Chapter 1

The World IT Project: A Long Journey in the Making

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A journey of a thousand miles begins with a single step
— Lao Tzu

Summary

The World IT Project, the largest study of its kind in the IS academic field, was conceptualized more than a decade ago. Long time in the making, the project was motivated by the dominant and pervasive bias in IS research towards American and Western views. In very broad terms, the World IT Project captures the organizational, technological, and individual issues of IT employees across the world and relates them to cultural and organizational variables. The project was officially launched in 2013 and is now in the publication phase. Because of the enormous global scale of the project, a single or even two or three publications cannot fully describe our findings. This book is a major publication that describes and analyzes the organizational, technological, and individual issues of IT employees in the 37 countries that were included in the project.

This first chapter provides the necessary background for the remaining country chapters, which are co-authored with specific country teams. In here, we describe the goals and objectives of the World IT Project, its general framework and major research questions, the relevant literature and theoretical background, methodological details, expected outcomes and publications, and important contributions. The goal is to provide a world view of IT issues that will be relevant to stakeholders at the firm, national, and international levels.

1.1 Introduction

While the journey begins with a single step, we believe the World IT Project is a single giant step. In fact, it is a journey within a journey.

It is widely recognized that Information Systems (IS) academic research is dominated by American and Western views. This is not due to any grand design but more so because much of IS research began in the US (in the seventies and eighties) and later in Western Europe. However, in this age and times, information technology (IT) has permeated the entire world, and yet the situation has persisted. This pervasive bias does not do justice to the rest of the world as other countries and regions do not find their topics investigated or have to rely on Western results, which may not be necessarily applicable to their contexts. Many scholars find themselves using

the models and results from the Western world directly and unscrupulously applying them to other countries. The consequences of such actions can be misguided, misleading, or even harmful.

An international team of researchers recognized this deep divide in IS research and initiated the World IT Project in 2013 — in order to investigate the major IS/IT[1] issues in different parts of the world. The World IT Project, although huge in size and scope, is yet a modest but important step to move IS research to incorporate views from major parts of the world. In our pursuit, we developed a standard instrument to track important issues in different countries of the world. The instrument focuses on organizational, technological, and individual issues of IT employees across the world and relates them to contextual factors such as the organization itself, organizational culture, environment, IT occupational culture, and national culture.

While it is not feasible to investigate each country in the world, we wished to maximize the usefulness of our results. So, we looked for countries exhibiting diversity in terms of their cultural, economic, political, religious, and societal backgrounds. Over a period of over 3 years, we were able to collect the same data from 37 countries. These countries provide a good representation of the diversity in the world. The data we collected is huge and enormous; our results will be captured in a series of articles and books. However, it is worth noting that the project's history, goals, governance, challenges, and lessons were reported in Palvia *et al.* (2017) and the major research questions were presented in Palvia *et al.* (2018).

This book was conceived to share with our audience the organizational, technological, and individual issues of IT employees in each of the 37 countries. There are 37 chapters that follow. Each chapter, in alphabetical order of country, briefly describes the country's background, its history, and its IT developments. Results are then presented about the three types of IT employee issues and interpreted in the country's context. Most chapters have co-authors from the country of focus, who were assisted by the central research team. Readers may read all chapters or focus on the countries that are of most interest to them.

In this beginning chapter, we describe the project goals and objectives, relevant literature and theoretical background, overall methodology and the research journey, outcomes and planned publications, and finally our contributions and limitations.

[1] As is often the case, we use the terms IS and IT interchangeably.

