Insights from the World IT Project Survey of IS Organizational Trends

Annually, MIS Quarterly Executive publishes a U.S.-centric IT Issues and Trends Study. In contrast, the World IT Project collected data on IS issues from over 10,000 IS employees in 37 countries. Though there are some common issues, there are important differences between countries that focus on strategic issues and those that focus on tactical/operational issues. This study highlights the need to address country- or regional-specific differences when pursuing international endeavors.[1]

Prashant Palvia
University of North Carolina
Greensboro (U.S.)

Jaideep Ghosh
Shiv Nadar University
(India)

Tim Jacks
Southern Illinois University
Edwardsville (U.S.)

Alexander Serenko
University of Ontario Institute of
Technology (Canada)

Aykut Turan
Sakarya University (Turkey)

Introductory Comments

MIS Quarterly Executive senior editor Mary Lacity asked the authors to discuss the results of their global survey of IS organizational trends. Based on data gathered from over 10,000 IS line employees and managers in 37 countries, the authors discuss the top 18 trends overall and how the importance of trends differs between two country clusters. The cluster with greater average gross national income (GNI) per capita focused more on strategic IT issues compared to the cluster with lower average GNI. The authors also discuss findings related to cultural differences, employee vs. senior management perceptions and gender.

MISQE Research Insights for IT Leaders

Mary Lacity: Prashant, Jaideep, Tim, Alexander and Aykut, thank you for sharing your research with us. Let's begin by understanding a bit of context. Prashant, would you please tell us the mission of the World IT Project, when it was founded and the other people involved?

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1 Mary Lacity is the accepting senior editor for this *MISQE* Research Insight. She helps the authors distill their academic research findings into actionable recommendations for IT leaders.

Table 1: Survey Respondents (37 Countries)

Characteristics	*N*	%	Characteristics	*N*	%
Age:			Sex:		
18-20	316	3.0	Male	7,509	72.8
21-29	3,371	32.5	Female	2,801	27.2
30-39	3,344	32.2			
40-49	2,106	20.3	Education Level:		
50-59	1,013	9.8	High school or less	793	7.6
60 +	227	2.2	Associate degree	1,343	12.9
			Bachelor's degree	4,998	48.3
			Master's degree	2,988	28.8
			Ph.D.	250	2.4
Years of IT Experience:			Position:		
0-4	2,975	28.7	Not part of management	5,364	51.7
5-9	2,717	26.2	Lower management	1,841	17.8
10-19	2,789	26.8	Middle management	1,999	19.3
20-29	1,398	13.5	Senior management	1,166	11.2
30 +	500	4.8			

Prashant Palvia: Several colleagues and I had been talking for years about the domination of U.S.-centric and Western-centric research in information systems. We were concerned that practices resulting from IS research were being applied to other parts of the world without considering the different cultures, levels of economic growth, societal and religious beliefs, and political systems. We decided to address this limitation by creating the World IT Project, which was officially launched in 2013. Our mission is to provide a global view on IS issues that considers the context of each country's or region's unique cultural, economic, political, religious and societal environment.

You ask about the people involved, and I apologize in advance because I cannot acknowledge every person within the limited space of this article. But early on—sometime in 2004 and 2005—I worked with Choton Basu at the University of Wisconsin-Whitewater, Mary Lind at North Carolina A&T University and Carol Pollard at the University of Tasmania to define an agenda for collecting worldwide IS/IT data and to develop an elaborate system to facilitate data collection and analysis. I involved other people through the Global Information Technology Management Association (GITMA)—an association I founded in 2000. At GITMA conferences and the Americas Conference on Information Systems (AMCIS), I recruited more people to the cause, and secured commitments from faculties on three Continents.

When the project was launched in 2013, its core members also included Naveed Baqir of the University of Delaware, Paul Licker of Oakland University and Celia Room Livermore of Wayne State University, who have since moved on to other interests. By 2014, the global team started collecting data from IT employees in 37 countries about their IS issues. Today, the core members are the co-authors of this article.[2]

Mary Lacity: I know that your most recent survey comprises more than 10,000 respondents. How did the research team solicit respondents from 37 countries?

