

Does location matter in IS research? A developing country perspective from India

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Abstract

This paper examines the question of doing information systems (IS) research from a location, particularly from a developing country like India. Our analysis reveals that IS publications from India are relatively few in number, though increasing in recent years; hardly focussed on context-specific issues and concerns; and are largely in lower-ranked journals. Using neo-institutional theory, we show that the reasons are dominantly coercive (measuring up to rankings and accreditation agencies) and mimetic (following leaders). Normative (influence of professional bodies) forces appear to counterbalance this by necessitating continuous improvement in research outputs and emphasising location-specific, impactful research. Institutional responses to these forces manifest in policies and mechanisms to operationalise them, such as resource availability, balancing teaching load with research expectations, promotion and tenure policies amongst others. We examine the paths by which more rigorous and relevant research, responsible to a location can be achieved, based on the insights from a series of talks given by eminent IS scholars. We opine that there is a need to consciously seek out such paths, perhaps by actively seeking collaboration with other disciplines and practitioners; establishing programmes of research; and building contextualised theories. We conclude with a relook at the underlying dynamics of the various institutional responses, recommended paths and some policy implications of our findings.

KEYWORDS

AIS India chapter, collaborative research, information systems research, institutional theory, research topics, rigour, relevance and responsibility

1 | INTRODUCTION

Doing research that makes significant impact on our societies continues to be a concern across management disciplines. 'IS scholarship must focus on building contextualised theories' and 'Indian IS researchers should seek to solve India's problems' were two strong views that emerged from a *Rendezvous with IS Researchers* weekly webinar series organised by the Association for Information Systems (AIS)—India Chapter (INAIS). These views echoed a clarion call for information systems (IS) research beyond rigour and relevance—towards responsibility to the location.

The seminar series spanned 12 weeks (in mid-2020) featuring a variety of presenter-researchers from different parts of the world, each showcasing a particular programme of their research and focussing on a dominant set of methods they chose to use for their work (Table A1). The scholars who presented their work had published in top IS journals, many of them had served in leadership roles in AIS, and some of them had served as senior editors of top IS journals. Their narratives prompted us to ask: how well is the potential of Indian IS Researchers being realised? What are the location-specific and institutional constraints that IS community members in India face, which hinder them from reaching their potential? What can be the corrective actions that can minimise these roadblocks, and engage the IS community in significant research? These are the questions that we address in this opinion article.

There are two reasons why we raise these questions. One, there is a belief that the scale of research output from Indian IS scholars is not proportional to their numbers. The rigour, relevance and responsibility of extant research from India too is not commensurate with what, we strongly believe, is the true potential of the Indian IS community, as a collective. Two, researchers in institutions in India face persistent pressures to publish in peer-reviewed journals. However, research incentives are skewed in favour of publication outlets that enable a quick acceptance, without deep or involved theoretical engagement. Incentives often discourage active and prolonged engagement to build a consistent body of research over a long period of time. Further, lack of such prolonged engagement diminishes the potential to generate programmes of research that are context-specific and relevant to local conditions and can in turn create meaningful impact on the larger environment around.

Rigour versus relevance in academic research has been an active debate in IS (Desouza et al., 2006; Straub & Ang, 2011; Wiener et al., 2018) and other management disciplines such as operations management (Sodhi & Tang, 2014), marketing (Madan et al., 2023), organisation science (Daft & Lewin, 2008) and management, in general (Hodgkinson & Rousseau, 2009). Along these dimensions, a panel discussion during ICIS 2005 advocated going beyond rigour and relevance, and including reverberation and responsibility as desirable characteristics of 'significant research' (Desouza et al., 2006). The panellists refrained from developing a singular understanding of what is significant IS research, and what is IS research responsible for. Interestingly, being responsible towards the environment, the third-world and society in general, were suggested by the scholars as necessary for significant IS research. These thoughts also resounded in ECIS 2017, where decoding the term 'impactful research' required a multi-dimensional view but being impactful requires an unambiguous link to real-world problems (Wiener et al., 2018). In our article, we define significant IS research as characterised by rigour, relevance and responsibility. We conceptualise responsibility along two dimensions: addressing problems situated in the country and developing contextual theories.

Our emphasis of location as an important element of context in IS research is consistent with the advocacy of scholars on IS research relevant to regions (Avgerou et al., 1999; Buhl et al., 2012) and in other areas of management research as well (Bruton et al., 2022; Rousseau & Fried, 2001). Traditions of IS research also evolve in different regions (Frank et al., 2008), based on demand for skills and knowledge, and pressures from institutions and peer communities. Avgerou (2008) showed that problems and the context of *developing* as against *developed* countries are

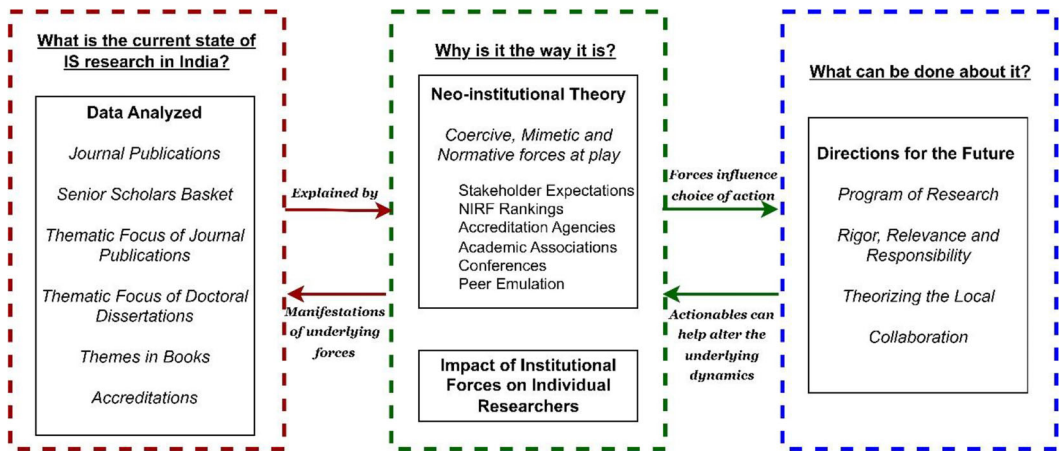


FIGURE 1 An overview of the paper.

distinctly different, and require separate attention. Scholars have also highlighted the need to develop contextualised theories where the different phenomenon studied include characteristics of the location as an integral part of the context (Avgerou, 2019).

Research is a prominent activity of IS academics around the world and the pressure to publish is growing in the Global South. Besides teaching, research acts as a key indicator of their performance as well as societal contribution. Publications in academic and practitioner journals is one output of research. Though it captures but one end result, and could magnify rigour and underplay relevance and responsibility (e.g., Corley & Gioia, 2011), it is measurable, albeit imperfectly. In this paper, we treat publications from research as an indicator of research effort, and the more publications in leading journals there are, for an individual, an organisation or a country, the better is the research. This assumption was implicit in our webinar series, where we invited scholars who had published in the leading IS journals. In this article, we use journal ranking as a measure of rigour of research, and research themes (topics) to signify relevance (as themes with implications for practice) and responsibility (themes addressing problems situated in India and developing contextual theories) of IS research to India. We acknowledge the inadequacy of both measures—publications and journal rankings in reflecting the true value of research, but our use of these is primarily to advance our understanding of the underlying dynamics in IS research in the Indian context. We further employ neo-institutional theory to understand the different context-specific external pressures that influence the choices made by India's IS community. A diagrammatic view of this paper is presented in Figure 1.

In order to address our questions, we structure an outline as follows: in the next section we provide data on the extent and positioning of IS research from and in India. This is followed by an analysis of the current environment of IS research in India and the institutional responses thereof, relying on neo-institutional theory as a framework. In the subsequent section, we draw insights from the narratives of some prominent IS researchers and identify certain strategies that IS researchers in India can adopt for responding to the forces at play while conducting significant IS research. We conclude with implications for individual researchers, policy guidelines for academic institutions, as well as for the government, to foster high-impact, rigorous, responsible research, specifically in the IS area but also extendable to other social sciences.

2 | IS RESEARCH IN INDIA

In a review of IS research in India, Bandi et al. (2014) found that research conducted by Indian academia was lacking in numbers, as compared to their US or European counterparts. They attributed this lack largely to the heavy

teaching focus of many Indian institutions. Their study also found that the situation is changing as institutions benchmark themselves against international business schools. Further, the scope of IS topics that were the focus of research in the leading business schools in India remained limited to a handful, as compared with the wide breadth of topics studied by the IS field world over. They also found significant difference in the scale of publications between the leading schools that emphasised research in comparison to schools that emphasised teaching management and technology (Bandi et al., 2014).

The situation with business research in India overall, and not just IS research outlined in Bandi et al. (2014), appears to be similar. Reddy et al. (2016) found that Indian research lags far behind China, United States and the United Kingdom in metrics such as citable documents, number of citations and H-index. Reddy and others also found that in international rankings, where total output in business research is compared, India ranks 9th, whereas United States is first, and China second. Their investigation indicated that India lags behind China in parameters such as the number of faculty serving on editorial boards, number of special issues edited by researchers, and the number of higher category journals published from the country. Though management research had grown in India, in relative terms, it had grown at a much faster rate in China.

It also appears that for business research in India, the overall rigour and ranking of journals targeted by Indian researchers (as measured by commonly accepted international rankings) leaves much to be desired. A study on research productivity in India's management schools between 1968 and 2015 reported that, of the 1416 faculty members in the 32 B-Schools of India, only 783 (i.e., 55.37%) had at least one publication figured in one of the three journal databases of NUS, ABS or Scopus (Sahoo et al., 2017). A considerable majority of articles published by authors located in India are either in 'C' category or unrated journals (going by the lists created by the Australian Business Deans Council (ABDC)¹ Journal Quality List and Chartered Association of Business Schools (ABS)² journal guide). In the subsections below, we analyse the authorship, followed by key thematic areas in which papers have been published by authors from India, in IS journals. However, we wish to point out that although we present a similar analysis of books later in the paper, unlike journal articles, data about books is not available in a searchable database and is therefore not as exhaustive as our analysis of journal articles. To that extent, our analysis below may be viewed as indicative of research and publishing potential rather than as an all-encompassing measure of academic research output. We also acknowledge, much in sync with Aguinis et al. (2020), that the rigour and relevance of articles published in lower ranked journals or as book chapters are not necessarily lower than those published in higher category journals. In making outlet choice decisions, researchers often consider a variety of factors, rank of the journal being merely one of them.