1.2 Project Goals and Objectives

As early as 2003, at the GITMA World Conference (www.gitma.org) in Calgary, Canada, and later in 2004 in San Diego, California, several IS colleagues started expressing concerns about IS research in general and especially the key IS management issue studies published in the top IS journals. The published research was clearly Western-centric. For example, two types of IS issues have been tracked in the US on an annual basis: organizational IT issues and technology issues (e.g., Kappelman *et al.*, 2018). While there have been fragmented and sporadic attempts to address issues in specific countries or regions (e.g., Ifinedo, 2006; Luftman *et al.*, 2012; Watson *et al.*, 1997), no one had examined much of the world's IT issues in any systematic or comprehensive manner. It took us almost 10 years to crystallize our ideas and put a team together to launch the project in 2013. After much deliberation, the project's core team (the authors of this chapter) settled on the following charter and goals for the World IT Project.

> *The World IT Project is designed to examine important issues confronting IT employees, both staff and management, in many countries of the world. The proposed project requires survey data collection from different countries, representing different cultures, levels of economic growth, societal and religious beliefs, and political systems. More than forty countries from all parts of the globe will be targeted for this research. In terms of scope, the project is akin to Hofstede's research on national culture and the GLOBE project on culture and leadership, and builds on their research.*
>
> *Specifically, the project will examine various IT employee issues, such as organizational IT issues, technology issues, and individual issues. Among organizational IT issues are the roles of IT strategic planning, IT-business alignment, business process reengineering, security and privacy, and IT reliability and efficiency, to name a few, in the nature and experience of IT employment. Technology issues include how cloud computing, social media, mobility, ERP systems, business intelligence, and big data, again to name just a few, are perceived by IT workers to influence their jobs. Some of the factors concerning individuals include job satisfaction, efficacy, and role ambiguity. For a deeper understanding of these, the context is important. Also examined will be contextual factors such as organizational variables (including structure and strategy), organizational culture, IT occupational culture, and national culture.*

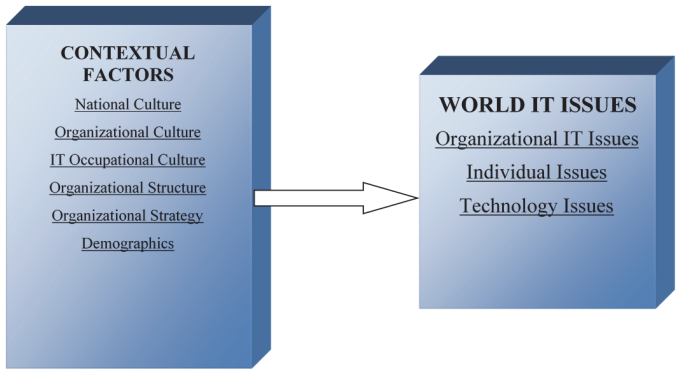

Fig. 1.1: General Framework for the World IT Project

Figure 1.1 provides the general framework for the project and captures the goals and objectives of the project in a succinct manner, albeit at a very high level. It is worth noting that many research questions and research models can be derived from the general framework. The more important research questions were reported in Palvia *et al.* (2018). Since then, we have added one more question. These questions are summarized as follows:

- **Research Question 1:** What are the important organizational IS issues in different countries and regions of the world?
- **Research Question 2:** What are the important technology issues in different countries and regions of the world?
- **Research Question 3:** What are the important individual issues of IT employees in different countries and regions of the world?
- **Research Question 4:** How do the national cultural values of IT employees compare with the national culture values of the general population in each country?
- **Research Question 5:** Do the national culture values of IT employees exhibit similarities across countries?
- **Research Question 6:** Do IT occupational culture values differ by country and/or region of the world? And, if so, how?
- **Research Question 7:** What are the antecedents of job satisfaction among IT employees, and how do they differ from country to country?
- **Research Question 8:** What are the antecedents of turnover and turnaway among IT employees, and how do they differ from country to country?

- **Research Question 9:** What are the differences due to gender in the individual variables and the relationships between the antecedents and the consequents? How do gender effects vary from country to country?
- **Research Question 10:** How do IT employees use social capital and draw from friendship circles when contending with dynamic elements of the organization? What are the differences from country to country?

