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Growing Doctoral Education in Africa: The Story of an Online Course at ICT University in Cameroon

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Abstract:

While Africa as a continent has experienced steady economic growth over the last decade, quality of life issues still plague much of the continent. The complexity of these problems requires intellectual capabilities to develop workable and sustainable solutions. Thus, facilitating doctoral education in less developed countries (LDCs) is an important and worthwhile undertaking. This paper tells the tale of how a simple case of serendipitous opportunity to facilitate a doctoral research seminar for an African university became a catalyst in securing the participation of several leading scholars to contribute to the seminar and grow their interest in contributing to doctoral education in LDCs. The seminar garnered strong positive reactions from the students who were spread across Africa and among the scholars who participated. We discuss the lessons we learned with a view toward providing a template for remotely delivering doctoral coursework in LDCs.

Keywords: Less Developed Countries, Sustainability, IS Education, Doctoral Education, Africa, Sub-Saharan Africa.

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1 Introduction

Today, more than ever, the world faces formidable global challenges and continues to grapple with the extreme disparity of the human condition between developed and less developed countries (LDCs). LDCs face various complex problems and needs, such as the availability of potable drinking water, eradication of infectious diseases, elimination of poverty, and availability of healthcare, that require well-developed and sustainable solutions. Solving these problems requires developing LDCs by developing human capital, goods and service production capacity, banking systems, community infrastructures, quality education, and healthcare organizations.

According to the United Nations' (UN) most recent triennial review of LDCs, 66 percent of the world's LDCs are situated on the African continent and 56 percent of African nations are LDCs (United Nations, 2016), which emphasizes the need to focus on developing the continent. However, in recent years, the focus of many non-governmental organizations (NGOs) and governments in developed countries has shifted from aid to more "trade and investment" toward sustainable economic growth (Essoungou, 2011). While Africa has since experienced a long, sustained uptick in economic development on average throughout the continent (Chitonge, 2015), this growth has had little impact on alleviating ongoing problems, such as extreme poverty, substandard water quality, and lack of quality healthcare (Chitonge, 2015; Okalany, Chindime, Uwituze, Osiru, & Adipala, 2016; Roche, Bain, & Cumming, 2017). For these reasons, we urgently need to develop intellectual capital internally in the form of scholars, leaders, and technicians. Building higher education programs in LDCs places the growth of education at the epicenter of where the greatest need resides. Growing scholars, leaders, and a technical people from the inside creates thinkers who can begin to address the issues in their own communities, states, and countries to which they are connected, which provides hope for a brighter, cleaner, and sustainable tomorrow. Such individuals will be able to leverage their local knowledge and produce contextualized solutions that represent both a contribution to science (Johns, 2006) and society¹ (United Nations, 2017).

Aside from the global drivers for potential solutions to the world's problems, building higher education programs in LDCs has direct implications for the IS community. Doctoral programs in LDCs, for example, allow IS researchers to expand their knowledge and insights throughout the global information systems (IS) community. A quality program also allows IS researchers to grow the community and expand to a broader audience. Such endeavors require the support and contribution of scholars in developed countries and agree with the Association of Information Systems' (AIS) mission and strategic goals (aisnet.org/page/AboutAIS). In addition to fulfilling the goals of promoting IS education and scholarship, participation in developing doctoral education in LDCs helps "position information systems as a leading profession in the service of society" (aisnet.org/page/AboutAIS). Such efforts need not be daunting. Instead, they can begin with baby steps by helping doctoral students from LDCs to engage with established scholars/experts in various domains.

In this paper, we present and discuss one such course—a second-year doctoral course on theory development and theories applicable to a variety of business disciplines—and the participation and collaboration of scholars in delivering content to doctoral students in a doctoral program at ICT University (ICTU) headquartered in Cameroon. We tell the story of how the development, coordination, and delivery of this course brought together a community of scholars who planted a seed for the continued contribution and development of doctoral coursework at that university. In addition, we explain the logistics, pedagogy, and delivery of the course. We share the scholars and students' feedback and comments, discuss the lessons we learned and how one might replicate the course and the program, and make suggestions for future growth and endeavors. Ultimately, we provide what one might consider the beginnings of a template for future such endeavors and inspire the larger community to help bring doctoral education to the remotest corners of the world.

¹ In 2000, at the turn of the century, the UN adopted the United Nations Millennial Declaration, which later became known as the Millennium Development Goals (MDG), an initiative to begin identifying and tackling global problems that negatively impact people around the world (www.un.org/millenniumgoals). The success or failure of these initiatives impacts LDCs. Today, the efforts continue as the MDG has transformed into the UN's Sustainable Development Goals initiative (www.un.org/sustainabledevelopment).

2 Background²

2.1 The Story: Early Experience and Birth of ICTU³

In late 2009, I received a call from a former PhD cohort and colleague, Dr. Victor (Vic) Mbarika. He (too) had a dream. As a natural outlet of his research stream, passion working with information and communication technologies (ICTs) in LDCs, and his love for his homeland of Cameroon, Mbarika had a vision to build a university to serve the people and communities of his hometown. His primary sought to help develop a viable workforce that would improve the quality of life in his homeland through sustainable economic development. He was in the process of establishing the governing structure for this institution, the ICTU Board of Trustees (BOT), that, once established, would be the final link in realizing his dream. Knowing my interest in and experience working in LDCs, he asked me to serve on the BOT. Being passionate and driven by a desire to give back and being committed to the belief that social and economic development requires developing and educating a workforce, I enthusiastically accepted. Soon thereafter, board appointments were completed, the founding BOT was officially in place, and, in 2010, ICTU was born.

2.2 The Story Continues: ICTU Expands⁴

Less than a decade later, ICTU has grown and expanded exponentially—it has gone way beyond the original mission to develop a marketable ICT workforce with graduates with solid ICT skill sets. Today, ICTU's 10 undergraduate programs, nine graduate (master's) programs, seven doctoral programs, and a myriad of diploma and certificate degree programs span beyond ICT degrees but remain connected to ICT and managerial human capacity development. ICTU has over 5,000 students, accreditation from the Cameroon Ministry of Education, and physical operations in Cameroon, Ghana, Uganda, and, most recently, Nigeria. ICTU's mission focuses on developing human capacity in LDCs and specifically targets Africa, Latin America, the Caribbean, and Asia. It also has the only certified Cisco Training Center in Central Africa. ICTU delivers courses both in person and online to students across Africa. With the growth of the university's programs and curriculum, coupled with the lack of an ample pool of academically qualified instructors, the university faces significant challenges in staffing courses and meeting demand.

In April, 2017, late into the start of the semester, I received a call that further illuminated these challenges that face many LDC institutions: an urgent need for someone to take over and teach a semester-long doctoral research seminar—a difficult task.