2.1 | Journal publications

We chose the Scopus database for analysing papers published in various *Management Information Systems* (MIS) journals across the years 2001–2023. Although Scopus does not provide an explicit definition of MIS,³ our understanding from the list of journals is that it includes journals that publish articles on information technology, information systems, library and information sciences, IS-related aspects in different business functions, technology policy-related aspects, and so on. We ignored years prior to 2001 since the number of publications were scanty and did not help generate any significant insights. We used Scopus' classification of 186 journals as belonging to the MIS discipline, although many of the journals in this classification can well be considered to be at the periphery of MIS, as a discipline. We mapped the list of papers published in these journals with the journal rankings of ABDC. We chose ABDC given that it is the most common ranking used by a large number of Indian management institutions and its

¹Australian Business Deans Council: <https://abdc.edu.au/>

²<https://charteredabs.org/academic-journal-guide-2021/>

³Scopus uses an All Science Journal Classification system which is done by their in-house experts by looking at the aims and scope of the journal, and the content published in the journal.

TABLE 1 Count and proportion of papers in journal categories.

Journal category based on ABCD list	(a) Count of papers with at least one author located in India	(b) Count of papers where all authors are in India	(c) Count of papers where authors located in India collaborate with foreign authors (a) and (b)	(R1) Category-wise papers with all authors in India as a % of category-wise papers with at least one author in India R1 = (b/a)	(R2) Category-wise % of papers with all authors located in India R2 = (b/d)	(R3) % of partial Indian author affiliation across all categories R3 = (c/e)
A star	397	156	241	39.3	2.4	9.8
A	1783	1056	727	59.3	16.5	30.0
B	1519	1105	414	72.8	17.2	17.1
C	5146	4099	1047	79.7	63.9	43.2
Total	8845	6416 (d)	2429 (e)	72.5	100	100

categories are recognised by the National Institutional Ranking Framework (NIRF) (Rajya Sabha, 2020). Despite the challenges in using a journal ranking list as an indicator of research rigour and relevance, we chose to do so given that such a system is being increasingly institutionally administered and socially legitimised in the Indian academic environment. We delineate the limitations of doing so later in the paper.

A total of 8845 papers published in the time period 2001–2023, across the 186 MIS journals have at least one author with an affiliation in India—academics and practitioners included. Of these, 2429 papers have been published in collaboration with authors from outside India; all authors of the remaining 6416 papers are located in India (see Table 1).

Two findings appear interesting here. One, percentage of publications in A* journals where all authors are located in India is as low as 2.4%. However, this percentage for A* category where author(s) located in India collaborated with foreign author(s) is 9.8% (column R3 in Table 1). On the other hand, 63.9% of the papers where all the authors of the paper are located in India were published in C category journals (column R2 in Table 1), and this number is 43.2% where author(s) located in India collaborated with foreign author(s) (column R3 in Table 1). Amongst papers published in A* journals with at least one author located in India, 60.7% are with collaborators from outside India but only 20.3% of the papers published in C category journals are with collaborators from outside India. Overall, these measures clearly indicate that one, there is a larger proportion of papers in C-category journals solely by authors located in India; and two, when authors located in India collaborated with foreign authors, they target A* or A categories of journals.

We visualise publication trends in Figure 2a, which shows the change in category wise number of papers where all the authors of the paper were from India and Figure 2b which maps the change in category-wise number of papers where authors from India collaborated with authors from outside India. The timelines of business school accreditation have also been shown in the graphs, the discussion of which we defer to the Section on ‘Coercive Forces and Institutional Responses’. The upper bounds of the two variables on the vertical axes are distinctly noticeable. The pattern in Figure 2a also shows the significant steep growth trend in C category journal papers by authors located in India although the number of papers in A*, A and B categories are gradual in their increasing trend. Interestingly a comparison with papers written in collaboration with authors located outside India paints a different picture especially when one considers the increasing trend in number of papers in A*, A and B categories. Figure 2b highlights this behaviour.

A further drill down revealed more insights. For one, when choosing to collaborate with authors from outside India, the choice of journal categories seems to differ (columns R3 vs. R2 in Table 1). This possibly indicates that the pressure to publish in high-ranked journals is higher when Indian IS scholars collaborate for research with scholars

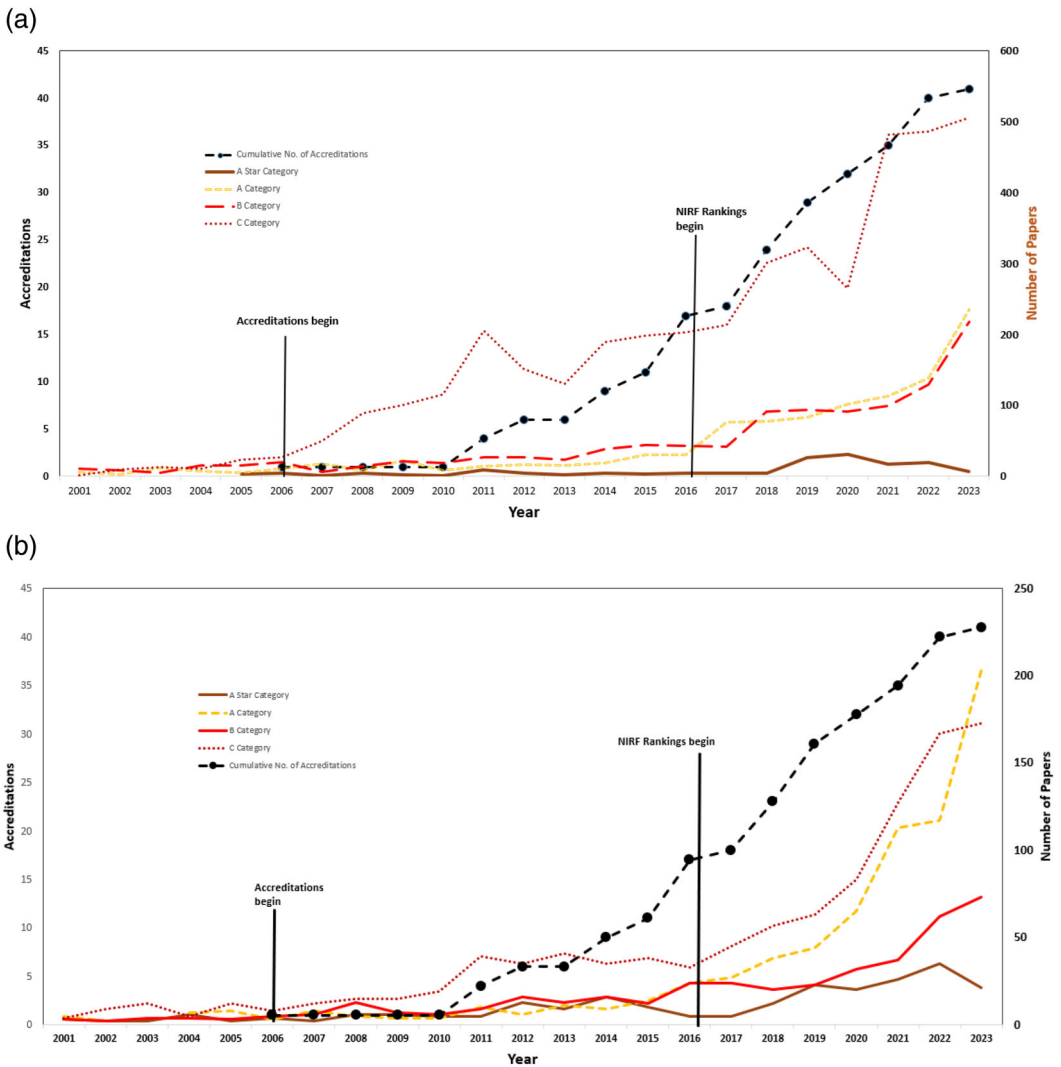


FIGURE 2 (a) Number of papers published solely by authors located in India alongside number of business school accreditations. (b) Number of papers published in collaboration with authors from outside India alongside number of business school accreditations.

outside of India. The top six countries from where collaborators hailed included United States, United Kingdom, China, Australia, Canada and Singapore. This also reflects the role of mentorship by IS scholars from other countries for publishing research in journals that are ranked higher. Findings from other countries also highlight the need for research mentors as a major challenge in publishing in higher ranked journals (e.g., Okoduwa et al., 2018). Recent initiatives such as the ICIS Mentoring programme (initiated in 2021), Trending Topics Workshop by Information Systems Journal (initiated in 2020) and Scholarly Development Academy by MIS Quarterly (initiated in 2021) are systematic ways to address this need.

Moving beyond the ABDC categorisation of journals, we also draw the reader's attention to the top 25 journals (in terms of number of papers published by authors located in India)—with and without collaborations with authors located outside India. Some rank positions are highlighted in Table B1 with column (1) listing journals where authors from India have published having no collaboration with authors outside India and column (2) listing journals

where authors from India have published in collaboration with authors outside India. While the top three positions are occupied by the same journals in both lists, other journals such as *Decision Support Systems* or *International Journal of Information Management*, *Information Systems Frontiers*, seem to have quite different positions in the order. Journals such as *Information Technology and Development* [ranked 29 in list (2) but 58 in (1)], *Technology in Society* [ranked 19 in list (2) but 28 in list (1)] and a more niche journal, *Electronic Journal of Information Systems in Developing Countries* [ranked 52 in list (2) and 85 in list (1)] should have ideally been interesting target journals for authors located in India, given their developing country focus (Avgerou, 2008), but, curiously, they are not.

In our final analysis of journal publications, we also looked at papers published in AIS Senior Scholars List of Premier Journals of 11 journals (Scholars 11) and found that a total of 191 papers have been published by authors from India across 2001–2023 (Table 2). Scholars 11 journals have over time established their credibility and contribution to the information systems discipline (College of Senior Scholars, 2023; Lowry et al., 2013). They also follow an intense review process, publish rigorous academic research and in-depth thought-leadership opinion articles. In 2023, Senior Scholars' Basket was expanded from the earlier eight journals to include three journals—*Decision Support Systems*, *Information & Management* and *Information & Organization*. Although this inclusion was only effected in 2023, we show data for papers published in these three journals since 2001 in Table 2 in order to maintain consistency.

A drill-down analysis reveals more interesting findings. Amongst the 191 papers published in Scholars 11, there have been 52 papers solely authored by researchers located in India of which 48 have been in the three journals recently included in the Scholars 11 (34 in *Decision Support Systems*, 12 in *Information & Management* and 2 in *Information & Organisation*). However, there has been an increasing trend in papers published in AIS basket by authors located in India in collaboration with co-authors from other countries (total in Table 2).

