability depend more on revenue diversification, fee-based income, and cost control? Using panel regression test we understand which factors matter most and which add little explanatory power in the Indian context.The findings carry practical implications for Indian bank management. If cost efficiency and income mix are the primary drivers, bank management should prioritize operational improvement and revenue diversification. Our results contribute to this debate with direct empirical evidence from India's private banking sector.

Literature Review

Research on bank profitability has traditionally focused on credit risk, liquidity management, and interest rate margins. The logic is straightforward good asset quality protects profitability; poor liquidity management creates constraints; and favorable rate spreads boost returns. This framework has guided Indian bank regulation and management practice.

However, recent work has highlighted the importance of operational efficiency and revenue diversification. Studies across emerging markets, including India, have shown that efficiency metrics significantly influence bank profitability. Fijałkowska et al. (2018) demonstrated that cost management and operational performance correlate with financial returns. Xhani (2025) found positive relationships between efficiency-driven innovations and organizational performance.These findings suggest that how banks manage their cost base and diversify revenue streams may matter as much as, or more than, traditional risk metrics. Indian private sector banks investing in technology, process improvement, and fee-generating businesses (wealth management, investment banking, insurance distribution) have often achieved stronger profitability even with similar asset quality profiles.The question remains: within India's private banking sector, which factors dominate profitability? This study provides an empirical answer.

Setting Hypotheses

H_0: The independent variables have no significant association with profitability in Indian private sector banks.

H_1: The independent variables have a significant association with profitability in Indian private sector banks.

Data and Methods

Sample: Thirteen private commercial banks listed on the NSE/BSE, observed over ten years (2013–2022), yielding 130 panel observations.

Data Sources: Financial data were drawn from annual reports and regulatory filings of the banks, publicly available through stock exchange disclosures. Macroeconomic variables were sourced from World Bank and Reserve Bank of India databases.

Study Period & Observations

Method: Panel least squares regression with Return on Assets (ROA) as the dependent variable and bank-specific fundamentals as independent variables, including revenue composition (non-interest income, net profit margins), cost measures (operating expenses), and asset quality and liquidity ratios.

Table 1 : Variable Details

Types	**Variables**
Dependent	ROA
Independent	5 Green banking specific variable
Control	7 variable

Results and Discussions

Table 2 Panel Regression

OPERATING_EXPENSES___TOTAL_INC...	0.086126	0.040578	2.122479	0.0350
OPERATING_EXPENSES___TOTAL_FU...	-1.024506	0.383664	-2.670318	0.0082
NON_INTEREST_INCOME___TOTAL_F...	1.591745	0.335795	4.740226	0.0000
NET_PROFIT___TOTAL_FUNDS____	0.548772	0.065636	8.360907	0.0000

NET_NON_PERFORMING_ASSETS	3.97E-05	2.78E-05	1.427009	0.1551
NET_INTEREST_MARGIN___	0.007916	0.041621	0.190091	0.8493
NET_INTEREST_INCOME	7.63E-06	3.43E-06	2.223741	0.0272
INTEREST_INCOME___TOTAL_FUNDS ___	0.137720	0.105159	1.309627	0.1918
GROSS_NON_PERFORMING_ASSETS	-2.17E-05	1.29E-05	-1.685012	0.0935
CREDIT_DEPOSIT___	0.000241	0.001470	0.163791	0.8701
COST_OF_INCOME_RATIO___	0.000323	0.002300	0.140402	0.8885
CASH___DEPOSIT____	-0.000649	0.022350	-0.029038	0.9769
__OF_GROSS_NON_PERFORMING_AS ...	0.016061	0.020226	0.794104	0.4280
C	-1.663728	0.997892	-1.667242	0.0970

Model Summary Statistics

Statistic	**Value**	**Statistic**	**Value**
R-squared	0.699885	Mean dependent var	1.004375
Adjusted R-squared	0.678243	S.D. dependent var	1.118623
S.E. of regression	0.634524	Akaike info criterion	1.996866
Sum squared resid	83.74513	Schwarz criterion	2.240555
Log likelihood	-207.6490	Hannan-Quinn criter.	2.095231
F-statistic	32.33792	Durbin-Watson stat	1.945643
Prob(F-statistic)	0.000000		