2.3 Drama Unfolds: My Mission Should I Choose to Accept It⁵

The doctoral research seminar, which focused on introducing students to a broad range of theories in business—presented two challenges in particular: the semester had already begun, and the course required extensive work to prepare for given that the students came from a variety of business disciplines. Moreover, the opportunity only offered a modest honorarium. It seemed unlikely that I would find someone who was a good fit and would want to take it on as a service project given the various constraints (especially the short notice). To tap into a network of possible candidates, I reached out to my colleague, the second author, for suggestions. I assumed he would be too committed to other projects to be able to teach the class himself, but I hoped he could perhaps lead me in the right direction and make introductions to potential candidates. Instead, he was intrigued and interested in being involved in the course himself because he also has a desire to give back to the community—especially in LDCs.

2.4 My Motivation to Coordinate the Course⁶

I decided to take on the course for a simple reason: to give back to the community in any way I could, which I feel is my true calling. I have been involved in a community development project in rural India for over 10 years. I have always been keen to offer workshops in LDCs such as China, India and Malaysia. This opportunity to participate in coordinating a course in Africa was a first for me, and I could not say no.

² For subsequent sections in first person, we include footnotes to indicate which author wrote them.

³ First author

⁴ First author

⁵ First author

⁶ Second author

2.4.1 Kicking Things Off

After discussing the logistics and course requirements and realizing that the timing of the course was going to be problematic (it overlapped two semesters), we decided we would jointly coordinate it: the first author would serve as the logistics coordinator and I would serve as the content coordinator. We then brainstormed creative ways to meet the course objectives under the time and delivery method constraints we faced. Beyond the basic goals of meeting these requirements, we both also had a desire to significantly contribute to the program and approach the course as the first step to a bigger initiative to help grow doctoral education in ICTU, Africa, and other LDCs. We hoped that, through personally developing and delivering this course, we would create the beginnings of a sustainable template for delivering the course that other people could replicate in the ICTU program and in other institutions/environments and course-delivery platforms throughout various LDCs.

2.4.2 Designing the Course

I took on the role of designing the course. Specifically, I designed it to cover all aspects of theory development to ensure it had broad applicability and relevance to various business disciplines (see Figure 1 for the topics).

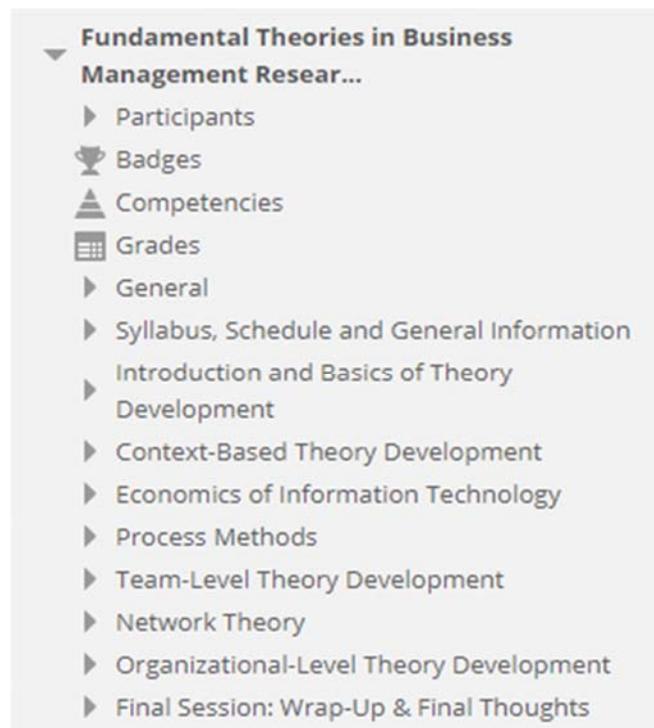


Figure 1. Fundamental Theories in Business Management Research Topic List

Next, after identifying the course topics, I focused on staffing the course with scholars who had both specific knowledge to cover the topics and more general knowledge that spanned disciplines. As such, I reached out to scholars from my network of former doctoral students and colleagues around the world and asked for their support in a given area of expertise. I hoped to keep their time investment low by focusing on their expertise area and/or drawing from a session that they had previously taught. I received an overwhelmingly positive response. Of course, given the course's timing and their teaching and research commitments, some scholars, though keen to participate, could not. Table 1 lists the scholars who could participate: these individuals showed much eagerness and enthusiasm about the opportunity to contribute to developing scholars from and in LDCs.

Table 1. List of Guest Scholars and Topic Coverage

Scholar	Affiliation	Topic
Indranil Bardhan	Professor, Information Systems Naveen Jindal School of Management University of Texas at Dallas	Economics of information technology
Hilloi Bala	Associate Professor and Whirlpool Corporation Faculty Fellow Information Systems Kelley School of Business Indiana University	Organizational-level theory
Likoebe Maruping	Associate Professor, Computer Information Systems Robinson College of Business Georgia State University	Team-level theory
Arun Rai	Regents' Professor; J. Mack Robinson Chair of IT-Enabled Supply Chains and Process Innovation and James A. Harkins III Professor in Information Systems, Robinson College of Business Georgia State University	Introduction and basics of theory development
Rajiv Sabherwal	Professor and Department Chair Edwin & Karlee Bradberry Chair in Information Systems, Information Systems Walton College of Business University of Arkansas	Process methods
Tracy Ann Sykes	Associate Professor, Information Systems Walton College of Business University of Arkansas	Network theory
Viswanath Venkatesh	Associate Professor, Information Systems Walton College of Business University of Arkansas	Contextual theory Development Research programs Writing

Once I had confirmed the lineup of guest scholars, the first author contacted each participant and managed the logistics of the scheduling, course material distribution, technology support, and student communications. ICTU provided some level of technology support during most class sessions that proved useful at times. Ultimately, each session finished successfully, and the lecturing participants and students provided overwhelmingly positive feedback. However, the sessions still had their challenges. In Section 3, we present the details of the course, discuss the logistics of executing and delivering it, and address the successes we realized and challenges we faced in delivering the course and/or meeting our objectives.

3 Seminar Logistics

As we state in Section 2, even though delivering an online course is commonplace nowadays, we faced various challenges in organizing and conducting the seminar. As such, in this section, we describe the course structure, delivery logistics, and the logic behind them to provide the beginnings of a course template that we hope others will find useful.