Prashant Palvia and Co-authors: The five of us are based in four countries—two in the U.S. and one each in Canada, Turkey and India. Though it was logistically and practically infeasible to collect data from every country in the world, our goal was to acquire data from countries representing every major region of the world. Local country teams were recruited and selected as they were the ones who understood the local culture and knew how best

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2   For a fuller history of the World IT Project, see Palvia, P., Jacks, T., Ghosh, J., Licker, P., Livermore, C. R., Serenko, A. and Turan, A. H. "The World IT Project: History, Trials, Tribulations, Lessons, and Recommendations," *Communications of the Association for Information Systems* (41), January, 2017, pp. 389-413.

to approach local businesses to participate. The local teams were also charged with translation/back-translation[3] of the survey instrument (if translation to the local language was necessary), to ensure that the wording and meaning were appropriate for the local culture. We achieved a good representation of IT employees by instructing the country teams to collect at least 300 data points from small, medium and large organizations in a variety of industries. Most country teams achieved this sample size.

Mary Lacity: Your team decided to include line-level IS employees in addition to IS managers. Why did you choose that sampling strategy?

Prashant Palvia and Co-authors: One of the key distinctions of our study is the choice of subjects for providing input on the key issues. Many U.S.-based studies rely exclusively on the opinions of CIOs and high-level senior IS managers of large companies. The sample in our study is more balanced: it includes small, medium and large organizations in a variety of industries, and the respondents are IT employees at various levels and in various roles (see Table 1). The perspectives of IT employees are important and of significant consequence because they are grounded in daily realities and are pragmatic and realistic. IT employees are also responsible for implementing any action plans stemming from organizational needs.

Mary Lacity: I know your survey includes opinions on individual career issues, technology issues and organizational issues, but for this MISQE Insight article, we'll focus on organizational IS issues. Before discussing the findings, would you please describe how you generated the list of questions relating to organizational topics?

Prashant Palvia and Co-authors: We adapted the organizational IS issues from the key issue studies published annually in the U.S. and from

international surveys.[4] We considered both older and recent studies because we assumed that IS employees in non-Western contexts may still be struggling with IS issues that are no longer pressing to Western IS managers. We made a special effort to minimize overlap among various issues and, as a result, several issues were added, deleted or merged, or the original wording was altered. The final list contains 18 organizational IS issues. Respondents rated each issue on a 5-point Likert-type scale, from 1 (most important) to 5 (not important).

Mary Lacity: And during which time period was the data collected for the survey?

Prashant Palvia and Co-authors: Given the enormity of the project and the number of countries involved, it took us from mid-2014 to the end of 2017. Then, we spent another six months cleaning the data and integrating it into one single database.

Mary Lacity: According to your findings, what were the top IS organizational issues?

3   The survey instrument has been translated into Chinese, French, Italian, Japanese, Korean, Malay, Polish, Portuguese, Russian, Spanish, Thai and Turkish.

4   Surveys consulted include:
• Brancheau, J. C., Janz, B. D. and Wetherbe, J. C. "Key Issues in Information Systems Management: 1994-95 SIM Delphi Results," *MIS Quarterly* (20:2), June 1996, pp. 225-242.
• Chou, H. W. and Jou, S. B. "MIS Key Issues in Taiwan's Enterprises," *International Journal of Information Management* (19:5), October 1999, pp. 369-387.
• Hayne, S. C. and Pollard, C. E. "A Comparative Analysis of Critical Issues Facing Canadian Information Systems Personnel: A National and Global Perspective," *Information & Management* (38:2), December 2000, pp. 73-86.
• Ifinedo, P. "Key Information Systems Management Issues in Estonia for the 2000s and A Comparative Analysis," *Journal of Global Information Technology Management* (9:2), September 2006, pp. 22-44.
• Kappelman, L., Torres, S., McLean, E., Maurer, C., Johnson, V. and Kim, K "The 2018 SIM IT Issues and Trends Study," *MIS Quarterly Executive* (18:1), March 2019, pp. 51-84.
• Kappelman, L., Johnson, V., McLean, E. and Maurer, C. "The 2017 SIM IT Issues and Trends Study," *MIS Quarterly Executive* (17:1), March 2018, pp. 53-88.
• Kappelman, L., McLean, E., Luftman, J. and Johnson, V. "Key Issues of IT Organizations and Their Leadership: The 2013 SIM IT Trends Study," *MIS Quarterly Executive* (12:4), December 2013, pp. 227-240.
• Luftman, J. and Ben-Zvi, T. "Key Issues for IT Executives 2011: Cautious Optimism in Uncertain Economic Times," *MIS Quarterly Executive* (10:4), December 2011, pp. 203-212.
• Luftman, J., Zadeh, H. S., Derksen, B., Santana, M., Rigoni, E. H. and Huang, Z. D. "Key Information Technology and Management Issues 2012-2013: An International Study," Journal of Information Technology (28:4), January 2013, pp. 354-366.
• Luftman, J. and Zadeh, H. S. "Key Information Technology and Management Issues 2010-11: An International Study," Journal of Information Technology (26:3), April 2011, pp. 193-204.
• Palvia, P. and Palvia, S. "MIS Issues in India, and a Comparison with the United States," International Information Systems (1:2), April 1992, pp. 100-110.