2.2 | Research themes

2.2.1 | Thematic focus of journal publications and doctoral dissertations

Our inquiry into IS research in India shows that it is largely location-agnostic, that is, the topics and methods could be of use anywhere in the world, and not specifically selected for Indian conditions. Barring areas such as e-governance, which have a focus on Indian projects and Indian socio-economic milieu (De', 2009), most other research focusses on theoretical framing of widely accepted lenses in IS, such as TAM and its variants. Further, much of the recent research also relies on data that is obtained from large multi-national platforms (like Reddit and Yelp), social media data (such as Instagram, Twitter, Facebook or LinkedIn) or data obtained from specifically Western sources (like Comstat). It also appears that institutional mechanisms have not yet been tuned to augment research rigour, relevance and responsibility, an aspect that we discuss later in the paper.

Two key sets of data substantiate our arguments. One, we analysed the themes of the journal papers where all authors are located in India. We used bigram topic modelling to extract theme occurrences, based on the abstract of the papers across journal rank categories. We started with a dataset of 6261 papers of which 75 papers did not have complete abstracts and were therefore excluded. Table C1 summarises the 30 most frequently studied themes across the different journal-categories. For ease of representation and keeping in mind that the number of papers published solely by authors located in India in A* and A categories are relatively low, we have combined these two categories. We restrict our analysis to bigrams which are relevant as research themes or key methods and techniques. Our findings revealed a dominance of themes that were highly technical in nature, focussing primarily on design, development and application of different emerging technologies; enhancements and improvements to specific computing techniques and research aimed at generating improvements to existing analytical methods. In other words, the emphasis on the IT artefact and IS development (Sidorova et al., 2008) was stark in comparison to the other IS research streams such as IT and organisation, IT and groups, IT and individual, IT and markets and IT and society. We drilled down on the 52 papers published in the Senior Scholars' Basket of Eleven where all authors were

TABLE 2 Papers published in AIS Senior Scholars' Basket where at least one author is located in India.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
EJIS	1								2				1									4	
ISJ																	2					1	
ISR							1	2	1	1	1	3	2	4	1	1	1	1	1	1	4	3	2
JIT						1	1	1			1	1	1	1	1							1	1
JMIS	2	1	1	1	1						1	1	2	2	1		1	1	2	2	1		1
JSIS	1				1		1					1	1										
JAIS																					1	1	1
MISQ									1		1	1	1	1	1	2		1				1	
DSS*	1		2	4	4	2	3	2	2	5	8	3	6	3	2	4	1	1	5	9	6	7	6
I&M*	1	1	1	1	1	1	1	1	1	1	2	2	2	1	2	2	3	1	1	5	4	5	3
I&O*									1			1	1	1								2	
Total	4	1	1	2	4	5	1	5	6	5	7	15	8	17	9	7	4	6	12	18	16	25	13

*These three journals were included in the Senior Scholars List of Premier Journals in 2023. However, we show data of these three journals for all 20 years in order to maintain consistency.

TABLE 3 Most frequently studied topics in doctoral dissertations in 13 management schools.

Topics	Term frequency	Document frequency	IS research stream (Sidorova et al., 2008) ^a
Recommender systems	67	9	IT Artifact and IS Development
Information security	34	8	IS Development
Business process	31	7	IT and Organisations
Machine learning	28	5	IS Development
Knowledge management	27	4	IT and Organisations
Big data	24	3	IS Development
Social media	22	3	IT and Individuals
Privacy concerns	21	3	IT and Individuals
Sentiment analysis	17	2	IS Development
Supply chain	15	2	IT and Organisations
e-Government services	15	2	IT and Society
Combinatorial auction	14	2	IT and Markets
Distributed computing	13	2	IT Artifact and IS Development
IT investment	12	2	IT and Markets
IT deployment	12	1	IT and Organisations
Collaborative technology	12	1	IT and Groups
Project performance	11	1	IS Development
Disaster management	10	1	IS Development
Advertising markets	10	1	IT and Markets

^aWe make two changes to Sidorova et al.'s (2008) first-order research themes. We add IT artefacts as an explicit theme along with IS development given the significant focus on emerging IT. Also, although they do not categorise IT and society as a separate theme, we have included this theme to highlight the theme's growing importance, particularly in developing countries. We use the same classification in Table 4 as well.

located in India and found that only 11 papers used data from or studied themes or problems that were specific to the Indian context.

Second, we examined the titles and abstracts of doctoral dissertations in 13 established management institutions and departments specifically looking at research in the area of information systems. Although this analysis is by no means exhaustive, we believe it is indicative of the preferred areas and topics of interest amongst scholars over a reasonably long timeframe. We used bigram topic modelling here as well, to extract topic occurrences, based on the title and abstract, from a total set of 169 doctoral dissertations completed at these management institutions.

Table 3 summarises the 19 most frequently studied topics, along with their term frequency (frequency in the whole corpus) and document frequency (number of dissertations having the topic). Following the IS research streams in Sidorova et al. (2008), we find the top five topics skewed towards IS development (recommender systems, information security and machine learning). Overall, the topics are distributed amongst IT artefact and IS Development (8), IT and Organisations (4), IT and Markets (3), IT and Individuals (2), IT and Society (1) and IT and groups (1). Thematic analysis of doctoral dissertations has been scarce in IS research, and we could not find a similar study from another country for the purpose of comparison.

2.2.2 | Thematic focus of books

We chose to understand the scale and diversity of books published by Indian IS Scholars on themes in and related to information systems and technology. Towards this, we sourced the book list of five well-established publishing

groups with significant business operations in India, including—Springer, Sage, Wiley, Routledge-Taylor & Francis and Prentice-Hall. Our analysis is partial given that information about books published across years, particularly those ‘out of print’, is not readily available and categorisation of books as belonging to the information systems discipline is not consistent across publishers. We excluded undergraduate and graduate text books whose primary purpose was to provide introductory ideas on the different topics, particularly IT artefacts, their applications and impact. We also excluded edited volumes which were primarily proceedings of conferences, although we included commissioned edited volumes that brought together research papers. We removed duplicates and multiple editions of the same books. Our final data on books published by authors from India on IS related themes included 120 books. Table 4 summarises our analysis of the themes of books excluding ‘out-of-print’ editions. We have included only those books where all authors are located in India. We have drawn upon the Sidorova et al.’s (2008) IS streams to categorise the dominant focus of the books, using the 5-factor labels recommended by them. However, we include a brief description of the themes and set of lower-order terms (table A5 on page A8 of Sidorova et al., 2008). Our analysis reveals that books, like doctoral dissertations and journal papers, are dominated by location-agnostic themes with very few that are specific to the Indian context, primarily in the stream—IT and society.

A limitation of the prior efforts to classify IS research as proposed by scholars such as Sidorova et al. (2008), is that they rely on descriptive categories that emerged as factors from extant research themes. A more appropriate classification scheme for developing countries would be the normative categories proposed by Avgerou (2008) and Heeks (2018). Whereas IS innovation and organisational change as themes set for developed nations would still be relevant to developing nations, these themes also need to be looked through the socio-economic contextual lens for developing localised theories (Avgerou, 2008). Furthermore, as several challenges constrain digital economies in developing countries from reaching their development potential, IS research agenda must prioritise mapping digital inequality, supporting digital labour, feminist digital economics and pro-equity interventions (Heeks, 2018). However, we found little evidence from the themes of IS research in India, related to any of these priority areas, except for the topics of *e-governance*, *e-government services* (Table 3 and Table C1) and to some extent *ICT for development and social implications of ICT* (Table C1). These themes seem grossly underexplored despite the pertinent role information technology and digital environments play—potential as well as actual, in reconfiguring the individual, social and organisational activities in such emerging economy contexts. On the contrary, most topics with high frequency in Table 3, Table 4 and Table C1 seem to focus more on IT artefacts, emerging technologies, technology-enabled problem-solving techniques, than on a problem, anomaly or curiosity that relates to India.

TABLE 4 Dominant IS themes in books published by authors located in India.

IS Stream	Description and topics (adapted from Sidorova et al., 2008)	Frequency*
IT and Organisations	Implications of IT use for organisations; strategic role of IT; impact of IT investments on organisational performance, and the effect of IT on business processes.	43
IT Artifact, IS Development	IT, IT artefacts, how they are developed; focussing on system functionality and/or the design of different types of systems; software development methodologies	99
IT and Individuals	Psychological aspects of human-computer interactions; individual's technology acceptance; use of IT artefacts for individual benefits; HR issues in IS; computer self-efficacy	6
IT and Markets	Impact of IT on interorganisational relationships and markets; electronic data interchange; platforms; marketplaces; use of IT artefacts in digital ecosystems	6
IT and Groups	Interaction of groups with IT; types of systems used to support group work; systems that influence group dynamics or trust in IT-enabled relationships	4
IT and Society	Impact of IT on public management; Use and impact of IT on social interactions; e-governance; digital society	9

*Some books have been classified across streams due to the nature of the topic dealt with.

From the exploratory analysis of the themes of journal papers, doctoral dissertations and books, there seems to be a pertinent need to further contextualise research issues and a need to increase focus on location-specific impactful research problems, an issue that is also accentuated by the institutional mechanisms at play in the Indian academic environment. Our analysis below reveals the external forces that shape institutional responses to research priorities, which we believe, are in turn reflected in the choices of the Indian IS Scholars.

3 | SITUATING IS RESEARCH IN INDIAN INSTITUTIONS

As our analysis of publications by authors located in India in the previous section indicated, there is a shortfall of significant IS research from India. It is important to closely examine the reasons for the same in the larger context of Indian academic institutions. The external forces that act upon Indian institutions and therefore IS academia involved in IS research and the mechanisms by which they respond to those forces show a certain misalignment, albeit inadvertently, which has over the years, disincentivised rigorous and locally relevant IS research in India. We draw upon neo-institutional theory to examine the external forces that shape Indian management institutions, and take recourse in the insights generated to formulate plans for future IS research in India.