3.1 About the Course⁷

The course, titled “Fundamental Theories in Business Management Research”, was a second-year doctoral course focused on theory development and theories in business research. As with most theory-development doctoral courses, the course’s learning objective focused on developing an understanding of theory building, learning a broad array of theories, and putting that understanding into practice through developing and writing effective research papers. The course content included a general introduction to theory and theory development and theories in various topics. More specifically and in alignment with the course objectives, the course had the following learning objectives:

⁷ Second author

- To build theory-development skills and recognize the challenges in developing good theory.
- To learn how to review and synthesize the literature with a focus on identifying gaps.
- To learn to write the front end (especially theory sections) of empirical papers in the social and behavioral sciences.
- To situate the knowledge gained about theory and writing in broad the context of developing an effective research program.
- To situate the knowledge about conducting research in different key paradigms.

Figure 1 in Section 2.4.2 above lists the topics. The course opened with two three-hour sessions: one reviewed the basics in theory development and the other reviewed contextualization of theory. From there, I designed the modules in blocks that, for the most part, I could easily move around in sequence to accommodate the complex constraints of the course design and the availability of the guest scholars. The course addressed various theory-development perspectives such as context-based theory, economics theories, process methods, team-level theory, network theory, and organizational theory.

3.2 Course Delivery

ICTU employs a variety of course-delivery methods (e.g., face-to-face, online, and hybrid models) primarily driven by the program and target student population. Although most students in the doctoral programs at ICTU attend classes in a traditional classroom environment, the program often includes online students from various places in Africa. Instructors at the university teach online courses and live collaboration and lecture sessions using the open source Moodle learning management system (Figure 2), and they administer live online sessions using Moodle's Big Blue Button (BBB), an embedded VoIP conferencing and collaboration tool (see Figure 3).

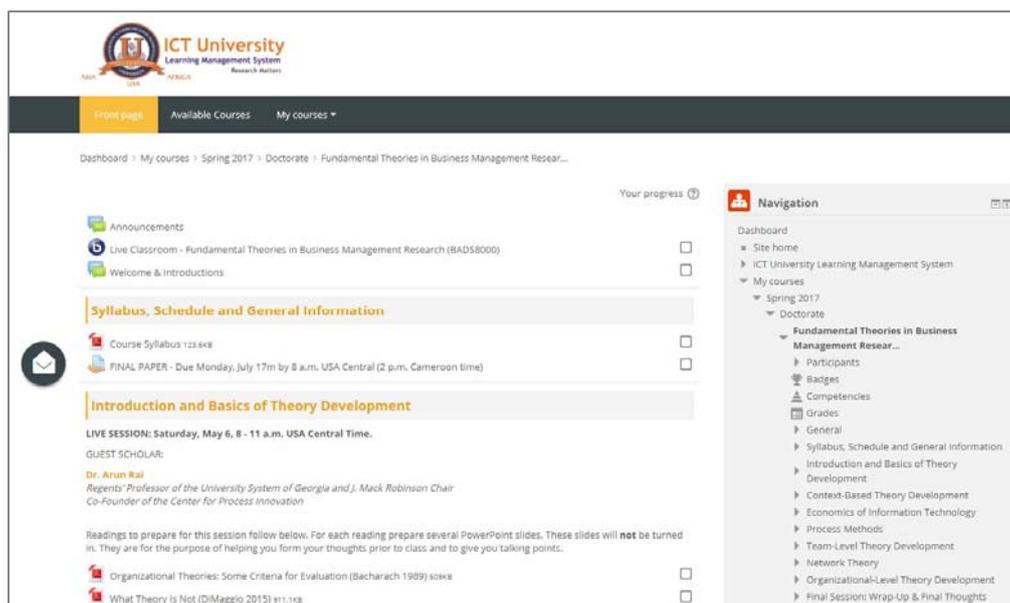


Figure 2. ICTU Moodle Interface Example

We delivered the course fully online using the Moodle learning management system (LMS). We provided the readings for the students to prepare in PDF files in each module throughout the session. A guest scholar delivered each module in a three-hour online session. The scholars conducted each of these three-hour class sessions live using Moodle's Big Blue Button tool and recorded the sessions. The BBB has audio, video, and screen-sharing capabilities (see Figure 3), and one can seamlessly use it in the Moodle interface. The class sessions varied on whether they used video or audio only due to the presenters' available bandwidth when connecting and/or the reliability and stability of the connection when conducting the class. We often found video delivery to be problematic and, thus, used only audio.