Table 2: Global Ranks of Organizational IS Issues

Organizational IS Issues	Global Ranks
IT reliability and efficiency	1
Security and privacy	2
Alignment between IT and business	3
IT strategic planning	4
Project management	5
Knowledge management	6
Continuity planning and disaster recovery	7
Business agility and speed to market	8
Revenue-generating IT innovations	9
Business productivity and cost reduction	10
Attracting and retaining IT professionals	11
IT service management (e.g., ITIL)	12
Enterprise architecture	13
Business process reengineering	14
IT cost reduction	15
Globalization	16
Outsourcing	17
BYOD (bring your own computing device)	18

Prashant Palvia and Co-authors: Table 2 shows the global ranking of the 18 organizational IS issues in our study. One of the most important findings is that IT *reliability* and *efficiency* tops the list. In our study, reliability refers to components of a computer system (e.g., software, hardware or a network) that consistently perform according to specifications. Efficiency refers to doing things in the right manner and focuses on maximizing output with minimum resources. Our data comes from many countries where the IT infrastructure may not be fully developed and stable, sometimes even in primitive stages, thus affecting both reliability and efficiency. This concern did not even appear in the top list of IS issues identified by senior IT managers in a recent U.S.-based survey published in the March 2020 *MIS Quarterly Executive*.[5]

Mary Lacity: Would you add some color to that observation? Which countries, in particular,

were most concerned about IT reliability and efficiency?

Prashant Palvia and Co-authors: The countries where respondents ranked IT reliability and efficiency as the number one issue were Brazil, China, Finland, Germany, Greece, Hungary, Italy, Lithuania, Malaysia, Mexico, New Zealand, Nigeria, Portugal, Russia, South Africa, Thailand, Turkey, the U.K. and the U.S.

Mary Lacity: There are some obvious Western countries in that list, and certainly Finland, Germany, the U.K. and the U.S. stand out. Are you interpreting these results as a difference between the views of senior-level management vs. those of IS employees?

Prashant Palvia and Co-authors: We understand why you might think that, but we analyzed the data by employee level and found that there are no significant differences between line employees and managers; the differences between our study and the above-mentioned U.S. IT issues and trends study published in *MIS Quarterly Executive* are likely due to differences in organizational size in the two studies.

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5 Kappelman, L., Johnson, V. L., Maurer, C., Guerra, K., McLean, E., Torres, R., Snyder, M. and Kim, K. "The 2019 SIM IT Issues and Trends Study," *MIS Quarterly Executive* (19:1), March 2020, pp. 69-104.

Table 3: The Two Country Clusters

Cluster 1	Cluster 2
Argentina	Bangladesh
Brazil	France
Canada	Germany
China	Hungary
Egypt	India
Finland	Iran
Ghana	Japan
Greece	Jordan
Italy	Lithuania
Malaysia	Macedonia
New Zealand	Mexico
Nigeria	Pakistan
Portugal	Peru
South Africa	Poland
Taiwan	Romania
U.K.	Russia
U.S.	South Korea
	Thailand
	Turkey
	Vietnam
Significant Differences Between the Clusters	
Focused on more strategic issues	Focused on more tactical/operational issues
Lower uncertainty avoidance	Higher uncertainty avoidance
Lower long-term orientation	Higher long-term orientation
Higher average gross national income (GNI) per capita	Lower average GNI per capita

Mary Lacity: Moving to the second and third issues in your global IT ranking, *security and privacy* and *alignment between IT and business* seem to be issues that affect IS employees in every country, and at all levels.

Prashant Palvia and Co-authors: That is correct. Security and privacy was ranked second in our global dataset. Threats to IT and supporting processes are constantly increasing in number and sophistication, and security concerns are experienced in organizations worldwide.[6] Alignment between IT and business,

ranked third in our study, has consistently been among the top issues in U.S. studies for many years. Alignment refers to the processes and structures by which a business uses IT to reach its organizational objectives, thereby achieving superior performance and marketplace competitiveness. In practice, it is difficult to bridge the gap between the organization and the IT suborganization due to a variety of differences in culture, knowledge base, and competing objectives and incentives, as well as changing business needs and exponential advances in the technology itself.