The regression model strongly rejects H_0 (F-statistic = 32.34, $p < 0.001$), demonstrating that the independent variables have a significant collective association with profitability in Indian private sector banks. The model explains 70% of variation in ROA, indicating good explanatory power. Among the variables tested, non-interest income emerges as the strongest predictor (coefficient: 1.59, p = 0.0000), followed by net profit margins (coefficient: 0.55, p = 0.0000) and operating expenses (coefficient: -1.02, p = 0.0082), all statistically significant at the 5% level. Notably, net interest income shows marginal statistical significance (p = 0.0272) but with negligible effect size. In stark contrast, traditional credit-risk and liquidity metrics—net non-performing assets (p = 0.1551), net interest margins (p = 0.8493), credit-to-deposit ratios (p = 0.8701), and cash-to-deposit ratios (p = 0.9769)—are statistically insignificant predictors of profitability. These findings indicate that profitability in Indian private sector banks is driven primarily by business model factors such as fee-based income generation and cost discipline, rather than by loan quality or traditional banking spreads, suggesting that banks prioritizing operational efficiency and revenue diversification achieve superior financial performance.

Interpretation and Discussion

The regression models explain 69.98% of the variation in bank profitability, with strong overall significance. However, the significant predictors are limited to a specific set of variables.

Revenue diversification, measured by non-interest income as a share of total funds, emerges as the strongest positive predictor of ROA. Indian private sector banks that generate material income from wealth management, investment banking, insurance distribution, and fee-based services demonstrate notably higher profitability than those reliant on traditional lending spreads alone.

Cost efficiency, measured by operating expenses relative to total funds, is strongly and negatively associated with ROA. This confirms the expected relationship: higher cost burdens reduce profitability. Net profit margins also show a strong positive association with ROA, reflecting efficient conversion of funds into profit.

By contrast, traditional credit-risk variables (gross non-performing assets, net NPA, NPA ratios) are not statistically significant predictors of ROA. Liquidity and pricing metrics (credit-to-deposit ratios, cash-to-deposit ratios, net interest margins, interest income-to-total funds ratios) also fail to reach significance.

This pattern is notable among Indian private sector banks: profitability appears driven primarily by business model factors (revenue mix and cost structure) rather than loan-book quality or pricing discipline. The absence of significance for credit-risk variables suggests that day-to-day profitability is determined more by operational performance than by asset composition, at least within this cross-section of well-managed private banks.

These results have clear implications for Indian bank strategy. Private sector banks seeking to improve ROA should prioritize: (1) developing non-interest income streams through digital banking, fintech partnerships, wealth management services, and insurance distribution; (2) relentless cost discipline through technology automation and process optimization; and (3) converting revenue into profit through better pricing and portfolio management.

The weak explanatory power of credit-risk metrics may reflect that among listed private banks in India, asset quality differences are modest and risk management standards are reasonably consistent owing to strong RBI oversight. In such a context, marginal differences in profitability are driven by business execution, fee generation, cost control, and capital efficiency rather than by differences in asset quality. This pattern is consistent with mature, competitive banking markets where risk differentiation is smaller.

These findings align with observed trends in Indian banking. As interest margins compress due to regulatory measures and competitive pressure, successful private sector banks increasingly rely on fee-based services, operational efficiency, and technology-enabled service delivery to drive profits. The shift toward digital banking and fintech collaboration reflects precisely this imperative.

The Reserve Bank of India's emphasis on financial inclusion and digital innovation has accelerated this trend. Banks embracing technology and omnichannel service delivery gain cost advantages and unlock new revenue streams,precisely the factors our analysis shows drive profitability.

Conclusion

This study demonstrates that profitability in Indian private sector banks is primarily determined by revenue diversification and cost efficiency rather than by traditional credit-risk or liquidity measures. Banks achieving superior ROA do so through a superior business mix, more diverse income sources and disciplined cost management, rather than through risk arbitrage or pricing advantage. These findings have clear practical implications for Indian bank management and suggest that competitive advantage in private sector banking increasingly depends on operational and business model excellence. As the Indian banking sector continues to evolve, these insights underscore the importance of technological investment, service diversification, and operational discipline.

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