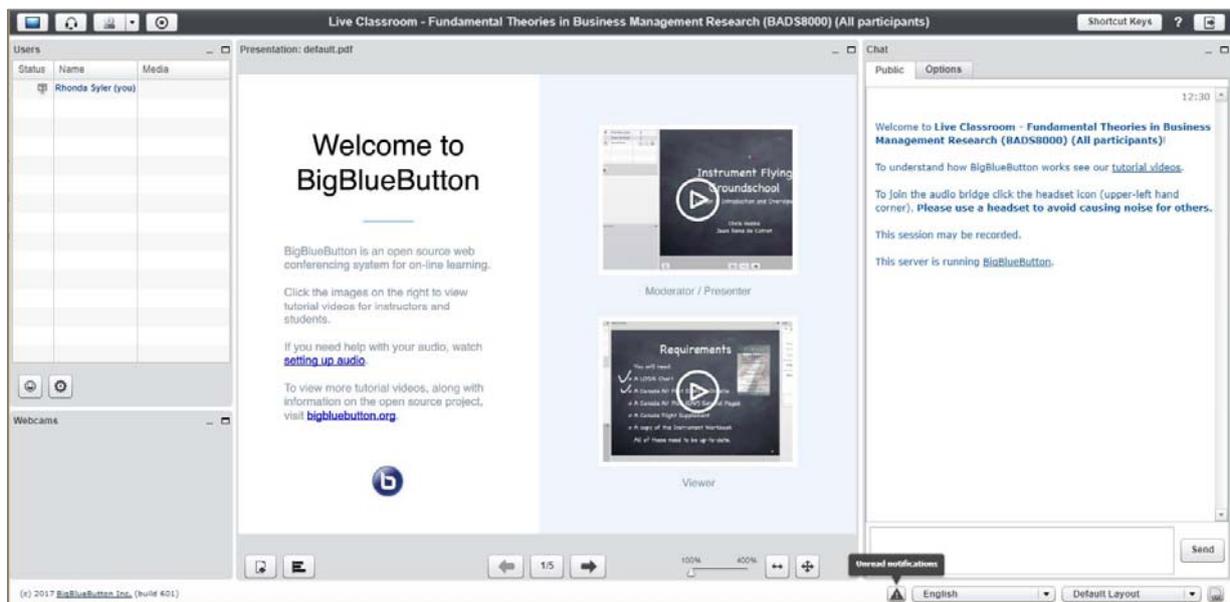


Figure 3. The Big Blue Button

3.3 Scheduling and Coordination

As we mention above, we designed the course so that the guest scholars would conduct one three-hour session with the students in their area of expertise. The guest scholars covered six of the eight sessions, and the second author covered the other two sessions. When we were approached about the immediate need to cover the course, it was already April—mid-way into the semester. However, we needed time to prepare for the course, coordinate the schedule for the sessions, and learn a new Learning Management System (LMS) technology. To complicate the scheduling, we (both authors, guest scholars, students, and the technical support spread across numerous time zones) were entering a busy time toward the end of the semester for already scheduled work. With the scheduling constraints we faced (i.e., optimal order for session delivery, available meeting times for students, participants' availability, and our availability), we faced challenges in coordinating the sessions. While we had tremendous buy-in from our slate of scholars, whether the course succeeded depended on when the live class sessions occurred and all parties' flexibility. The guest scholars were very accommodating and flexible, which had the makings to offer a potentially successful course, but first we had to actually resolve the scheduling issues.

Initially, we assigned a single, fixed time for the live class sessions. However, the time constraints we faced meant such a fixed time could not work, so we presented our proposal for the course design and pedagogical concept to ICT University's staff to explore what flexibility existed for scheduling to best balance the constraints. The ICT leadership team and staff expressed enthusiasm about our design and worked hard to accommodate a variable schedule for the live sessions. The staff worked to develop a list of available times that suited all students and the parameters of the myriad of time zones we had to deal with (as many as five different time zones at any given time).

With the time availabilities provided to us, I⁸ created a scheduling grid to make coordinate the guest scholar's sessions, their varied schedules and time zones work, and the students' schedule constraints. I then coordinated with each guest scholar to find workable times among the available time slots that all parties would be available to conduct a live session. I aimed for a series of weekly live sessions, but that proved impossible. However, with this grid of resulting time availabilities and the flexible design that ICTU allowed, we were able to create a logical flow of course content and present a pedagogically sound course schedule (see Table 2). After several iterations and emails among the various stakeholders, a schedule emerged. We focused on maintaining frequent sessions to ensure that scholars and students continued to engage throughout the course, but, on occasion, we needed to schedule live sessions on back-to-back days or in the same week to accommodate schedules without disrupting the flow of course content.

⁸ First author

Table 2. Lecture Schedule and Topics

Date & time	Topic
Saturday, 6 May, 8 – 11 a.m.	Introduction and basics of theory development
Monday, 15 May, 11 a.m. – 1 p.m.	Context-based theory development
Friday, 2 June, 8 – 11 a.m.	Economics of information technology
Monday, 5 June, 11 a.m. – 1 p.m.	Process methods
Wednesday, 7 June, 8 – 11 a.m.	Team-level theory
Monday, 12 June, 11 a.m. – 1 p.m.	Network theory
Tuesday, 20 June, 7 – 10 a.m.	Organizational-level theory
Monday, 10 July, 8 – 10 a.m.	Final session: wrap-up and final thoughts

In general, the live sessions followed the same format. In the minutes leading up to the class meeting, we would sign into the LMS to establish a connection for the class. The first few minutes (sometimes more if students had connectivity problems), the guest scholars and facilitators present would interact with the students, ask questions, and address any student concerns' and general class logistics/management questions. During the rest of the session, the guest scholars discussed the readings and sought to engage students in discourse about the readings.

As the course's final deliverable, the students had to write the front end of a research manuscript that focused on the theoretical development of a proposed research study. The students had diverse interests and research topics (see complete list in Table 3). The second author reviewed papers, which the students submitted at the end of the session. The second author provided feedback and indicated that he would review revise and further-developed work at a later date should the students desire it.

Table 3. Paper Topics

Paper topic	Domains	Geographical lens
Understanding individual choices between formal and informal financial services	Financial services	Uganda
Effects of succession planning on the sustainability of family business	Financial planning, small business	Cameroon
Gender differences in factors affecting students' performance in higher education	Higher education, gender differences	Uganda
Antecedents of students' academic performance in higher education	Higher education	Uganda
Women representation on boards of public enterprises	Public entity governance, gender studies	Uganda
Group collusion formation in embezzlement of public resources	Non-governmental organizations (NGOs), ethics	Non-specific
E-health interoperability framework: A case of Ugandan public healthcare	Healthcase, e-health	Uganda
Toward a conceptual model for examining the impact of human factors on project success within an integrative analytical framework	Project management	Non-specific
The impact of financial inclusion on poverty alleviation in Cameroon: the case of small- and medium-sized enterprises	SME, financial inclusion, poverty alleviation, sustainability	Non-specific
Assessing household savings patterns	Personal finance	Cameroon
Governance and performance of public universities	Higher education	Uganda
Theorizing performance management of academic staff in Uganda public universities	Higher education, higher education leadership	Uganda
Humanitarian assistance to refugee crisis in the eastern region of Cameroon	Humanitarian response, sustainability	Cameroon

4 Challenges and Lessons Learned

Considering the nature of the course content, structure, logistics and mode of delivery, the many challenges we faced spanned cooperating with various individuals, managing expectations, developing contingency plans, and having the appropriate support available during live sessions. Nonetheless, we can categorize the primary challenges we faced that had the potential to dramatically alter the outcome of the course experience into three primary areas: technology, cultural norms, and coordination/scheduling. One needs to recognize the possible pitfalls associated with these areas and know how to avoid them in order to devise a replicable course template.

4.1 Technology

Despite diligent efforts to test technology and connections for live sessions, problems or concerns that the students and guest scholars most commonly expressed concerned connectivity and quality of connection. The issues varied from an inability to connect to frequent connections drops and a lack of clear audio and/or video. Some students blamed their lack of contribution in the live sessions on these technological issues. Although other factors, such as lack of preparation, may explain some students' low engagement, the issues with technology that we documented add validity to their claim.

To deal with the potential technological challenges, ICTU provided technical support for the classes. With this support, we resolved or worked around almost every problem encountered in a timely manner so that students or guest scholars lost little time. As we resolved issues and subsequently developed some of our own best practices for the context of the course, we found having the students connect with audio only made a significant difference in both connectivity and quality issues. Having the guest scholars appear via video added a dynamic and dimension that brought added value, and students enjoyed "meeting" leading scholars in the field. However, video connections from guest scholars often proved to be problematic. Exploring ways to optimize one-way video streaming quality in remote areas of LDCs would be worthwhile.

4.2 Cultural Issues

The guest scholars consistently found that, while the students exhibited a strong work ethic, they had difficulty in getting them to engage in discussions during live sessions. In addition to this feedback, our own experience with the students suggested that students were not as comfortable engaging in discussions during the live sessions with the guest scholars as their first-world counterparts often are. Differences in cultural norms could likely explain this phenomenon.