Mary Lacity: You've sliced the data in various ways, but one of the most interesting to me was

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6   See, for example, Top *9 Security and Risk Trends for 2020, Gartner 2020*, available at https://www.gartner.com/smarterwithgartner/gartner-top-9-security-and-risk-trends-for-2020/.

based on Hofstede's five cultural dimensions: Power Distance, Uncertainty Avoidance, Individualism-Collectivism, Masculinity-Femininity and Long-term Orientation.[7] Please explain what you did and what you found.

Prashant Palvia and Co-authors: We first took the top seven issues—IT reliability and efficiency, security and privacy, alignment between IT and business, IT strategic planning, project management, knowledge management, and continuity planning and disaster recovery—and performed a cluster analysis by country. The data fell nicely into two groups, comprising 17 and 20 countries respectively (see Table 3). In Cluster 1, respondents focused more on alignment between IT and business, IT strategic planning, and continuity planning and disaster recovery. We consider these issues to be strategic in nature. In Cluster 2, respondents focused more on security and privacy, knowledge management, attracting and retaining IT professionals, and IT reliability and efficiency. We consider these issues to be more tactical/operational in nature.

We then asked: Why do these clusters have systematic differences on top IS issue rankings? As you mentioned, one of the analyses that we did was based on Hofstede's five cultural dimensions. In the World IT Project, we independently measured these dimensions using Hofstede's original survey items. A significant difference was found between the two groups for the uncertainty avoidance and long-term orientation dimensions. Higher uncertainty avoidance implies less propensity for risk taking, and vice versa. Cluster 1—our "strategic" group of countries—had lower uncertainty avoidance scores (i.e., higher risk-taking propensity) than Cluster 2—our "tactical/operational" group of countries. Another

difference was in the long-term orientations of the two groups: The tactical/operational group had higher long-term orientation scores than the strategic group.

Mary Lacity: We think of strategic issues as future focused and operations issues as present focused, so what do you make of your perplexing finding about long-term orientation?

Prashant Palvia and Co-authors: You are right that most people believe this, and the literature suggests that strategic issues and strategic planning refer to a long-term view. Perhaps this is a paradox as there is much written about the focus on short-term results in the U.S. and other Western nations, yet IS studies show there is an emphasis on strategic planning in the very same countries. A possible explanation is the highly turbulent nature of the IS environment where the difficulty of making accurate long-term strategic predictions grows exponentially, and those who have a long-term vision must strategically focus on the successful completion of short-term milestones. The implication is that organizations can still act strategically in the short term. But this is a very interesting observation that needs further exploration.

Mary Lacity: You also compared the gross national income (GNI) per capita of both clusters. What did you find?

Prashant Palvia and Co-authors: On average, the GNI per capita of the strategic group was higher than that of the tactical/operational group ($29,253 and $22,911, respectively).

Mary Lacity: So overall, what do you surmise from these clusters?

Prashant Palvia and Co-authors: We conclude that, with a few exceptions, the strategic group comprises countries that are economically better off, are less risk averse, and focus more on the present than the tactical/operational group. For example, the strategic group values IT strategic planning and IT/business alignment more, whereas the tactical/operational group puts more value on IT cost reduction, revenue-generating innovations and outsourcing.

Mary Lacity: As a woman in IT, I am also interested in the fact that 27% of your respondents identified as female. This is a higher percentage than we normally see in surveys of CIOs, which typically have 10% to 15% female respondents. Which countries had the highest

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7   *Power Distance* is the degree of inequality among people, from relatively equal (small power distance) to extremely unequal (large power distance). *Uncertainty Avoidance* is the extent to which a society feels threatened by uncertain situations and avoids these situations by providing career stability, establishing formal rules and not tolerating deviant ideas; a higher score implies less risk-taking propensity and vice versa. *Individualism-Collectivism* contrasts societies in which individuals take care of their own interests with societies in which groups take care of each other. *Masculinity-Femininity* reflects whether the dominant values are associated with the collection of money and things (masculine) vs. values associated with caring for others and quality of life (feminine). *Long-term Orientation* is when one is focused on the future as opposed to short-term orientation, where the focus is on the present or past. For more information, see Hofstede, G. "Culture and Organizations," *International Studies of Management & Organization* (10:4), Winter 1980/1981, pp. 15-41.

percentage of female respondents? Moreover, which country had the highest percentage of female respondents in management positions?