The focus of this book is on research questions 1, 2, and 3. In subsequent chapters, we provide the results of organizational IS issues, technology issues, and individual issues for each of the 37 countries. Results related to the remaining questions will be included in forthcoming journal articles and conference papers.

1.3 Literature and Theoretical Background

Given the scope of the book, we describe only the literature related to organizational IS issues, technology issues, and individual issues. Much of the following description is adopted from Palvia *et al.* (2017), where it was first reported.

Academic studies on organizational IT issues have typically been conducted only in the US and have been tracked annually for more than a decade. Past research has generally tracked two types of issues: organizational IT issues and technology issues, from the perspective of IT managers. These results are published annually in *MIS Quarterly Executive*; the last results are from 2017 (Kappelman *et al.*, 2018). We evaluate organizational IT issues and technology issues worldwide from the perspective of IT employees. We were interested in IT employees' views and deliberately chose them, as they are closer to the IT profession and thus not unduly influenced by general management or other stakeholders. There are other studies that have examined specific IT personnel issues, such as job satisfaction (McMurtrey *et al.*, 2002), technostress (Ayyagari *et al.*, 2011), and turnover intention (Shih *et al.*, 2013). We grouped these and similar issues under "individual issues" and included them in the World IT Project.

The original source of organizational IT issues was the key issue studies published annually in *MISQ Executive*, such as Luftman and Ben-Zvi (2010) and Luftman *et al.* (2012). The various issues listed in these studies were examined for their relevance in the global context. Items were added,

Table 1.1: Organizational IT Issues

Business productivity and cost reduction
Alignment between IT and business
Business agility and speed to market
Revenue-generating IT innovations
IT cost reduction
IT strategic planning
Business process reengineering
Enterprise architecture
Security and privacy
IT reliability and efficiency
IT service management (e.g., ITIL)
Globalization
Outsourcing
Attracting and retaining IT professionals
Bring your own computing device (BYOD)
Continuity planning and disaster recovery
Project management
Knowledge management

deleted, and modified based on various international studies and existing literature. The final list included eighteen issues, as shown in Table 1.1.

A primary and important part of IT employees is to interface with the technology itself and deal with related issues. In many ways, technology (e.g., computer hardware, telecommunications, software, and services) defines the entire IT occupation (Guzman *et al.*, 2008; Jacks, 2012). There are a myriad technologies and related issues: old, new, and emerging; so, we included broad technologies based on their appearance in the IS literature (e.g., the annual key issue studies cited above) and our knowledge of the IT industry. A total of 16 technology issues were included, as shown in Table 1.2.

Individual issues for IT employees describe the attitudes, beliefs, and behaviors that prior research has shown to be critically important in the workplace. These issues were measured by several constructs, namely: job satisfaction (Moore, 1997), perceived work overload (Kirmeyer and Dougherty, 1988), perceived work/home conflict (Kreiner, 2006), strain (Moore, 2000), professional self-efficacy (Moore, 1997), job insecurity (Ashford *et al.*, 1989), turnover intention in the organization (Moore, 1997), and turnover intention in the IS profession (Moore, 1997). Each construct was operationalized by multiple items, as shown in Table 1.3.

Table 1.2: IT Related Issues

Business intelligence/analytics
Cloud computing
Enterprise resource planning (ERP) systems
Collaborative and workflow tools
Customer relationship management (CRM) systems
Mobile and wireless applications
Enterprise application integration
Business process management systems
Big data systems
Mobile apps development
Networks/telecommunications
Social networking/media
Virtualization (desktop or server)
Software as a service
Data mining
Service-oriented architecture (SOA)

1.4 Methodology and the Journey

Much of the methodology details described here are documented in Palvia *et al.* (2017).