While other factors, such as lack of preparation of the class materials and technological issues, could explain the lack of engagement in the class meetings, culture likely had an impact. Cultural differences in classroom etiquette, work style, and communication style may have driven the dynamic of classroom interaction and perceived richness of the classroom experience. According to the ICTU administrators, students tend to be more reserved—particularly in the online collaboration environment. One needs to recognize these differences to ensure successful class session interactions.

4.3 Coordination and Scheduling

Although we faced significant constraints in coordination and scheduling, they were unique to the circumstance and are preventable in future implementations. We learned several lessons from having to float the session time. First, it can work and be worthwhile. Having the flexibility to move the session time around but in a defined parameter opened the door for more guest scholars to contribute. The students never mentioned the varying times for synchronous content delivery as a problem in their feedback. The students were committed to the program, and many attended the live sessions even though we recorded the sessions and made them available online via the Moodle platform.

The floating class time approach seemed to work well with everyone's schedule. However, the limited time left to complete the course requirements and the limited time and availability of guest scholars resulted in a schedule with great variability in when we offered the individual sessions: multiple sessions sometimes occurred in the same week, which could have not provided enough time for students to reflect on what they had learned and prepare for the next session. We feel it would be optimal to have a more consistent time interval between live sessions but, more importantly, to provide ample time for students to read the assigned papers.

4.4 Suggestions for Improvement

Despite the things the students valued and enjoyed about the course, some areas still need improvement. As we refine the pedagogical model to deliver the course again, we will consider each of the concerns.

First, pedagogical improvements include having students develop a research proposal or a portion of it from the start, which allows them to better define their research questions and their theoretical underpinnings. In addition, if AIS or institutions in developed countries can serve as a sponsor to provide a conduit to bring together guest scholars and the logistic and financial resources necessary, it may be useful to have an in-class two-week boot camp for doctoral students from LDCs.

From a logistical perspective, the guest scholars expressed varying degrees of understanding of the context of the course and how it fits into the program at ICTU. Just like with any course we teach, understanding where it fits in the context of program and the program's mission, having some perspective of the students' background and capabilities, and knowing what potential challenges and stumbling blocks await can provide the appropriate insight for presenting course materials, setting expectations, and mitigating problems. For future class offerings, we will provide this context and background information to the guest scholars.

5 Feedback and Outcomes: Developing a Template for Replication

One needs to recognize, appreciate, and address the challenges in delivering an exemplary online doctoral research theory seminar to develop a replicable and sustainable template for course content and delivery. As part of the process to improve the course's quality, we solicited feedback from both the guest scholars and students. We used this feedback to evaluate the content, sequencing, and delivery aspects of the course to not only improve the experience but also provide at least the beginnings of a template that outlines the course content and suggestions for delivering the course.

In addition, to truly move toward developing a replicable model for delivering this and similar doctoral coursework and programs at ICTU and other institutions in LDCs, two additional factors deserve attention. First, one needs to mobilize a network of scholars to truly replicate this course. Second, one needs to develop a business model to sustainably implement this and other doctoral coursework. In this section, we discuss these issues and propose potential solutions, and we discuss the salient aspects of the course feedback we received that are important to improving the quality of the course content and administration.

5.1 Feedback: A Tool for Quality Improvements in Course Design and Implementation

The community spirit and willingness to give back and develop a program for Africa was phenomenal. Based on our own experience delivering the course and the feedback we received from the students and the guest scholars who delivered the content, everyone found the journey to be valuable. We present two types of evidence for the course's learning outcomes: the quality of the papers and some anecdotes/reactions. This evidence indicates that we met the course objectives and that the students truly valued the learning experience.

5.1.1 Quality of the Papers⁹

I read all papers, provided feedback, and gave a grade for the course using this deliverable. I was shocked by the topics the students chose because they all at their heart were practical problems that would help in the development of Africa (see Table 3 for topics). I also found that the students clearly had limited prior exposure to theory development and theories in general; thus, the course represented one of their first efforts to build theory. Overall, I found the effort to be commendable given the short timeframe. In most cases, I understood that the students took existing papers or topics in which they were interested and molded it into a paper for this class. I received favorable and grateful reactions from the students for the feedback they received. I did indicate that, should they revise the paper, I would be happy to read a revised version. I can only hope they take me up on this offer as they continue their doctoral education. I was impressed with the students so much that I gave them each a copy of my book *Road to Success: A Guide for Doctoral Students and Junior Faculty Members in Behavioral and Social Sciences*.

⁹ Second author

5.1.2 Student Sentiment

The students who participated in the course overwhelmingly found value in it: some noted it to be the most interesting class they have had so far in the program (see Tables 4 and 5). Most also said that they found great value and benefit in having different scholars present different topics. For example, one student explained that most prior classes they had taken seemed to focus on testing and evaluating the theory but not on actually building it.

The students indicated that they found great value in the focus on theory development throughout the session. For example, one said: “Bringing out a theoretical or conceptual framework of a research, I now understand that research can be carried out on almost every worry and theories can be extended...relative to the context”.

As the student feedback in Tables 4 and 5 evidences, the students overall found the experience beneficial and rewarding. However, as with any instructional situation, the experience had its challenges. The students noted issues with connecting to the live sessions and that the poor quality of the connection impacted their level of engagement. Some students also mentioned that they had insufficient time to read the papers and prepare for the sessions. While we minimized the technologies issues somewhat by using only audio and recording the sessions, others should ensure they minimize issues that students face in reading and preparing for the live sessions by providing reading requirements earlier. The short lead time we had contributed to creating these limitations, but these issues—at least on the delivery side—can certainly be overcome.