Neo-institutional theory posits that organisations in a particular field of recognised institutional life experience a push towards homogenisation. Certain forces from the Institutional environment push and shape the structure of the organisation for achieving legitimacy, and not necessarily for efficiency as in Weber's classical institutional theory (DiMaggio & Powell, 1983). There are three types of environmental forces identified in neo-institutional theory, coercive (arising from political, legal or regulatory requirements), mimetic (as response to uncertainty) and normative (associated with professionalism), that act on institutions, be they individuals, groups, organisations or nation states. Neo-institutional theory also argues that '...highly structured organisational fields provide a context in which individual efforts to deal rationally with uncertainty and constraint often lead, in the aggregate, to homogeneity in structure, culture, and output' (DiMaggio & Powell, 1983, p. 147). These forces would ultimately produce isomorphic organisations. Isomorphism here refers to a state of homogeneity resulting from constraining processes that forces one unit in a population to look like others facing the same environmental conditions. Here, formal and informal coercive pressures arise from other organisations, regulators and societal expectations. Mimetic pressures set in when organisations function under environmental uncertainty and the easiest resort is to mimic admired peers. Finally, normative pressures further shape an organisation's structure and practice, due to professionalism that is created by networks, educational institutions and accompanying norms and sanctions.

Our choice of neo-institutional theory as the lens to situate IS research in India stems from multiple reasons. First, unlike classical institutionalism which emphasise formal institutions, rules and organisational efficiencies, neo-institutional theory centres around legitimacy, social norms, placing greater emphasis on change and adaptation. In particular, the theory seeks to explain environmental pressures that shape the structure, and consequently the homogenisation (amongst peers), culture and output of scholars across institutions. As IS Scholars are situated in an institutional environment consisting of peer organisations, regulatory bodies, accreditation agencies and other professional bodies, this theory enables us to identify the environmental forces that constrain institutions and in turn hinders IS scholars from reaching their potential. Drawing upon neo-institutional theory also allows us to recognise that such constrained production of IS research is contingent upon historical legacies, power structures as well as cultural norms that emerge from the actions of individual actors and their interactions that shape institutional dynamics. From our collective academic experience, and our numerous conversations with colleagues in management institutions and business schools in India, the scale, scope, thematic-focus and publication choices of IS scholars in India, can be explained as their response to the many forces in their institutional environments. Finally, we sense manifestations of isomorphism in the internal structures and practices of business schools and management departments in India. The dominant role played by the government early-on in establishing management institutions of national importance (the earliest IIMs and the National Institute of Industrial Engineering were established

in 1960s; industrial engineering and management departments in some of IITs dates back to early 1970s) and more recently, creating national-level ranking mechanisms appears to pave paths for institutions to mimic the better performers. Neo-institutional theory, therefore, is useful to analyse institutional and individual responses to external forces that shape significant IS research in India, as 'organisational decision makers learn appropriate responses and adjust their behaviour accordingly' (DiMaggio & Powell, 1983, p. 149). Given that institutions often face conflicting pressures from different stakeholders, they may choose to comply, avoid or manipulate depending on their specific circumstances and the nature of pressures, but aiming to maintain their social acceptance and credibility in the eyes of key stakeholders (Oliver, 1991).

3.1 | Institutional responses to coercive forces

Coercive forces could be both formal as well as informal, 'exerted on organisations by other organisations upon which they are dependent and by cultural expectations in the society within which organisations function' (DiMaggio & Powell, 1983, p. 150). In India's business school setting, these forces could be exerted by common legal environment for education, regulatory bodies such as the All India Council for Technical Education (AICTE) and the University Grants Commission (UGC), global business school accreditation bodies like the AACSB, EQUIS and AMBA and the more recent government initiative, the National Institute Ranking Framework (NIRF)⁴ for the ranking of educational institutions of India. We examined the impact of NIRF and the international accreditations, as there has been a growing adoption of these by business schools in India. Our findings indicate that there has been a steep increase in the number of papers published post-2016 when the NIRF rankings began (Figure 2a,b).

Disciplined process adherence has helped Indian business schools attain international accreditations such as AACSB, EQUIS and AMBA⁵ for educational quality. Table 5 shows the growth in the number of accreditations (see also Figure 2a,b, left vertical axis). Although the number of unique institutions which are accredited by any of these three agencies remained at 30 as of 2023, an increasing number of private business schools are seeking accreditation (Column 2 in Table 5).

In IS research, coercive forces do not appear to have had attention-worthy influence in ensuring rigorous, relevant and responsible research although they have had a major influence on the scale of IS research itself. Following the guidelines of the Ministry of Human Resource Development (MHRD) (now Ministry of Education, MoE) demanding enhanced research for faculty recruitment and promotion in Indian higher education institutions, there has been pressure on institutions and individuals in institutions to focus more on research. This mandate applies to the IS discipline as well. In the last few years, the government's NIRF has added another impetus to improve research. This initiative did serve to boost research output, where some measures show a 38% increase (Kumar et al., 2019). To the best of our knowledge, NIRF uses number of publications as a measure of research performance of a school, and does not differentiate research output based on impact and relevance.

Accreditation agencies, on the other hand, have allowed business schools to define their own benchmarks in terms of publication quality and quantity, without any deep mandates on rigour, relevance and responsibility. However, such benchmarks are often set in consultation with peer review teams consisting of faculty members from institutions across the world. While on the one side, such flexibility in defining the metrics accommodates the diversity and specificities of the individual management disciplines, on the other side, the emphasis on universalisation and innate need for legitimacy sets in motion forces that demand convergence (Engwall, 2007; Latusek & Hensel, 2022).

⁴NIRF uses a methodology to rank higher education institutions across the country through five parameters which reflect Teaching and Learning, Research, Graduation Outcomes, Outreach and Inclusivity and Peer Perception.

⁵Association to Advance Collegiate Schools of Business (AACSB), EFMD Quality Improvement System (EQUIS) and Association of MBAs (AMBA) are three major international business school accreditation bodies.

TABLE 5 Number of accreditations.*

Year	Total no. of accreditations (1)	No. of accreditations by private institutions (2)	No. of accreditations by public institutions (3)
2006	1	0	1
2007	1	0	1
2008	1	0	1
2009	1	0	1
2010	1	0	1
2011	4	2	2
2012	6	4	2
2013	6	4	2
2014	9	5	4
2015	11	7	4
2016	17	9	8
2017	18	10	8
2018	23	14	9
2019	29	17	12
2020	32	19	13
2021	35	20	15
2022	40	22	18
2023	41	23	18

*Some institutions have more than one accreditation. We therefore present count of accreditations rather than count of institutions.

3.2 | Institutional responses to mimetic forces

In addition to coercive authority, ‘uncertainty is a powerful force that encourages imitation’ (DiMaggio & Powell, 1983, p. 151). When an organisation faces an uncertainty with ‘ambiguous causes or uncertain solutions’, then mimicking or modelling on another desirable, more legitimatised organisation makes economic sense. Institutions may choose to mimic another more successful peer (vertical emulation) or a ‘market leader’ in order to achieve legitimacy or with the hope that such a behaviour may increase availability and quality of resources—financial, people or reputational. More importantly, such imitation instils an aspirational image and identity amongst the institution’s internal and external stakeholders (Labianca et al., 2001). Some others may mimic peer institutions which are similar in market position or other institutional performance criteria on behaviours (horizontal emulation), which may be perceived to have resulted in benefits of a certain kind. Kothiyal et al. (2018) attribute such behaviours amongst Indian business schools to the phenomenon of ‘business school globalisation’ decoded as researchers in these schools perceiving a distinctive position of alterity, but the sense of ‘other’ leading to ‘fundamental ambivalence that results from seeking to establish and maintain a sense of self’ (p. 147). Vakkayil and Chatterjee (2016) argue that such globalisation can take one of four routes—drift (through accreditations); infiltration (such as programme standardisation); replication (through alliances, conformity); expansion (by making local distinctiveness salient at the global level).

Some of the mimetic isomorphic tendencies may have also resulted from the coercive forces at play. Isomorphic forces of ‘the three types intermingle in empirical setting’ (DiMaggio & Powell, 1983, p. 150). For example, when the Government of India established the new set of Indian Institutes of Management (IIMs), they persuaded the older ones at Ahmedabad, Bangalore, Calcutta, Lucknow, Indore and Kozhikode to mentor the newer IIMs. Some of the

policies, extent of emphasis on research, interdisciplinarity and so on were therefore akin to those in the mentor institutions and have, over the years evolved to give way to morphed avatars.

In addition to national institutions and departments for management education set up by the Indian Government, there has been a proliferation of private business schools in India post 1980s. However, only a few of these schools contribute significantly to research output from India. A handful of elite private business schools, such as the Indian School of Business, which was structured on the American model of business schools, are increasingly positioning themselves as research-intensive institutions. Although most of the other private business schools have in the past tried to mimic Indian Institutes of Management (IIM) in structure and practice, evidence of significant IS research (using higher category journal publications as a proxy) in this category of private schools too is minimal. However, we anticipate a gradual but perceptible change in this trend given that private schools, in their attempt to retain faculty, succumb to the mimetic and coercive forces at play including work norms, research incentives, ranking and accreditation.

3.3 | Institutional responses to normative forces

Normative pressures arise out of professionalisation, ‘the collective struggle of members of an occupation to define the conditions and methods of their work...’ (DiMaggio & Powell, 1983, p. 152). Normative pressures thus cause organisations to become isomorphic in the hope of achieving legitimacy. Normative forces influence an organisation through professionalisation of the field, where professional bodies set the norms for a profession (Hsu et al., 2012). For example, the American tenure-track system of higher education has been influenced by the normative structures of academia as a profession (Scott, 1995). Furthermore, the impact of normative forces could also be context dependent (Hsu et al., 2012).

A doctoral degree in a relevant management field with credible publications have become the norm of the tenured academic professional in an established business school in India. In public management institutions in India, the Ministry of Education guidelines require candidates to have doctoral degrees in respective disciplines except in the case of Professors of Practice who are in turn expected to be professionally qualified through many years of corporate or policy work experience in their areas of specialisation. Such professionalisation has in turn set workload expectations from academically qualified faculty members, which in premier management schools are strongly tied to research, and for faculty members with industry experience, expectations are tied to teaching and training. The former are socialised in their disciplinary world views through their advanced doctoral training and the latter through their professional work and interactions. The tight-knit networks that are created through the socialisation process aid the emergence of norms which are then enacted as legitimised behaviour by the constituent individuals of the network (Wilson & McKiernan, 2011).