The first critical step of the World IT Project was the preparation of the standard survey instrument. As much as possible, we used previously validated items for the constructs so that the instrument had good psychometric properties. Pilot tests also helped us refine the instrument. Ultimately, the instrument contained 160 items. Although the instrument appeared to be long, all questions required the respondent to select one answer from a menu of options, and it could be completed in about 25 min. For example, majority of the questions required a selection on 1–5 scale, where 1 represented most importance and 5 represented no importance, or 1 represented strongly agree and 5 represented strongly disagree. The instrument was frozen at the end of 2013. As an exception and in special cases, country investigators (CIs) could add a few of their own questions. This was necessary to assure uniform data across all countries. The Institutional Review Board at the University of North Carolina at Greensboro approved and exempted the instrument from further review. The core team members and CIs also received approvals from their home Institutional Review Boards if necessary.

Table 1.3: Individual Issues

Job Satisfaction	In general, I like working here. All in all, I am satisfied with my current job. In general, I don't like my current job.
Perceived Workload (Work Pressure)	I feel that the number of requests, problems or complaints that I deal with at work is more than expected. I feel that the amount of work I do interferes with how well it is done. I feel busy or rushed at work. I feel pressured at work.
Work/Home Conflict (Work–Life Balance)	There is a blurring of boundaries between my job and my home life. My work-related responsibilities create conflicts with my home responsibilities. I do not get everything done at home because I find myself completing job-related work.
Strain (Workload and Burnout)	I feel drained from activities at work. I feel tired from my work activities. Working all day is a strain for me. I feel burned out from my work activities.
Professional Self-Efficacy (Sense of Accomplishment)	I feel I'm making an effective contribution to what this organization does. In my opinion, I do a good job. I have accomplished many worthwhile things in this job. At my work, I feel confident that I am effective at getting things done.
Job Insecurity (Threats to One's Job)	I am worried that future technology advancements may pose a threat to my job. I believe that other people may be able to perform my work activities. I am concerned that my job may be eliminated soon. I am concerned that my job may be outsourced soon.
Career Plans: Turnover Intention — Organization	I will be with this organization 1 year from now. I will take steps during the next year to secure a job at a different organization. I will be with this organization 5 years from now.
Career Plans: Turnover Intention — IS Profession	I will be working in the IT field 1 year from now. I will take steps during the next year to secure a job outside the IT field. I will be working in the IT field 5 years from now.

The core team members guided the overall project and served as liaisons to individual CIs and provided them with support. Each country had its own team. Each country team generally had one to three CIs. In some cases, we allowed four members per team. We solicited CIs through professional contacts and conferences, requests on the AISWorld listserv, and direct emails to faculty listed on the AIS faculty directory. We also organized information sessions at conferences, such as the GITMA and AMCIS conferences in 2013 and 2014, in order to attract CIs. In each communication, we described the benefits to the CIs and their roles and responsibilities.

One of the primary goals of the project was to obtain data from major regions of the world and include countries that represent different cultures, economic status, religious beliefs, and political systems. We needed local CIs because they would understand the local culture and how to best approach local companies to participate. The CIs were also responsible for the translation/back-translation of the instrument to the local language, if necessary. As a result, the instrument has been translated into the following languages: Chinese, French, Italian, Japanese, Korean, Malay, Polish, Portuguese, Russian, Spanish, Thai and Turkish.

The CIs were given general directions and guidelines for collecting the data from IT employees in organizations. As they knew their situation best, they were given discretion in what specific method(s) they used to collect the data and how to approach organizations in their country. The general guidelines included:

- All respondents needed to be in the IT profession.
- Try to get a minimum usable sample size of 300 IT employees.
- Collect responses from 10 to 15 IT employees from 20 to 30 companies.
- Try to include a variety of industries.
- Assure complete anonymity in data collection.

Most countries exceeded the target sample size of 300. There are a few who fell short because of a variety of reasons; nevertheless, we decided to include them in our analysis.