Table 4. Student Feedback Summary

Category	Feedback
<p>Factors affecting contribution to live session discussion</p>	<ul style="list-style-type: none"> • <i>Technology and time factors.</i> • <i>In instances where I had not fully read the papers provided prior to the class, my contribution would be affected.</i> • <i>Network issues constantly disturbed communication and some of the lecturers were usually too fast when talking.</i> • <i>Intermittent degradation of connection quality.</i> • <i>Uncompleted reading; not having fully appreciated a certain reading.</i> • <i>Missing out and sometimes technical problems of connection, the microphone issues.</i> • <i>Joining late.</i> • <i>It was easy to follow up what lecturers say but difficult to relate it on how I can personally built a theory or how to improve on one.</i> • <i>Inadequate preparation. Given the large volume of papers posted vis a vis the limited time needed to read and internalize the articles, it was not possible for me to make any meaningful contributions. The factor that the course started way into the semester also did not make matters any better as the facilitators had to virtually rush through the materials provide.</i> • <i>Sometimes network connection.</i> • <i>Internet and power supply interruptions.</i>

Table 4. Student Feedback Summary

Greatest Challenge of the Course	<ul style="list-style-type: none"> • <i>Getting comfortable with a new and ambitious level of learning (theory development). I am used to evaluation and utilization of theories... and the final exam is a very big challenge. Time factor in coming up with a research paper.</i> • <i>The final exam is the most challenging part of the course. With no prior experience writing a journal paper, the first opportunity comes in form of an exam!! This has been a great challenge.</i> • <i>Reading the many papers and summarizing. Also some of the papers were very abstract to my understanding.</i> • <i>Adequately digesting advance reading material prior to classes.</i> • <i>Internet connectivity.</i> • <i>Some readings took me time to understand to the extent that I appreciate some of them after it had been discussed by the Professor.</i> • <i>Not starting along with others and trying to catch up. The recordings are much appreciated they enabled me to get on board.</i> • <i>Firstly, internet connectivity which makes it difficult for full participation at times. I am of Development Planning and most of examples were of business management oriented. Though I tried working on my own on how to use knowledge gain and build into my own field of study. The greatest challenge was actually struggling to intersect two theories to come up with a model in my paper given the limited number of pages.</i> • <i>Inadequate timing for the course.</i> • <i>Theory development.</i> • <i>The class schedules were very challenging because it did not consider our working schedules back at home.</i>
Greatest benefit of guest-lecture seminar approach	<ul style="list-style-type: none"> • <i>Interaction and the opportunity to be taught by great scholars i could only dream to know.</i> • <i>This exposed us to a variety of "voices" and as well an opportunity to interact with very high level scholars.</i> • <i>The lectures opened my mind for research and gave me a big push for research which I was formally getting confused on how to go about, especially with developing a theory.</i> • <i>Enhanced experience due to manifold perspectives and backgrounds of the various presenters.</i> • <i>Too beneficial.</i> • <i>Benefit of acquiring knowledge from various experts with different styles of delivery.</i> • <i>Brings in a lot of experience and clear explanations from a practical view.</i> • <i>It was quiet awesome. I love it. I actually enjoyed one of my lectures who did his best to explain about context in theory building, looking into who, what where and how.</i> • <i>Perspectives of different scholars (facilitators) on theory development enriched the learning process.</i> • <i>Understanding the level of theory development and easily it can be mixed.</i> • <i>It was good because it got the students exposed to different expert know-how.</i>
Most beneficial takeaway	<ul style="list-style-type: none"> • <i>The different perspectives on theory building and theoretical analysis.</i> • <i>The theory development processes as well as levels (macro and micro) of theory development.</i> • <i>Bringing out a theoretical or conceptual framework of a research. I now understand. that research can be carried out on almost every worry and theories can be extended in relative to the context.</i> • <i>Exposition of some viable approaches to theory development.</i> • <i>Theory development.</i> • <i>Clear understanding of what a theory is and how a theory can be developed.</i> • <i>The context effects.</i> • <i>How to get what has happened in a different context and situate in another different context but passing on the same meaning.</i> • <i>The skills to identify gaps in literature and theories.</i> • <i>Levels of theory development i.e. organizational, team and individual.</i> • <i>Theory development and the different levels of theory development.</i> • <i>The theoretical contribution in a research work.</i>

Table 4. Student Feedback Summary

<p>Things to leave in place/things that are working</p>	<ul style="list-style-type: none"> • Everything. • First of all I would have loved the course to be at the beginning of every semester and to all beginners since it will lead them to research. I would design the course such that every student is given a chance to prepare some material in his/her domain and present to the appreciation of others. • All modules except economics of information technology. • Weekly student discussions should be a must. • I would not alter the themes or topics. • I found all components relevant for the learners giving a wider view of concepts • Each lecturer coming out with an outline and steps on how to build a theory or improve on one, assigning participants to exercise. Participants may do sample presentations according to lecturer's guides for general class critiquing for others to learn from it. • The aspect of utilizing multiple facilitators with varied areas of specialty. • For the year ones, it looks intricate and makes it a bit hard to comprehend at first. • Leave in place of... Did not get the question very well.
<p>What would you do differently?</p>	<ul style="list-style-type: none"> • I would make it possible to have an international seminar (not virtual) where all students would meet face to face with facilitators. • I would create opportunities earlier in the course for students to practice what has been provided as a final exam. • I would constantly give assignments that would require submissions and presentation so as to get all the students fully involved. I would also present an illustration for each topic using a formulated example in class. • Add a companion course: (Applied) Philosophy. i.e. epistemology, metaphysics, ethics, etc. - as applied to the social sciences. After all, it is difficult for one to lay claim to being a teacher of the love of wisdom without having studied it. I envisage these two courses preceding Critical Literature Review and Proposal Writing to comprise the four cornerstones of this PhD program. • Include more practical lessons. • I would give it more time and i would have students discuss all readings in groups for at least an hour. I would also recommend the course to be mandatory/core for the PhD. BADS program. • I would give an assignment to students every after a topic to ensure that students practice or apply what has been shared. • Not much to say here. • Make it more practical and participatory by involving the students in theory development time permitting i.e., each student would identify a business problem; review literature and theories, identify gaps and presentations made in class for others to critic for better learning. • I think the course is ok but only that as a fresh student, one is just trying to discover themselves so comprehending the course requirement is a little hard but with more reading of materials given, one gets a better understanding. Nothing I would change probably, un-icing the intricate issues more. • Use Business oriented papers for the Business Administration students.

Table 5. Student Verbal Feedback

<p>Verbal feedback in class on last day</p> <p>One student revealed that this was one of the best courses that he had had so far. He felt like it (the way we taught it) should be placed as one of the first courses in the curriculum which would really give them the framework and the know-how to do a proposal.</p> <ul style="list-style-type: none"> • He felt Dr. Rai's and the second author's sessions provided a fantastic foundation. • He suggested that the sooner we get the material out the better. • He found the references within the paper as much or more interesting. <p>Another student also stated that this was one of the most valuable courses they've had in the program so far.</p> <p>"Just this morning as we chatted about this course, three students from Uganda agreed that this was the most interesting class they have had so far."</p> <p>Another student said "I think the course was great" while agreeing with a peer that perhaps the sequencing could have been done differently. She added: "For instance our last guest presentation was so helpful and made me appreciate the first one even better. But all in all the presenters were outstanding and I learnt a lot. The rigors of the course concerning 'theory building' are not common. Most times, facilitators concentrate on 'theory testing and evaluation.'" Further, she added: "If we had this earlier [referencing the sequencing of the course], it would be very useful", and said that it was not too late and was very valuable.</p>

5.1.3 Guest Scholar Sentiment

The guest scholars' participation in delivering the course was integral to both its success and uniqueness. We report the invaluable feedback we received from the scholars in Table 6. The guest scholars had varied reasons for participating, but they shared a common theme of contributing for the greater good. One scholar commented: "I enjoy participating in initiatives that pertain to the development of the field where I can make a meaningful contribution". Another said: "Participating was a way to give back to the field"—especially in a place that had a greater need. Finally, another said: "I felt [contributing] was an important thing to do and... felt a strong sense of fulfillment when the session was over".