Normative forces, which are also contextual in nature, have acted on IS research in India through three sets of professional bodies (i) accreditation agencies like the EQUIS and AACSB; (ii) academic associations like the AIS and INAIS; and (iii) academic conferences and workshops. AACSB in its task force for spotting gaps in management research has revisited the rigour versus relevance debate (AACSB, 2012) and in more recent guiding principles included ‘societal impact of intellectual contributions’ as a standard for impact of thought leadership and scholarship of faculty members (AACSB, 2020). Research output continues to be an essential requirement for a faculty member to be academically qualified in a school that aims for accreditation. Accreditation bodies have attempted to temper isomorphic tendencies amongst Indian schools by drawing their attention to mechanisms by which research output can be continuously improved, from faculty recruitment to re-designing incentive mechanisms. Although rankings more commonly performed this role of mediating institutional isomorphism amongst higher education institutions (Wedlin, 2007), it appears accreditation agencies too tend to achieve similar outcomes through political power and legitimacy amongst peers (Abraham, 2024; Wilson & McKiernan, 2011).

Homogenising tendencies have also often been effected by professional associations in different management disciplines (Engwall, 2007). While they do play an important role in bringing together scholars and researchers in a particular area, there is an innate tendency to impose a certain degree of convergence. However, such collectives also play an important role of building external trust-worthiness through the various norms and sanctions that are created through time (Latussek & Hensel, 2022). A distinct landmark in the professionalisation of IS in India is the founding of the Association for Information Systems (AIS) India Chapter (INAIS) in 2016, under the supervision of the AIS, the global body. INAIS is enabling IS conferences in India, including the International Conference of Information Systems (ICIS), 2020 and 2023 apart from numerous domestic conferences and workshops. It also hosted the global seminar series mentioned earlier, *Rendezvous with IS Researchers*, connecting India's IS community with accomplished IS scholars from all over the world. In bringing the domestic community together under the umbrella of a professional association, INAIS also been able to create a forum for debates surrounding the importance of location-specific research, indigenous theories and their underutilised potential for publishing in higher-ranked journals.

As a large number of IS scholars from India get exposed to the norms of significant IS research discussed in global IS conferences and debated in the different IS academic forums, they will increasingly be able to collectively assimilate and internalise such norms. Such an exposure would also ensure IS scholars develop the capability and perceive the need to embark upon location-specific impactful research that can set them apart while allowing them to fulfil their broader responsibility towards their context. However, such an outcome can hardly be left to serendipity. On the contrary, Indian IS researchers have the immense role of emphasising the need for alternative perspectives and building indigenous theories amongst peers in the community (Khene & Masiero, 2022). Conscious concerted efforts towards removal of institutional barriers and systematic institutional facilitation are important for individuals to be able to leverage normative mechanisms in achieving dominance of significant IS research. In the following section, we particularise the many facets of the influence of institutional forces discussed thus far on the individual academic.

3.4 | Impact of the institutional forces on the individual

Our analyses of IS research from and in India (please refer to earlier section on 'IS Research in India') based on the scale of publications, ranking of journals published in, and research themes showed that there is a shortfall of significant IS research in the country. As demonstrated in the previous section, neo-institutional theory throws light on the mechanisms by which institutions create practices and norms, which in turn influences choices made by IS scholars. An institution's implicit emphasis and explicit efforts in creating a policy and an environment that fosters significant research is path-dependent (historical) while also being contingent upon factors such as resource availability and the current cultural milieu. But it will also be conditioned by the institution's ability to develop and sustain the requisite complementarities, such as brand and reputation, teaching load, support and facilities available, promotion and tenure framework, access to corporate or government networks and, most importantly, political legitimacy and institutional governance (Hicks, 2012). Institutional context and policies greatly influence a faculty member's research choices. When the institution or department is seen to be more supportive, fair and cooperatively managed, individual research productivity is more likely to be higher (Ramsden, 1994). Altbach (2014) argued that in the elite Indian institutions, research and teaching productivity are more the result of culture and tradition rather than a reward system. This has undergone significant changes particularly in management institutions where monetary incentives for research outputs have become a norm. Such incentives are seen to increasingly drive expectations amongst potential faculty recruits while influencing research outlet choice decisions of faculty members.

In many Indian management institutions, the ranked journal list which serves as the reference point is an international journal categorisation (such as ABDC or the ABS list), the use of which is expected to promote internationalisation, but often does so at the cost of grading domestic journals lower. The unfortunate outcome is one of

de-humanised performance indicators (Sutton, 2017), where quantitative measures such as number of journal papers, books or book chapters then become over-simplified targets and output measures. Economists have argued that such external interventions may 'crowd out' the intrinsic motivation if the researchers themselves perceive such measures imposed by the institutional environment, to be 'controlling' instead of 'supportive' (Kim & Bak, 2020). The very same metrics which were designed to help in evaluation become baseline targets to be achieved for survival, rather than fostering a responsible 'research culture'.

A small set of individual faculty members rely more on their innate inclination towards research, drawing upon the notion of 'stock of academic habits' (Faria & Monteiro, 2008). Scholarly productivity can therefore also be seen as a response to an internalised value of academics as a profession and the role typically inculcated in a researcher through her immersion in the peer environment. However, individual attributes such as an early interest in research over other academic activities, a deep interest in the researcher's own area, and the predisposition of the researcher towards active research and publications also play a role amidst other factors (Ramsden, 1994). Ample academic research has debated the (de)merits of the tenure system particularly looking at whether faculty members continue to be research productive after tenure. Both perspectives seem to co-exist—one argues that research productivity post-tenure drops (Faria & McAdam, 2015) and another indicates that post-tenure faculty are more risk taking in the research themes they work on, are willing to take on new roles and projects especially if they have a stronger sense of belonging to the institution and need for recognition (Beauboeuf-Lafontant et al., 2019).

Table 6 summarises our discussion on the various forces, the pressures they impose, the mechanisms that operate and common responses along with the impact on IS research. Our analysis demonstrates that institutional responses to environmental pressures may have played a perceptible role in the Indian IS scholars' choice of topics, and ranking of journals where they publish. The Indian IS community's capability to do rigorous, relevant and responsible research has been conditioned by such institutional responses. Although the increasing isomorphic tendencies direct scholars towards populistic research choices, the normative forces seemingly have the power to counteract in order to course-correct and ensure more impactful, context-focussed research from India as a location.

4 | FUTURE DIRECTIONS FOR IS RESEARCH IN INDIA

While the institutional analyses of Indian IS academia helped us paint the *as-is* picture, we now turn to the question of how and in what manner must researchers based out of India fulfil their research potential and pursue rigorous and relevant IS research, responsible to the location. To answer this, we rely upon the insights from the webinar series—the *AIS India Chapter's 2020 series—Rendezvous with IS Researchers*. Drawing upon the neo-institutional theory, we also construe these as normative mechanisms to inform and influence IS community and business schools on the directions for future IS research.

Within the IS community, apart from the IS area journals, the Association for Information Systems (AIS), its various special interest groups and communities, and area conferences that the AIS organises, have been forums for disseminating IS research and setting future research direction. AIS—India Chapter (INAIS) was founded in 2016, aiming to support academia and professional activities of practitioners in the Information Systems and related disciplines with a particular focus on India. INAIS has, across the years, reached out to more than 1500 scholars and professionals in India with programmes and mechanisms to foster rigorous and impactful IS research in the country. The normative influence of these interventions is yet to be assessed given that it is too early to engage in such an exercise. However, alongside the workshops and seminars, INAIS has also been striving to discuss ideas that aim to enhance the scale, scope, relevance and contextual embeddedness of IS research in India. Some such ideas that surfaced at the webinar series are discussed below. These ideas for future directions address the key issues facing IS research in India outlined in our analyses earlier in this paper. In particular, we focus on achieving rigour, relevance and responsibility; programme of research; locally relevant theory; and collaboration, to effect a renaissance of IS research in India.

TABLE 6 Forces at play and their impact on information systems research.

Forces	Mechanisms that operate	Impact
Coercive forces		
Regulatory Bodies such as AICTE, UGC	Normative requirements to be approved by AICTE/UGC	Scale and volume of papers published
National Accreditation Agencies (NIRF)	Ranking	
International Accreditation Agencies (AACSB, EQUIS, etc.)	Fear of missing out on benefits of accreditation	Homogenisation of journal lists (e.g., NIRF emphasis on ABDC)
Mimetic forces		
Mentoring of new institutions	Tacit transfer of norms	Acculturation into research norms
Business School Globalisation	Emulation pressures; work norms and research incentives	Emphasis on publishing in ranked journals
Leaders and Performers—Local and Global	Accreditation goals; mirror structures and processes; Work norms and research incentives	Journal choices; Thematic priorities
Internal and External Stakeholders	Structures, processes, governance mechanisms and communication; Leadership priorities	Scale and volume of papers published; Teaching vs. Research prioritisation
Normative forces		
Professionalisation—Conditions of Work	Workload expectations; Tenure requirements	Quantity and quality of papers published; Emphasis on social impact and location-centricity
International Accreditation Agencies (AACSB, EQUIS, etc.)	Process redesign with clarity on research goals	Balance between rigour-relevance but emphasis on responsibility towards location
Professional Associations (domestic)	Awareness; Re-prioritising	Routinisation of research norms
Conferences and Workshops	Socialisation; Building research networks	Thematic divergence; Creation of cross-institutional thematic research teams

The presenter-researchers we heard over 12 weeks during the INAIS webinar series, have published extensively and shared their publication insights with us. We had invited researchers with a specific request—not only should they present their major research questions, their methods of going about the research, and their key findings, but that they share with the audience some insights about their ‘journey’—the path by which they worked through the difficult terrain and arrived at their published work. The presentations, of course, were as varied as the presenter-researchers themselves and the topics they had picked for their work were remarkably diverse (Table A1). What we learnt formed a mosaic of ideas, thoughts, personal philosophies, situational imperatives and work-life anecdotes. We extract some insights, some heuristics and some policy guidelines from our interactions with the presenter-researchers, and lay these out to supplement our previous authorship, thematic and institutional analyses.

4.1 | Achieving rigour, relevance and responsibility

It is well known and understood that leading journals seek both rigour and relevance in articles, as emphasised by many of the featured researchers who presented their published work. There is a long-standing debate in IS on

rigour versus relevance, where the out-of-court settlement is that both are needed, a researcher cannot quite be deep in one without the other (Galletta et al., 2019; Robey & Markus, 1998). The path to rigour has many turns, bends and climbs, and is arduous, though the path to relevance appears, deceptively so, rather more straightforward. Recognising that rigour of research may not lead to relevance (Corley & Gioia, 2011; Polzer et al., 2009), Straub and Ang (2011) proposed practice-oriented knowledge transfer through alternate media as one of the paths to bridge the rigour-relevance gap.

