

Interview with Ritu Agarwal on “Information Systems – Research, Teaching, and Community Development”

Ritu Agarwal is a Professor, and the Robert H. Smith Dean’s Chair of Information Systems, at the University of Maryland, College Park. She founded, and is the Director of the Center for Health Information and Decision Systems (CHIDS). CHIDS, established in 2005, was the first research center within a business school to study the use and application of information technology in healthcare. She assumed several editorial roles in top-tier journals and is now the Editor-in-Chief of the INFORMS Information Systems Research (ISR) journal.

Her current research is focused on understanding how information technology can be used to alleviate cost and quality challenges in healthcare, and with identifying mechanisms through which IT can be successfully incorporated into healthcare routines. Among several other topics, she also studies privacy issues and other impediments and vulnerabilities in a digital society.

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BISE: Information Systems (IS) is often described as interdisciplinary and different areas of IS research intersect with computer science, economics, operations research, organizational behavior, and strategic management, for example. What is distinct about research done in

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IS relative to these other fields, and where do you see the role of IS and its contributions? When would the topic of a paper qualify for ISR rather for a journal in any of these other disciplines?

Agarwal: I have always maintained that the power of IS research derives from its multidisciplinary nature. More than any

other “functional” discipline, to the extent that information systems touch every aspect of individual, organizational, and societal activities, arguably IS researchers have the broadest perspective on the role and effects of information systems and technologies as compared with scholars in other fields. While it is certainly true that we may draw upon other disciplines for theoretical lenses and phenomenon framing, IS researchers are uniquely equipped with a deep and nuanced understanding of the underlying technology that researchers in other disciplines such as economics, strategy, organizational behavior, and operations management may lack. Likewise, IS researchers have a deeper understanding of the social and economic outcomes of IS and IT that computer scientists may be less interested in. Thus, the distinctive contribution of IS is to weave together a more complex perspective on whatever research problem is being addressed than any of the disciplines alone.

I should point out that it is entirely feasible that an IS paper (such as one that studies the effects of social media on consumer purchase decisions) is as much of interest to IS researchers as it is to Marketing scholars. I see no reason why such research is not appropriate for both Marketing and IS journals as it likely provided insights relevant to scholarship in both disciplines. Similarly, a study on

information integration through shared virtual spaces among supply chain partners would be interesting to both IS and OM scholars. Where the researcher ultimately decides to submit the work might change the positioning of the paper at the margin, but the core question being addressed is of interest broadly to multiple scholarly communities. I always encourage IS researchers to also submit their work to the top journals in the discipline their research intersects with the most. Such cross-pollination is healthy for the field and expands our impact and reach.

BISE: Given the interdisciplinary nature of research in IS, there is also a broad set of research methods that is nowadays being used ranging from analytical modeling to algorithm design, lab experiments and field studies. While this holds to some extent also for other areas in the management sciences, it raises the questions of which methods should be taught in graduate programs.

Agarwal: It is virtually impossible (although I have seen a few rare exceptions!) for doctoral programs to train students in every possible methodological and analytical approach in any deep or substantive way. Students need to be exposed to the range of available methods as part of any researcher's arsenal, but ultimately each doctoral program has a special "flavor" or strength that is typically defined by the faculty who are part of the program. We train our students in depth in the approaches that reflect the particular orientation of the graduate program, while making them aware of other techniques they may want to explore at some point in their academic progression and development. So, for example, it is easy to look at ten different programs and quickly identify what research skills you would expect students graduating from those programs to have. My personal view on this matter is that graduate students need to become masters of whatever their chosen methodology is and receive as much formal, in-depth training on that, as opposed to understanding a very broad range of methods at only a very surface level.

BISE: Information technology is still developing rapidly. The importance of these technological changes for research varies across different research questions. But, how important is it to have information technology and engineering classes as part of IS curricula? This has an impact on the types of jobs IS students will apply for.

Agarwal: First, let me note that there are many varieties of IS students with significant variation in the academic units in which IS programs are housed, and the job markets that these students compete in. As a basic principle, I believe we cannot give a student a degree or diploma in information systems without providing them with an understanding of information technology and the process of system construction (i.e., engineering). Of course the level of emphasis and the depth in these classes differs by type of degree and academic unit. So, for example, undergraduate students may get hired for their technical skills, thereby requiring more in-depth study of technology and systems development and integration. Equally, employers might seek students who understand the interplay between technology and organization and would serve as consultants or business analysts. The level and depth of technical training this latter group needs is likely less than the former. MBA students are generally not recruited for pure system development roles and will need to have knowledge and skills related to implementation, change management, and the role of IT in different areas of the business.

The short answer to your question is that this is a co-evolutionary process: the market drives what skills we provide our students (e.g., analytics and big data are becoming important to businesses so we should incorporate those technical skills into our curricula), and as technologies evolve, so do the market needs! Our role as educators is to define the core set of skills that all IS students need to have (that I believe should include basics of technology and systems design principles), and adapt our specialized offerings to be responsive to technology advances.

BISE: Parts of the European IS community follow an engineering tradition in their research, which is well in line with the design science movement in IS research. This includes the design of innovative IS artifacts and their evaluation. There has been a debate that such types of research are harder to publish in top tier journals compared to research adding to the descriptive and explanatory base of the IS literature. How do you see the role of engineering in IS?