Prashant Palvia and Co-authors: In terms of overall female employment in IT, our results are remarkably close to what is reported in the media,[8] which reports that women make up about 25% of the tech sector and hold 17% of senior IT management positions. We did not see much variance in the overall female employment across the countries. Countries reporting women making up more than a third of the IT workforce included China, France, Iran, Macedonia, Malaysia, Romania, Russia, Thailand and the U.K. Countries reporting more than a third of senior IT management positions being held by women include: Finland, Ghana, Iran, Malaysia, Romania, Russia and Thailand.

Mary Lacity: Thank you so much for sharing your valuable and ambitious research project with us. I know we only focused on organizational IS issues, but if readers want to learn more about your findings relating to technical IS issues and individual IS career issues, where can you point them?

Prashant Palvia and Co-authors: Currently, we are in the process of writing papers on technical IS issues and individual IS career issues and will submit them to journals. We expect them to be published in 2021. In the meanwhile, readers may contact any one of us directly.

About the Authors

Prashant Palvia

Prashant Palvia (pcpalvia@uncg.edu) is Joe Rosenthal Excellence Professor, Bryan School of Business & Economics, at the University of North Carolina Greensboro. He is Editor-in-Chief of *Journal of Global Information Technology Management* and an Associate Editor for *Information & Management*. He has published 126 articles in *MIS Quarterly*, *Decision Sciences*, *Journal of the Association for Information Systems*, *Communications of the ACM*, *Communications of the Association for Information Systems*, *Information & Management*, *Decision Support Systems* and other journals. Prashant has published six books, most recently as co-author of *The World IT Project: Global Issues in Information Technology* (World Scientific Publishing Company).

Jaideep Ghosh

Jaideep Ghosh (jaideep.ghosh@snu.edu.in) is Professor of Decision Sciences, Operations Management, and Information Systems at the School of Management and Entrepreneurship, Shiv Nadar University, India. His interests include social networks, data science and big data, system dynamics, financial modeling and econometrics. His work has been published in the *Journal of the Association for Information Science and Technology*, *Sociological Methods & Research*, *IEEE Transactions on Engineering Management*, *International Journal of Production Research*, *Communications of the AIS*, *Journal of Global Information Technology Management (JGITM)*, *Social Indicators Research*, *Scientometrics* and *Journal of Mathematical Sociology*, among others. He is an Associate Editor for *JGITM*.

Tim Jacks

Tim Jacks (tjacks@siue.edu) is an Associate Professor in the Department of Computer Management & Information Systems at Southern Illinois University Edwardsville. He received his Ph.D. from the University of North Carolina at Greensboro and is a founding member of the World IT Project research team. His research has been published in journals including *Communications of the Association for Information Systems*, *Data Base for Advances in Information Systems*, *Information Technology & People*, *Information Technology & Management*, *Decision Support Systems and Business Process Management Journal*. He is the Senior Editor at *Journal of Global Information Technology Management*.

Alexander Serenko

Alexander Serenko (a.serenko@utoronto.ca) is an Associate Professor of Management Information Systems in the Faculty of Business and IT, University of Ontario Institute of Technology, and a Lecturer in the Faculty of Information, University of Toronto. His PhD in Management Information Systems was awarded by McMaster University. His research

8 See *What Are the Trends of Women in Information Technology?*, MyComputerCareer, 2019, available at https://www.mycomputercareer.edu/trends-women-information-technology/.

interests are scientometrics, knowledge management, technology addiction and implicit cognitive processes. Alexander has published more than 90 articles in refereed journals, including *MIS Quarterly*, *European Journal of Information Systems*, *Information & Management*, *Communications of the ACM* and *Journal of Knowledge Management*. His articles have received more than 8,500 citations.

Aykut Turan

Aykut Hamit Turan (ahturan@sakarya.edu.tr) is a Professor at the University of Sakarya, Turkey. His research interests include global IT management, healthcare IT, IT acceptance and adoption, IT diffusion in SMEs, IT occupational culture, and key organizational, IT and cultural issues in different countries. His work has been published in journals including *European Journal of Information Systems*, *Journal of Global Information Technology Management (JGITM)*, *Information & Management*, *Journal of Theoretical and Applied Electronic Commerce Research* and *Communication of the ACM*. He serves on the editorial board of *JGITM*.