Table 6. Guest Scholar Feedback

What were your personal motivators for giving of your time and energy for this initiative?
<ol style="list-style-type: none"> 1. <i>I enjoy participating in initiatives that pertain to the development of the field where I can make a meaningful contribution. It was a pleasure to be able to participate.</i> 2. <i>The timing was not the most convenient given my commitments this summer, but in the grand scheme, the summer is likely as convenient as it gets. The two big motivations for me to participate were (a) the opportunity to be part of a strong team delivering high quality content; and (b) the opportunity to impart what little knowledge I have on a topic that is near and dear to me. Motivation (b) is fairly obvious. For motivation (a) what was particularly exciting was that although this was not compensated, the quality of the content was a high that which would be delivered at most US-based institutions. The opportunity to be a part of such knowledge transfer was too enticing to pass up. I also happen to have grown-up on the continent to which this content was being delivered. It was nice to be able to contribute something.</i> 3. <i>I felt that it was good cause, and provides the opportunity to give back to an underserved community.</i> 4. <i>My personal motivation for participating was that it was a way to give back to the field, and in a place that probably gets less cooperation/participation than it should, given it probably has a greater need.</i> 5. <i>When [second author] mentioned that this was for some doctoral students in Africa, I really wanted to do it. I have visited South Africa and Swaziland in the past and interacted with folks from both countries. I have always wanted to do something with them and for them. I felt this was an opportunity to do so. Also, I felt that our sessions would help the doctoral students in Africa to learn and understand how academics in the USA think and work. These students might not have another chance to do so in their program(s). In any case, the idea of compensation never even came to my mind. I just wanted to do it because I felt it was an important thing to do and I can tell you now I felt a strong sense of fulfillment when the session was over.</i> 6. <i>To help the PhD students, especially in a less developed country. When I visit schools for invited talks, meeting PhD students at those other schools and sharing my insights is a high point. I was glad to be able to do in this situation as well. The satisfaction was further enhanced because this provided an opportunity to help Ph.D. students in a less developed country, who might otherwise have lesser opportunities to experienced faculty.</i>
What value, if any, do you see in this initiative for the broader IS community?
<ol style="list-style-type: none"> 1. <i>The development of IS scholars in less developed parts of the world can play an important role in expanding high quality IS scholarship and education in these regions. It should accelerate high quality IS research initiatives to address business and societal problems that are distinctive to these contexts.</i> 2. <i>I see short-term and long-term value. Short-term I believe it is a noble undertaking for the broader IS community. As a community we have accumulated a wealth of knowledge about IS-related phenomena, theories, and research methods. It is valuable to have a digital platform to disseminate this accumulated knowledge to many corners of the world. Long-term I think the payoff will be quite significant. No-one can predict in which area of the world the next great minds in the profession will emerge. By spreading this knowledge broadly, we as a community are able to increase the odds that those minds will be attracted to our community. I firmly believe that this will enrich us all intellectually and enable our discipline to continue to grow and thrive.</i> 3. <i>Good opportunity to connect with stakeholders in many under-developed nations; understand their research questions and issues that concern their economies.</i> 4. <i>I think it brings awareness of programs in the geographical region, all of our major conferences for the most part have avoided Africa, for valid reasons (like health and safety), but this was a nice way to develop relationships, nascent though they may be. I am not sure what other fields do, but I think an initiative like this is very critical for the broader IS community for at least two reasons (don't laugh...it now feels like I am writing a theoretical contributions section!). First, given that IS is not as mature as other academic fields; I always feel that our research standards, norms, and expectations are not well defined and diffused (yet). So, initiatives like this (and beyond Africa) are needed to spread (and teach) our research standards, norms, and expectations. Second, I think these initiatives will increase collaboration opportunities and avenues for conducting interesting research (such as the ones [second author] has been doing in India).</i> 5. <i>This initiative will help grow the IS community of academics, in terms of the number of individuals as well as the depth of their insights, by spreading knowledge about information systems research and associated related research methods to less developed countries.</i>

Table 6. Guest Scholar Feedback

<p>What were the challenges?</p> <ol style="list-style-type: none"> 1. <i>Nothing major. It was unclear at times if the participants could hear me clearly or at all. We were able to quickly address the issue. Being the first class in the line-up, some of the students were likely getting used to the technology.</i> 2. <i>The communication technology was a challenge, but my circumstances were partly to blame for this. The wifi at my location was very weak/slow and I was not able to get up and running. Fortunately, I was able to work around this by tethering my mobile phone. Everything largely worked smoothly with this solution.</i> 3. <i>the quality of the online system was suspect; I had a hard time in connecting initially, and the quality of the sound based on the audience feedback was quite poor.</i> 4. <i>Technology was not as smooth as it could have been. I had played with the software prior to using it for my session and it all seemed fine, but then when I went to have the session, had a technical hiccup for the first 15 mins or so. Was able to get it taken care of though. so it all worked out. Another challenge was the language barrier. I had difficulty understanding several of the participants due to heavy accents, and technology did not make it easier to understand. Not sure how to fix this.</i> 5. <i>Usual challenges associated with online teaching (technology, limited interaction mechanisms, not getting immediate feedback from the students during the session). I have done some online teaching before. So, I am somewhat used to these challenges. A major challenge usually is lack of participation from the students and also not being able to hold them accountable for the readings/work.</i> 6. <i>In addition to the challenge faced in any virtual setting relative to a F2F setting, my lack of prior knowledge regarding what the students know and what they don't, was a challenge. I did watch the videos of sessions prior to mine, and understood what the other faculty had covered in those sessions, but I could not understand where the students were in terms of their learning, both from those earlier sessions and from their prior education and coursework.</i>
<p>What worked well?</p> <ol style="list-style-type: none"> 1. <i>The students were well prepared. They posed thoughtful questions that led to high quality discussions. >>> From a program management standpoint, [first author] did a terrific job in making sure that everything worked well.</i> 2. <i>The platform itself appeared to work well at least in terms of the one-way communication from instructor to students. The share screen feature was also helpful so that the students could follow the sections of the readings to which I was referring.</i> 3. <i>While some students had read the assigned material, others were clueless and did not have much preparation. More class participation should be encouraged.</i> 4. <i>After the hiccup was addressed, the tech worked great, they could see my slides, I could hear their comments/questions as well.</i> 5. <i>[First author] and her team were very responsive to get the setup done. However, the GA who was supposed to be available during the session was not around during the session. He or she just initiated the session and disappeared. I could not get anyone to test how the audio was working. In the end, students could not use audio...they had to type the questions which I think affected overall participation quality (and quantity).</i> 6. <i>The technology worked very well. The students seemed to understand the materials.</i>
<p>What were your impressions of the students?</p> <ol style="list-style-type: none"> 1. <i>The students were well prepared. They had clearly taken time to go over the materials and to relate the concepts to their research ideas and projects.</i> 2. <i>It was difficult to gauge this as the circumstances were such that it was easier for me to just deliver the content to the student. It was largely a one-way communication.</i> 3. <i>This is harder to quantify as they were not so talkative/questioning. After the session, I received a few emails from various students who requested I help them with accessing a lot of materials. I get the impression that they lack a great many of the materials that we in the other regions take for granted. Like simple MISQ/ISR/other journal access.</i> 4. <i>It's hard to assess. Only a few students participated and they were reasonably good.</i> 5. <i>To the extent I could discern from the virtual interaction, the students are good. I have encountered more questions in other similar virtual sessions, albeit those others have been with students in developed countries, and am not sure if that was due to cultural differences between Cameroon and the more developed countries with which I have done similar sessions, or due to differences in prior knowledge and/or experience.</i>