Recommendations were made to the CIs on the actual data collection, e.g., mail surveys, face-to-face surveys, email surveys, Web-administered surveys, and going through the CEO/CIO or another senior executive to recruit multiple IT employees from the same organization. The CIs used the above methods, but also came up with their own innovative solutions to collect the data, e.g., hire a consulting company specializing in conducting surveys, have the surveys completed at industry conferences, and organize

Table 1.4: Countries in the World IT Project

Argentina	Iran	Portugal
Bangladesh	Italy	Romania
Brazil	Japan	Russia
Canada	Jordan	South Africa
China	Lithuania	South Korea
Egypt	Macedonia	Taiwan
Finland	Malaysia	Thailand
France	Mexico	Turkey
Germany	New Zealand	UK
Ghana	Nigeria	USA
Greece	Pakistan	Vietnam
Hungary	Peru	
India	Poland	

special events for the purpose. Many CIs used multiple methods to collect the data.

The initial cutoff date for data collection was December 2016. However, given the enormity of the projects and challenges encountered in data collection, the date was extended to December 2017. Our initial target for the number of participating countries was 30, which we later increased to 40. The final count was 37 when we finished the data collection effort. Table 1.4 shows the list of countries participating in the World IT Project.

Once the data collection was complete, the CIs were asked to code the data in an Excel file and send it to the core team. They were sent a coding template and instructions. The core team examined each country data both visually as well as applied statistical tests. The visual examinations looked for things like: missing data, same codes for all fields, out of range data, and similar codes across multiple records. Any anomalous records were deleted. For example, if the missing data was excessive, the entire record was deleted. If the row with missing data was retained, the missing data were replaced by the number 9. IBM SPSS 23 was used for statistical analysis. Statistical tests included construct reliability assessment. This was done both at country level and the entire data set level. Problems were flagged and will be accounted for in our future analysis. It is worthy of note that at least three country datasets were completely rejected, and the CIs were given the opportunity to collect the data all over again. Two of the countries complied. One did not and is not part of the 37 countries.

The complete database of all the 37 countries is enormous; it has more than 11,000 records and more than 1.7 million data items.

1.5 Outcomes and Publications

Subsequent to the goals and research questions presented in an earlier section, we describe here some specific studies that will result from the analysis of the massive and rich database of the World IT Project. The types of studies conducted can be viewed along two dimensions: scope and epistemology, as shown in Table 1.5. On the scope dimension, we plan to conduct three types of studies: single country studies, multiple country studies, and global studies. The multiple country and global studies will provide a comparative examination as well as an integrated view of findings across countries and regions. On epistemology, each study can be either descriptive, i.e., providing analysis of stand-alone issues and findings, or theoretically grounded explanation of various phenomena and relating them to a variety of antecedents and contextual factors.

This book is a compilation of single country studies, and it reports descriptive analysis of the organizational, technological, and individual issues of IT employees in each of the 37 countries (i.e., the top left cell of the above matrix). We plan to also prepare descriptive analyses of IT occupational culture and national culture values of IT employees.

Studies in the other cells of the above matrix are underway and will be published in other outlets. As an example of theory-based study in a single country, we recently completed a study in Brazil (Porto Bellini *et al.*, 2019), which examines the following research question: What are the antecedents of turnover and turnaway among IT workers in the context of a national crisis, and how are they affected by age differences? Note that turnover refers to changing jobs within the IT profession and turnaway refers to moving to another profession altogether. We had a fortuitous situation, from a research point of view, that a major national crisis developed in Brazil during the time data were collected in the country. We were able to develop a theoretically grounded model employing the constructs of professional self-efficacy, job satisfaction, and job insecurity along with turnover and turnaway, with national crisis and age as control variables. The model was evaluated by using structural equation modeling (SEM) techniques.

Table 1.5: Types of Studies from the World IT Project

Scope/Epistemology	Single Country	Multiple Country	Global
Descriptive			
Theory-based			

Another example of a theory-based study using the entire global dataset, currently underway, is to examine the relationship between IT occupational culture and national culture. Possible research questions to examine are: Do the national culture values of IT employees exhibit similarities across countries and do they differ from the general population? Do the IT occupational culture values of IT employees exhibit similarities across countries? Can the countries be clustered based on IT occupational culture and if so, how many clusters? Can links be found between national culture and IT occupational culture?