Relevant research is often driven by a long-term agenda, where the topic of interest drives the initial quest, followed by the quest for access to data sourced from practice, which then recursively leads back to the question. Normatively, many speakers in our webinar series argued, the research question drives the data search and acquisition, though often the data and the form in which it is available shapes the question and background theorising. In an emerging context such as India, where quite often structured, ready-to-analyse data is hard to come by, this reframing of questions due to paucity of data may be far less uncommon than those of other less-chaotic social and business environments. This may force the choice of qualitative research methods and interpretive epistemologies (Walsham et al., 2007) on the researchers, which also demands a revisit to theorising. Questions emerge from evolving situations and phenomena related to IT, and these questions have relevance and currency. A long-term research agenda may be challenged by emerging technologies and changing nature of phenomena, and researchers may veer away, faced by the FOMO ('fear-of-missing-out') prospect. But many persist and sometimes point the theories and methods they have mastered, at the new phenomena. Some may, as Thatcher et al. (2018) suggest, adopt an entrepreneurial model of academic scholarship, where answering new research questions, understanding new phenomena, pursuing new avenues to create new theories, may impose trade-offs between desirability and feasibility where the former encourages IS researches to be creative while the latter ensures institutional norms are fulfilled.

In IS, two salient entities stand out for the researcher—the IT artefact and the actor. One cannot lose sight of either. As the artefact is evolving and is invariably the 'new' in most situations, the actor's interactions with it, the outcomes of the use, invariably become the focus of research. The speakers at our webinar series, reminded us that impactful and relevant research has to include both the entities. Interesting problems arise when researchers observe phenomena that reveal idiosyncrasies of the local context and necessitate adaptation of the IT artefact, valuing local practices, retaining local identities of the increasingly 'global' actors and utilisation of local knowledge to complement the global experience (Walsham et al., 2007). In conducting research that not only takes cognisance of this but also presents those convincing and compelling narratives, researchers may often face challenges, as they may have to unshackle the hegemony of the dominant narrative and offer competing narratives which may focus on stakeholders uncommon in mainstream IS research (Clarke & Davison, 2020).

We perceive the potential and the need to push IS research in India to a state of being 'impactful' and contextual, which we call 'responsible IS research'. We articulate impact on the location as an aspect of responsible IS research in addition to the five characteristics of responsible IS research laid out in Davison, Majchrzak, et al. (2023)—social good, inclusivity, contextualising yet mainstreaming the theory and implications for IT design. We consider this location responsibility in IS research as critically important to a researcher due to three reasons. First, the country of one's origin provides a researcher ample resource to get educated, grow, get employed and do research from a location, much akin to a business organisation which is expected to fulfil its social responsibility having received the 'license to operate' in a location (Porter & Kramer, 2006) and the less acknowledged indigenous know-how to do so. Hence from an ethical standpoint, it is the collective 'role-responsibility' of the Indian IS community to give back to the society through significant IS research. Second, a researcher who belongs to a location has the advantage of familiarity with the culture and characteristics of the location, compared to a researcher from another country. This unique advantage of familiarity of IS researchers with the problems of the Indian society should hardly be left unutilised. Finally, the issue of responsibility has been resounding in IS community globally, as a much-wanted focus of IS research, particularly on responsibility towards society (Davison, Majchrzak, et al., 2023; Desouza et al., 2006; Wiener et al., 2018), and responsibility towards environmental sustainability (Loeser et al., 2017; Melville, 2010). We advance responsibility of Indian IS community as a normative argument consistent with

'impactful IS research' suggested by Shirley Gregor in an ECIS 2017 panel discussion: 'impact comes from tackling important problems' of the real-world (Wiener et al., 2018). Responsibility is especially important at this juncture, as Indian educational institutions are gearing up to become, presumably, 'world class' and are experiencing many forces (coercive, mimetic and normative) demanding 'results', as perceived, in world rankings and accreditation bodies. In the rush to show results, the focus may shift to easy, low-hanging returns where research is directed at problems that can be readily accessed and have available secondary data sources. Hard problems arising from grand challenges that pertain to India require considerable effort to both problematise and source empirical data to support rigorous theorising. As one of our colleagues quipped 'it is easier to write a paper on the American buffalo (*because data is available*) than Indian livestock'. It is for this very reason that although 'mainstream IS has shifted its research gaze to the Global South, it has remained focused on the concerns of the developed countries' (Sahay et al., 2017, p. 841). Societal problems/wicked problems are also finding traction in top journals (Gupta, 2017, p. 3) and adopting multi-disciplinary approaches to tackling them (through *collaboration*, as discussed later) may be a necessity. Government funding agencies define research programmes that address questions of pressing immediate concerns, such as building capabilities to meet technical skills requirements or envisaging technology-enabled services for specific segments of the population. Sometimes these problems are scoped as consulting assignments, rather than deep research problems, and a *responsible IS* researcher can very well seek out the latter through the former. We believe that engaging in such 'socially conscious strands of IS research' (Sahay et al., 2017, p. 841) can truly aid in strengthening the synergy between mainstream IS research and context-sensitive research from the global south. Such approaches towards *responsibility* may in fact help recalibrate the benchmarks set by 'engines of academia' towards a new normal where 'significance statements' supplement research questions (Burton-Jones et al., 2023), thus counteracting the very coercive and mimetic forces that drive institutions towards isomorphic tendencies.

4.2 | Programme of research

Several of our speakers mentioned that they had followed a programme of research, either explicitly or implicitly. This was a directed path that followed a particular question or a set of research issues on a sustained basis. The notion of a 'program of research' in MIS can be traced back to Mason and Mitroff's (1973) notion of an information system consisting of 'at least one person of a certain *psychological type* who faces a *problem* within an *organisational context* for which he/she needs *evidence* ...made available through a *mode of presentation*' (p. 475). They argued that five considerations including—psychological type, class of problem, evidence, the organisational context and modes of presentation as independent constructs can each assume several different states and the 'interaction effects of all possible combinations of the (chosen) variables' (Mason & Mitroff, 1973, p. 484) can yield a grand programme of research for MIS design. Our presenter-researchers, however, encouraged the audience to move beyond such a notion of combinations, to exploring different facets of the phenomenon that they wish to explore. Many of them argued that having a programme of research led them to explore new data sources, new theoretical lenses by which to view the problem, and new methods by which to explore the similar and related sets of research questions. It enabled them to build on their research, seeking out the rigour and relevance that ensues from examining a phenomenon over an extended period of time, through persistent and patient learning.

A systematic programme of research includes interrelated streams of multi-disciplinary, multi-method, and where possible, multi-institutional set of projects, which can inch towards an overarching goal that aims to create conceptual solutions having potential impact on communities of use (Nunamaker et al., 2017). Also, having such a programme that is known and identified with a person, a set of people or institution leads to positive network externalities, allowing researchers to manage, overcome or circumvent some of the institutional pressures identified earlier in the paper. Other researchers and collaborators seek them, for working with them on their projects. External agencies seek out those who have worked on these kinds of problems, either as consultants or as lead project researchers. However, such programmes do bring with them their own challenges—consistent funding; gaining the

trust and support of practitioners; need for persistence and, above all, patience for the programme to take shape through years of continued work (Nunamaker et al., 2017). The time horizon of a programme of research may also result in risks that researchers may have to take, especially when they find that a particular set of methods or perspectives leave little scope for further exploration. A change of method may be the obvious choice in order to move forward, resembling Vanessa Ho's situation in Gallupe (2007).⁶ To undertake programmes of research, a wider range of research methods may be needed, while the extant research in a domain or theme may be dominated by a particular method or may even have paradigmatic or epistemological preferences. In addition to these, publishing journal articles from programmes of research may place the researchers in a Catch-22 situation where journal articles with the incremental empirical findings can only be published when the assumptions of the programme are established elsewhere (Lyytinen et al., 2007). Through exploration of the labyrinth of the phenomena under study, the researcher needs to garner skills to execute such long-term research programmes, while at the same time publishing rigorous and relevant papers. Despite these challenges, programmes of research have many positive outcomes including, but not limited to, creation of fundamental knowledge, sometimes deep, localised and contextualised knowledge; opportunities to work with a variety of methods; and exposure to a diverse set of collaborators (especially if the programme is international in nature) and disciplines (Nunamaker et al., 2017; Straub & Loch, 2006). Through such outcomes, it may well be possible to alter the expectations of the immediate institutional stakeholders but also draw the attention of the larger global IS community to the contextualised knowledge so created.

4.3 | Theorising the local

Local problems, and local questions, originating out of Indian contexts seem a worthwhile direction to pursue, to remain a responsible IS community. They engage the researcher in domains that are familiar, have relevance, and facilitate deep insights. On the practical side, local sites are feasible to access, overcoming language, cultural and political challenges. As noted in the Introduction section, one of the senior scholars noted during a panel discussion, 'Indian IS scholars should also focus on India's problems. In particular intervention-based research would hugely benefit policy makers and the Indian industry'. Another scholar noted that 'contextualising IS theories' geographically and developing indigenous IS theories is a critical need of the present time. Contrary to popular belief, contextualising can yield opportunities for synergising mainstream and niche IS research much akin to reverse innovations (Davison, Majchrzak, et al., 2023; Sahay et al., 2017). Li et al. (2014) found that many of the papers they reviewed to understand the key issues and trends in research on IT in China, were under-contextualised, that is, they extended or generalised theories developed in the west, failing to account for local contextual factors. This 'false universalisation' and de-contextualisation is not unique to information systems, but is also voiced in disciplines such as strategic management with Venkateswaran and Ojha (2017) suggesting that over-generalisation and stereotyping of emerging economy research is not uncommon; and in organisational studies where Vijay et al. (2020) argue that hegemonic tendencies in studies of social transformation engage in erasures of countervailing views, sanctioned ignorance and are characterised by epistemic universality. Adopting a decolonial perspective may usher in the requisite transformation in such theorisation, promote indigenous theory (Davison & Díaz Andrade, 2018) rather than reinforcing the status quo, which quite often may be dominated by Northern worldviews (Hamann et al., 2020). But such an exercise may also require deep interventions and alternative thinking-modes that demands questioning our own complicity as 'change makers' (de Andreotti, 2015).