Agarwal: I suspect this concern is somewhat urban legend now! I see top-tier journals in IS increasingly publish (and receive as submissions) research

that is grounded in design science concepts. While I agree that a study describing only the design of an innovative IS artifact is likely to not make it through the review process in a top-tier journal, certainly one that includes an evaluation and evidence of the superiority of the design, or that generalizes the design to core principles with broader applicability could fit quite well with the mission of the top journals. Reviewers ultimately are looking for evidence of the "scientific method" that of course varies in its detail across research genres, as well as a substantive contribution to knowledge. They also want to be persuaded about the "interestingness" of the problem. It is incumbent upon the authors to explain in a compelling fashion what contributions their work makes to the study of information systems.

BISE: IS is a relatively young field. How do you see the development of the IS discipline over time? More specifically, if you look at the type of work published in ISR and other top journals in the recent years, which trends and topics do you see emerge?

Agarwal: Broadly, I see three major trends. One, I think as a community we have become increasingly more sophisticated methodologically. I observe the level of rigor that reviewers are demanding going up over time, which is a positive development for the field. Research designs and data sets that would have passed muster a decade ago are unlikely to make it successfully through the review cycle today. Two, the breadth of research topics that IS researchers study has of course expanded, as you alluded to indirectly in the first question. While this is closely related to the striking innovation that continues to occur in technology, it also signals that IS researchers are paying attention to timely and relevant phenomena. I see many papers being submitted addressing emerging (and in some instances, enduring) developments such as electronic markets, open innovation, social media, the transformation of work, healthcare, security and privacy, etc. Finally, going back again to your original question, IS research is becoming more multidisciplinary, with IS scholars collaborating with those from other disciplines. For example ISR commissioned a special issue on Social Media that had a leading researcher from Marketing, David Godes, as one of the guest editors.

BISE: The editorial boards and also the authors of top-tier IS journals such as ISR

are largely from US universities. What are reasons for the lower presence of Asian or European scholars?

Agarwal: As EIC I have valiantly attempted to engage faculty from all across the globe with the journal! At ISR, we have Senior Editors and Associate Editors from Asia and Europe, but your point is well taken. Clearly a majority of the editorial board comes from the US universities. I do not know of any systemic reason why this is the case. I know that journal editors are continuously seeking qualified individuals for appointments to the editorial board. I would simply suggest that scholars in Asia and Europe proactively reach out to editors, or senior scholars like you nominate others to serve on the board. Inviting editors to talk about their journals at various meetings may also be helpful to raise awareness about the nuances of the journal (I made brief presentations at the European Conference on Information Systems (ECIS) and Mediterranean Conference on Information Systems (MCIS) that I think were helpful for European colleagues.)

BISE: There is no simple standard recipe for top-tier journal publications. However, which advice would you give young IS researchers, who want to publish their work in top-tier journals.

Agarwal: This is a question that I get asked a lot! I wish I had a simple answer but as you say, there is no standard recipe. I have tried to synthesize my thoughts and recommendations on this topic in the December 2012 Editorial of ISR. Essentially the editorial outlines what criteria editors and reviewers typically use when they evaluate a paper for a top-tier journal, and what authors can do to increase their chances of success. I summarize the criteria as F.I.R.S.T.: fit, interestingness, rigor, story, and theory (in no particular order!). I

also point out the F.E.O.'s (frequently encountered omissions) that frustrate reviewers and may result in a recommendation rejection. The editorial is available <http://dx.doi.org/10.1287/isre.1120.0458>. I always urge potential authors to read several papers published in the journal prior to submitting their own work to get a detailed understanding of the journal's standards and style of discourse.

BISE: You have worked on a number of different research areas in your career. Much of your recent research is devoted to IT in health care. This is a topic many colleagues in Europe are interested in as well. Where do you see the research challenges for IS scholars in this area in the coming years?

Agarwal: Yes, it is true that after a quarter of a century in academia, when I look back, I find that my research interests have evolved over the years. But I see that as inevitable and a very important part of the intellectual development of a scholar, at least for me personally. One line of study opens up many interesting and exciting questions and it is a privilege to have the freedom to explore new domains.

My interest in healthcare arose from a desire to do something with my scholarship that may have broader policy value and impact. I believe the IS research community has a lot to offer researchers in the medical and health informatics fields, and also to policy makers. We have been studying the challenges and opportunities of IS and IT in other sectors for decades and have developed a corpus of important insights. Healthcare has some unique and distinctive characteristics (not the least of which are the consequences of life and death), but the digital transformation of healthcare also has several points of intersection with what we have observed in other sectors. Our

work has been theoretically grounded, which is different from the research that comes out from the medical community that tends to be much more phenomenon and data driven. The range of questions that need to be asked and answered in healthcare and IT is remarkable and offers the IS research community rich opportunities for future work.

What do I see as the challenges? First, domain knowledge, i.e., a deep understanding of the healthcare context is essential. This is not part of the typical IS training so we need to team with individuals who have this knowledge, and also expand our own understanding through fieldwork and observation. I have spent countless hours in health delivery settings and interacting with clinicians and other healthcare workers! Second, scholars have to be prepared for the challenge from reviewers (in the IS journals, not in healthcare publications) that the research is not generalizable across settings. While I don't believe this is strictly true, it is important for authors to make the case for the broader implications of the work. Third, there is an abundance and yet a paucity of data. As you well know, privacy is a significant concern with health data, and gaining access to this is a frequent challenge. Fourth, the healthcare setting is so complex that it is difficult to isolate the importance of management, organization, and technology factors on health outcomes relative to other complements such as biomedical innovation. But this also presents a striking opportunity to do really meaningful work that can help identify the precise economic and social value that information technology can create in healthcare!

BISE: Prof. Agarwal, we thank you very much for this interview.