Another important area of investigation would be to examine the impact of national culture and IT occupational culture on important issues and dependent variables, e.g., the need for security and privacy, IT strategic planning, and technostress. Along these lines, the role of gender on these issues would be an important one to examine.

As can be seen, numerous research questions can be addressed using the World IT Project's rich dataset. Along with this book, we have had three journal publications and multiple conference papers. At this time, we have plans to complete eight to 10 mores studies.

1.6 Contributions and Limitations

The World IT Project started with an ambitious and expansive goal. Fortunately, we have been able to accomplish our objectives and the project is coming to fruition. The implications for both research and practice are enormous. As we said in our project charter, a good understanding of the critical IT issues facing firms and their employees within their surrounding contexts will be important from the firm, national, and international points of view.

Specifically, at the firm level, our results would help management and staff in formulating business and IT related policies and strategies. At the national level, it would allow stakeholders, such as policymakers, governments and vendors, to address the pressing issues of the times. In international business, it would help firms and governments respond to the needs of partners and stakeholders in other countries. A comparative examination across countries and world regions would help facilitate global understanding, cooperation, and knowledge transfer among many nationalities.

For academic research, the World IT Project offers current and future scholars a grounded understanding of the international IT environment and provides a validated framework to launch many international IT studies.

Truly global IT studies are acutely needed in IS research; occasional and sporadic forays do not lead to cumulative knowledge and a good understanding of global phenomena. Other publications from the project will provide theoretically grounded models which researchers would find useful to build and extend their work. We even offer the possibility, on a selective basis, of sharing our database or part of it with other researchers as long as their goals coincide with ours and help the mission of greater global understanding.

As for the contributions from this book itself, readers, whether from academia or industry, may find value in several ways. The readers may focus only on one or a few chapters, based on their countries of interest. Each chapter is independently written and can be read without the knowledge of other chapters. More likely, readers would be more interested in multiple chapters so that they can compare, contrast, and integrate issues from several countries. The more avid reader is encouraged to read the entire book to develop a more comprehensive understanding of the global issues in IT.

As for the limitations of the World IT Project, it is worth mentioning a few. First, our survey instrument was long with 160 questions; yet it may not have been able to capture all the dimensions of global IT. But we do believe that we have captured most of the important dimensions within the constraints of what was achievable in one single project, albeit a very large one. By the same token, many of the lists and items we provided to the respondents may not have captured all of the relevant issues; although again, we did our homework in combing through the literature, pilot-testing and validating the various constructs and items. Our research also suffers from the usual limitations of survey research, e.g., sample size, randomness, and representativeness. Although it was almost impossible to draw our respondents completely randomly from representative sub-populations, we did our best to draw respondents from various industries and organizations of different sizes. Finally, while using a standard instrument offered benefits in terms of comparability of results, there were instances when some terms in the instrument had different semantic interpretations in other countries and cultures. Again, we exercised caution and relied on local CIs to handle such situations.

1.7 Conclusion

In this chapter, we have provided the necessary background for the World IT Project as a precursor to the remaining 37 chapters, one for each country that was investigated by the project. We described the goals and objectives of the World IT Project, its general framework and major research questions, the relevant literature and theoretical background, methodological details, expected outcomes and publications, and important contributions. The project will have several deliverables that should significantly enhance our understanding of the global IT environment, and this book is one of its first deliverables. Each chapter that follows is a systematic assessment of the needs and issues of IT employees in organizations across the globe. As pointed out earlier, the problems and opportunities associated with these needs have profound implications for researchers and practitioners in all parts of the world. Finally, this research effort should serve as an exemplar of global IT research and encourage diversity in research and the use of multiple paradigms beyond the current American and Western-centric views. Just as we were able to accomplish our goals, we encourage research collaboration among scholars across the world, thus leading to higher synergy and relevance.

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