Established IS journals such as *Information Systems Journal*, *MIS Quarterly*, *Information Systems Research*, *Management Science*, have recently welcomed contextual indigenous theories (Avgerou, 2019; Burton-Jones & Volkoff, 2017; Davison & Díaz Andrade, 2018; Xu & Zhang, 2022). Researchers have few choices in order to theorise

⁶Gallupe (2007) presents a fictional account of Assistant Professor Vanessa Ho who used survey method to study strategic impact of IT on organisations for her PhD but chose to switch to interpretivist methods later, although such a shift required that she re-skill herself. The move was a risky one given that she was up for tenure in a couple of years, but she felt the method was more appropriate for the research problems she felt were important.

from locally situated contexts—drawing from localised research themes and developing new theories; or contextualising prevailing theories to the local or combinations of the two. Here, we rephrase our research question: what kind of responsible IS research must be encouraged in India's business schools and management departments for ensuring rigorous and high-impact publications? How can location and therefore context be leveraged? Avgerou (2008) argues that 'the distinctiveness of the ISDC (IS in Developing Countries) research lies in its attention to the DCs' context of IS innovation and problematisation of the developmental role of IS innovation' (p. 140). Prior IS studies have followed several methodological traditions to develop contextualised theory (knowledge). This includes contextualist theory (Pettigrew, 1985), neo-institutionalist and social constructionist analyses (Avgerou, 2008) and critical realism and grounded theory (Avgerou et al., 2019; Burton-Jones & Volkoff, 2017) while more recently, there have been calls for indigenous theory building (Davison & Díaz Andrade, 2018; Khene & Masiero, 2022) through iterative contextual discovery and employing decolonial approaches. Following a rich methodological tradition would help address the issue of rigour while conducting India-specific IS research.

Whereas theorising in context through such methodologies would ensure rigour, how can IS Scholars in India ensure relevance to practice? Given its many unique characteristics, India is also well positioned to serve as a 'natural laboratory' for envisioning new theories and validating some existing ones (Sahay et al., 2017). It can also help in increasing comparability with other South Asian, developing or the global south countries where there is reasonable relative similarity of institutional and socio-economic conditions. For instance, Heeks (2017) suggests that four priority areas are imperative to address the digital divide in developing nations: identifying digital economy-related inequalities; understanding and increasing value capture by workers in the digital economy; developing understanding of gendered interventions; and supporting pro-equity interventions. Although these directions resonate with the current state of digital economy in India, IS scholars could further identify research domains that require urgent attention. We propose five attention-urgent domains for the global-South: agriculture (and other rural-centric livelihoods), healthcare, education, informal-sector and governance. While the first three domains form the lifeline of any developing country, the latter two permit researchers to engage with the large segment of heterogeneous technology users. Inequalities prevail in the access, use and benefits digital technologies promise, between the urban (~70%) and the rural (~30%); between the formal organised sector (10%) and the unorganised informal sector (90%) (Bhattacharya, 2019). Studies on such domains would also contribute to policy and practice at different levels. For example, understanding the interactions of the supply chain actors of shrimp farming in Indian sea coasts would help design digital platforms that could reduce costs, find better prices and ensure access to expertise for farmers (Kannan et al., 2020) or the role of sociotechnical intermediaries and community digital literacy initiatives in accentuating the impact of smartphone use amongst rural women artisans to enhance their social capital, well-being and entrepreneurial intent (Parthiban et al., 2022).

4.4 | Collaboration

Our reflections on the analyses of IS research in India and our interactions with IS scholars point to the critical role of research collaborations to foster rigorous research. As we observed from the data on journal publications, a vast majority of Indian scholars' publications in journals that are ranked higher, resulted from collaborations with scholars outside India, especially in the developed world. A leading IS researcher-presenter pointed out that collaboration with established authors helps in multiple ways: (i) expertise in certain research and analysis methods; (ii) prior experience in working on a similar problem and publishing in top journals; (iii) access to data; (iv) editorial support to meet language expectations of high-ranked journals (pragmatically) and (v) to build confidence with an editor about the credibility of the work. Although we believe the scholar's fifth observation may not homogeneously reflect practices followed by all IS journals, we cannot altogether disregard the possibility that some editors and researchers, particularly from the developed world (and by extension their collaboration partners) feel that the presence of established authors evokes a certain sense of confidence in the work.

Collaborations of mutual interest need to be initiated, developed and sustained. This is a critical input for policy makers at the national level and also for business school deans. Although recent initiatives of the Indian Government, such as GIAN (Global Initiative of Academic Networks), VAJRA (Visiting Advanced Joint Research) and SPARC (Scheme for Promotion of Academic Research and Collaboration) (Altbach & Mathews, 2019) show some traction in this direction, it may be a while before we are able to assess how far quality of IS research has benefited from such initiatives. However, such initiatives must also be cautiously approached lest the Indo-western research collaborations replicate neo-colonial relations leading Indian IS scholars to construct their identities as the 'other' in comparison to scholars in the West (Kothiyal et al., 2018).

Our recommendation to pursue local problems in key domains and themes also calls for a more nuanced approach to research collaborations. Whereas collaborations with experienced scholars would help in terms of publishing in high ranked journals, such collaborations may not always bring forth the necessary expertise to unearth location specificities. Also, IS scholars may not always be experts in application problem domains. In this situation, seeking collaboration with experts of other domains, from practice or academia would be imperative. Deep engagement with practice can help IS researchers seek opportunities to conduct research on relevant tangible ideas and effectively move forward both practice and academic research (see a recent call for papers Davison, Marabelli, et al., 2023; Thatcher et al., 2018). Such 'partnerships between academics and practitioners, supported by appropriate training in theory and research methods, can yield outcomes that meet the twin imperatives of high-quality scholarship and social usefulness, to the mutual benefit of both agendas, without compromising the needs of either party in the relationship' (Hodgkinson & Rousseau, 2009, p. 538).

Alongside this discussion, it is also important that the IT industry, so prominent in India, becomes an integral part of the IS research endeavour. Many of these firms deal with and try to solve hard IT implementation and management problems that are of interest to IS researchers. They define the contours of a practice problem and also provide data and insights for their solution (Gill & Bhattacharjee, 2009). Impactful, relevant and rigorous research can be enabled by collaborating with practice. Responsibility of the industry towards academia as well as that of academia towards industry can be accomplished through such collaboration.

Although the issue of interdisciplinarity and cross-disciplinary movement of scholars warrants a much deeper discussion, in the context of collaboration, we must appreciate that institutions and universities in India are constantly under pressure to respond to coercive market forces to create new programmes, courses and research programmes. By focussing on creating inter-disciplinary programmes and thus fostering boundary-less disciplines, it may well be possible to draw the attention of researchers to fundamental 'problems' that are closer to practical life problems, rather than to 'disciplines', which seem 'irrelevant or even obstructionist to their quest' and challenge traditional notions of disciplinary tribalism (Repko et al., 2017)—in effect, 'building an empire without walls' and ceasing to defend the very 'walls that don't exist' (Davern & Carr, 1997).

5 | CONCLUSIONS

This article is an effort towards understanding the current status, the institutional setting, and potential future directions of IS research in India. A visual summary of our work is provided in Figure 1. The first part of our work is inductive and descriptive, as we drew insights from data. The second part is deductive and analytical, as we use neo institutionalism to explain institutional dynamics amongst business schools and their research priorities. The third part is abductive, where we propose future directions for IS research based on insights drawn from a global seminar series. We believe these future courses of action can indeed help alter the dynamics of the underlying isomorphic forces at play. These methods served as broad guidelines to our work; we also used relevant literature throughout our work, to compare, to argue and to provide support.

We analysed the trajectory of IS research in India in terms of scale and themes of journal publications and the themes of IS-related books published by IS researchers located in India, with and without collaboration of authors

located outside India. We complemented this with an analysis of common doctoral research topics, trends in accreditations and an assessment of institutional pressures that drive, or detract from impactful, rigorous and relevant research. There is little doubt that journal rankings, while serving the purpose of fostering a healthy rivalry, may also unintentionally cause mediated isomorphism and must be used with caution while attempting to select research topics, target journals and even looking for potential research collaborators. In the same tone, accreditations and institution ranking frameworks, while aiming to serve as signalling mechanisms for prospective stakeholders, and activate a sense of competition, are likely to leave institutions, particularly those in the global south, in desperate pursuit of irrelevant metrics, redirecting or worse, throttling otherwise scarce resources. Institutions, while ensuring incentives for research, including tenure, promotion and rewards, must design policies that cohere with the rigour, relevance, responsibility and local-focus aspects we have highlighted. Both institutions and individuals must also attempt to look beyond the performance templates dictated by ranking agencies to create unique location-focused objectives that they aim to fulfil. It is our firm belief that by doing so, leadership in academic institutions in India, and the global south in general, will be able to influence the very same coercive forces towards creating context-sensitive criteria and benchmarks.

Altbach (2014) argued that it is possible to ‘build world-class higher education in India, if the *conditions for development* are right’. Much in line with his argument, doing rigorous, relevant and responsible IS research from a location, such as India, and publishing in the leading journals is possible, and feasible. Given the scale of forces at play, there is little doubt that this requires more-than-usual effort on the part of the researchers, the institutions they are affiliated with, and the government and the larger environment that facilitates, constrains and regulates these activities, given the hysteresis effect that management research experiences. As researchers, we appreciate the path dependent nature of our work. But as good researchers, we also know our ‘competence (domain knowledge, experience and understanding of our research methods) is never absolute’ and we must pause on our tracks to ask ourselves how one can ‘move towards the absolute from a state of ignorance’ (Davison, 2021, p. 3). The four alternative courses of action—programme of research; rigour, relevance and responsibility; theorising the local; and collaboration can help eventually alter the underlying structural elements of IS research in India and through that the dynamics of the isomorphic forces at play.

This opinion article is not without limitations, and future reflections may address them. One, our focus is on India, a developing country with a particular historical higher education trajectory and social-political leaning, and in this context, our findings may not be universally applicable to other countries in the global south. However, we do observe similarities with prior such reflections and research such as Li et al. (2014) who analysed IT/IS research from China and Thompson and Walsham (2010) who examined a representative set of IS literature in the African context. Two, we understand that all research topics and problems may not be equally context sensitive and our findings and recommendations may not uniformly apply to those situations. Third, with the specific purpose of suggesting actionable prescriptions, we refrained from taking a strong critical perspective, which further introspection may benefit from. Fourth, the specific research issues in the five attention-urgent domains for the global-South, are worthy of further in-depth discussion. Doing so would enable future researchers with potential opportunities in these priority domains. Finally, although we use standard definitions of journal categorisations and rankings, it is acknowledged such rankings may not always do justice to the quality of papers published in them (Fitzgerald et al., 2019). Our use of journal publications and books as the main output was guided by the unavailability of accurate data on other forms such as monographs, research reports, grants, chapters in edited books and so on. Rigorous, relevant papers continue to be published in journals which are yet to be highly ranked in commonly used business school ranking schemes.

Over the years, the information systems discipline has made concerted efforts to recognise the plurality in perspectives, heterogeneity in contexts (Walsham et al., 2007) and research although there is always more that needs to be done especially in developing theories that are ‘capable of addressing the interrelationship of context with IS innovation’ (Avgerou, 2008, p. 142). Over the years from anecdotal evidence as well as published papers, we find editors and editorial boards of journals such as *MIS Quarterly*, *Information Systems Research*, *Information Systems*

Journal, European Journal of Information Systems, Journal of Information Technology, Management Science, Information Technology for Development, Information Technologies & International Development, Information Systems Frontiers, International Journal of Information Management, Electronic Journal of Information Systems in Developing Countries and many others very welcoming of research that attempts to develop contextualised theories and deep dives into location-specific themes. They are supportive of and willing to engage with authors from developing countries in their efforts to diversify their research, and their quest to expand the IS discipline's perceived 'mainstream'.

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DATA AVAILABILITY STATEMENT

A part of the data that support the findings of this study are in publicly available journal and article databases such as Scopus. Other data were collated by the authors from multiple sources as mentioned in the paper. Such data are available from the corresponding author upon reasonable request.

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APPENDIX A

TABLE A1 List of speakers in the INAIS webinar series 2020.

Speaker	Topic	Sample pivot discussion papers
Andrew Burton-Jones	Theory Building	Burton-Jones, A., & Volkoff, O. (2017). How can we develop contextualized theories of effective use? A demonstration in the context of community-care electronic health records. <i>Information Systems Research</i> , 28(3), 468–489. https://doi.org/10.1287/isre.2017.0702
Chrisanthi Avgerou	Retroduction in the Critical Realist approach	Avgerou, C., Masiero, S., & Poulymenakou, A. (2019). Trusting E-Voting amid Experiences of Electoral Malpractice: The Case of Indian Elections. <i>Journal of Information Technology</i> , 34(3), 263–289. https://doi.org/10.1177/0268396218816199
M. N. Ravishankar	Qualitative Comparative Analysis	Nishant, R., & Ravishankar, M. N. (2020). QCA and the harnessing of unstructured qualitative data. <i>Information Systems Journal</i> , 30(5), 845–865. https://doi.org/10.1111/isj.12281
Sudha Ram	Heterogenous Data	Zhang, W., & Ram, S. (2020). A comprehensive analysis of triggers and risk factors for asthma based on machine learning and large heterogeneous data sources. <i>MIS Quarterly</i> , 44(1), 305–349. https://doi.org/10.25300/MISQ/2020/15106
Anjana Susarla	Econometric Modelling	Susarla, A., & Mukhopadhyay, T. (2019). Can outsourcing of information technology foster innovations in client organizations? An empirical analysis. <i>MIS Quarterly</i> , 43(3), 929–949. https://doi.org/10.25300/MISQ/2019/13535
Shirish C. Srivastava	Publishing in top IS journals	Srivastava, S. C., Teo, T. S. H., & Devaraj, S. (2016). You can't bribe a computer: Dealing with the societal challenge of corruption through ICT. <i>MIS Quarterly</i> , 40(2), 511–526.
Ryan Wright	Experimental Methods in IS Research	Jensen, M. L., Dinger, M., Wright, R. T., & Thatcher, J. B. (2017). Training to mitigate phishing attacks using mindfulness techniques. <i>Journal of Management Information Systems</i> , 34(2), 597–626. https://doi.org/10.1080/07421222.2017.1334499
Tejaswini Herath	Survey-based Empirical Research	Herath, T., Yim, M. S., D'Arcy, J., Nam, K., & Rao, H. R. (2018). Examining employee security violations: moral disengagement and its environmental influences. <i>Information Technology and People</i> , 31(6), 1135–1162. https://doi.org/10.1108/ITP-10-2017-0322
Thomas Widjaja	Design Science Research	Widjaja, T., & Gregory, R. W. (2020). Monitoring the complexity of IT architectures: Design principles and an IT artifact. <i>Journal of the Association for Information Systems</i> , 21(3), 664–694. https://doi.org/10.17705/1jais.00616
Janaki Srinivasan	Ethnography in IS Research	Srinivasan, J., & Burrell, J. (2015). On the importance of price information to fishers and to economists: Revisiting mobile phone use among fishers in Kerala. <i>Information Technologies & International Development</i> , 11(1), 57–70–70.

(Continues)

TABLE A1 (Continued)

Speaker	Topic	Sample pivot discussion papers
Balaji Padmanabhan	Agent-Based Simulation in IS research	Malgonde, O., Zhang, H., Padmanabhan, B., & Limayem, M. (2020). Taming complexity in search matching: Two-sided recommender systems on digital platforms. <i>MIS Quarterly</i> , 44(1), 49–84. https://doi.org/10.25300/MISQ/2020/14424
Robert Davison Richard Watson	Panel Discussion on ‘Who are we doing research for’ and Future of IS research	Davison, R. M., & Martinsons, M. G. (2016). Context is king! Considering particularism in research design and reporting. <i>Journal of Information Technology</i> , 31(3), 241–249. https://doi.org/10.1057/s41265-016-0002-x Watson, R. T. (2015). Beyond being systematic in literature reviews in IS. <i>Journal of Information Technology</i> , 30(2), 185–187. https://doi.org/10.1057/jit.2015.12

APPENDIX B

TABLE B1 Top 25 MIS journals where papers were published by authors from India.

Without collaboration outside India (1)		In collaboration with authors outside India (2)	
Journal	No. of papers	Journal	No. of papers
<i>Expert Systems with Applications</i>	1052	1 <i>Expert Systems with Applications</i>	266
<i>Applied Soft Computing Journal</i>	849	2 <i>Applied Soft Computing Journal</i>	142
<i>Applied Soft Computing</i>	278	3 <i>Applied Soft Computing</i>	109
<i>International Journal of Business Information Systems</i>	254	4 <i>Information Systems Frontiers</i>	91
<i>Knowledge-Based Systems</i>	207	5 <i>Knowledge-Based Systems</i>	89
<i>Computer Journal</i>	189	6 <i>International Journal of Information Management</i>	69
<i>International Journal of Information Security and Privacy</i>	143	7 <i>Journal of Enterprise Information Management</i>	69
<i>Journal of Information and Knowledge Management</i>	134	8 <i>SIAM Journal on Computing</i>	64
<i>Information Processing Letters</i>	116	9 <i>Information Processing Letters</i>	53
<i>Knowledge and Information Systems</i>	109	10 <i>Journal of Computer and System Sciences</i>	47
<i>Computers and Security</i>	107	11 <i>Computers and Security</i>	43
<i>Global Knowledge, Memory and Communication</i>	103	12 <i>Decision Support Systems</i>	43
<i>International Journal of Intelligent Information Technologies</i>	101	13 <i>Journal of Global Information Management</i>	38
<i>Electronic Library</i>	93	14 <i>Information Processing and Management</i>	37
<i>Journal of Enterprise Information Management</i>	79	15 <i>Journal of Knowledge Management</i>	37

TABLE B1 (Continued)

Without collaboration outside India (1)		In collaboration with authors outside India (2)	
Journal	No. of papers	Journal	No. of papers
VINE Journal of Information and Knowledge Management Systems	72	16 Journal of Systems and Software	35
Business Process Management Journal	71	17 Information and Computation	34
Personal and Ubiquitous Computing	65	18 Personal and Ubiquitous Computing	32
Journal of Cases on Information Technology	63	19 Technology in Society	29
International Journal of Information Technology and Web Engineering	61	20 Enterprise Information Systems	28
Information Systems Frontiers	60	21 International Journal of Business Information Systems	28
International Journal of Information Security	58	22 Information Systems Research	27
International Journal of Healthcare Information Systems and Informatics	57	23 Journal of the ACM	26
International Journal of Information Management	57	24 Electronic Commerce Research	25
Information Processing and Management	54	25 Information Technology and People	25

APPENDIX C

TABLE C1 Analysis of research themes of journal papers where all authors are located in India.

Rank	CATEGORY A* AND A		CATEGORY B		CATEGORY C	
	Frequency	Bigram	Frequency	Bigram	Frequency	Bigram
1	167	Social media	193	Social media	508	Neural network
2	99	Supply chain	137	Supply chain	258	Decision-making
3	90	Decision-making	116	e Governance	256	Genetic algorithm
4	85	Machine learning	95	Decision-making	250	Machine learning
5	68	Neural network	94	Knowledge management	226	Swarm optimization
6	67	Knowledge management	78	Covid 19	192	Deep learning
7	61	e Commerce	75	e Government	189	Support vector
8	60	Deep learning	71	e Commerce	169	Optimization algorithm
9	58	Knowledge sharing	57	Machine learning	144	Covid 19
10	53	Cloud computing	44	Big data	141	Social media
11	50	Genetic algorithm	43	Social networks	115	Supply chain
12	50	Intrusion detection	40	Service providers	107	Cloud computing
13	49	Big data	38	Health care	106	Data mining
14	41	e Government	38	Social implications	101	Power system

(Continues)

TABLE C1 (Continued)

Rank	CATEGORY A* AND A		CATEGORY B		CATEGORY C	
	Frequency	Bigram	Frequency	Bigram	Frequency	Bigram
15	37	Support vector	36	Information security	99	Intuitionistic fuzzy
16	33	Optimization algorithm	35	Sentiment analysis	79	Fuzzy logic
17	31	Social network	35	Developing countries	76	Sentiment analysis
18	29	Sentiment analysis	35	Organisational performance	74	Decision tree
19	28	Software development	34	Fake news	71	Big data
20	27	Internet banking	34	Web 2	68	Fuzzy numbers
21	25	Case Study	33	Digital library	67	Social network
22	25	Knowledge creation	33	Business process	65	Energy consumption
23	24	Data mining	32	e Learning	64	Stock market
24	23	Artificial intelligence	31	Neural network	64	Learning techniques
25	22	Swarm optimization	30	Data analytics	61	Meta heuristic
26	22	Service quality	29	Search engines	61	Image segmentation
27	20	Firm performance	28	Service quality	57	Intrusion detection
28	19	Detection system	28	Online reviews	54	Soft computing
29	19	e Learning	28	Information retrieval	54	Clustering algorithm
30	15	DDOS attacks	27	Recommender systems	53	Optimization algorithms