Table 6. Guest Scholar Feedback

How do these students compare to other doctoral students you've worked with?
<ol style="list-style-type: none"> 1. <i>My experience with the students was limited to one class session. Based on this session, I found the students to exhibit high levels of preparedness and motivation, largely similar to motivated PhD students that I have had in my classes and workshops at different universities.</i> 2. <i>This was difficult to gauge as there was not much opportunity for interaction.</i> 3. <i>More preparation necessary; quant training is a major problem.</i> 4. <i>I think they are less well developed, they have less access to learning materials, and possibly less access to qualified instructors (although I do not know this for sure). The programs are structured differently from the North American model I think.</i> 5. <i>It's hard to assess this. It might be beneficial to do more than a session...perhaps, a group of us can teach them and also does a research project together with them?</i> 6. <i>I believe I have covered this to some extent above. I didn't get a very good sense of what a "typical" student in this session was, so it is a bit difficult to do the comparison. The students I have previously had such virtual or F2F interactions have been at highly research-oriented schools, and therefore have had more prior knowledge and experience associated with research.</i>
Suggestions for future sessions?
<ol style="list-style-type: none"> 1. <i>I think it would be useful to have students develop a research proposal or a portion of it. This could provide them with an overarching exercise to bring together what they have learned.</i> 2. <i>I would have to do this again with a more complete experience in order formulate more meaningful suggestions. But overall I enjoyed the experience and I would certainly do it again if asked.</i> 3. <i>If AIS can serve as a sponsor, it may be useful to have an in-class two-week bootcamp for PhD students from developing countries, where faculty can volunteer to teach one or more sessions.</i> 4. <i>I'm not sure what would be helpful...it seems to me that these few sessions are great and all, but what is the goal of the sessions? I would not want to fall into the same pattern as so many developmental projects end up falling in, where aid is sent but that aid is not really what the people need, or delivered in the way that is best. For example: I've given short week or two week "courses" to students in Asia, where they have access to all the same materials that I do here or most of them, they have all the same sort of technologies etc. The students in these programs seem to get a lot out of the sessions. Or a reasonable amount. However, the students in the sessions, we are talking about a few 2-3 hour sessions, with a lot of the materials not being normally available to the students, how helpful are these? I'm not trying to poo-poo the program. I'm wondering if something like a full semester of online, weekly sessions would not be more helpful to them, with all the reading materials provided etc. I know very little about what their program is like, so I don't know what recommendations to make, it seems to me that the best things we could do would be to supplement wherever their program is weaker?</i> 5. <i>Yes, a few:</i> <ol style="list-style-type: none"> a) <i>What can we do to make sure the students would read the articles and come prepared?</i> b) <i>What can we do to ensure that they participate in discussion (and even show up during the live session)?</i> c) <i>How about a research project experience for the students?</i> d) <i>We need a GA to be present during the live session and handle technical issues (or at least provide morale support to the faculty)</i> 6. <i>I would suggest providing each instructor, before the sessions, a brief directory of students attending the sessions, including each student's brief bio, prior coursework, and titles of any prior/working research papers.</i>

5.2 The Beginnings of a Template: Tips for Replicating Course Delivery

Based on our experience with the course and the feedback we received, we believe the following tips (which we organize in four key areas) provide a sustainable and replicable model for delivering a doctoral research course for LDCs using an online delivery method.

Course organization:

For effective course organization that will facilitate a successful experience, anyone replicating this course should:

- Recruit a senior faculty member willing to design and solicit community participation;
- Secure a strong commitment from some scholars with a willingness to spend three hours teaching an online module.
- Find a project manager who is willing to serve as the point person for just about everything.
- Ensure you have knowledgeable and committed technical support in place.

Course content and materials:

As with any course, the content and pedagogical approach are critical to providing an environment conducive to learning. More specifically, based on our experience with this venture, organizers of a similar course should consider:

- Developing clear course objectives.
- Providing the readings and other course material as far in advance as possible in digital files as many do not have access to library resources¹⁰.

Coordination and scheduling:

Coordination and scheduling the courses was one of the biggest logistical challenges. Understanding that up front and having a strategy in place is key.

- Consider a floating class time model. Select three to four time slots that work best considering all the relevant time zones.
- Schedule the course with fairly consistent amounts of time (days) between sessions.

Personnel and support:

Finally, be prepared for the unexpected. Technical issues are common. Thus:

- Test connections with each guest scholar in advance; the guest scholars should ideally test from the device and Internet that they will use.
- Have technical support online during the session.

5.3 Replicating the Network of Scholars

One of the most unique aspects in delivering this course and also perhaps the aspect that contributes most to having had a successful and engaging experience concerned the network of scholars we brought together. Admittedly, we recruited the scholars we did for the seminar due to the second author's strong network. In addition, the opportunity itself would probably not have emerged without the first author's connection to Vic Mbarika and the ICTU. Thus, even though the need for more such courses may exist in several universities in LDCs around the world, with the appropriate network, those universities may not be able to replicate what we accomplished. Yet, higher education institutions in these LDCs do have that need. Further, many untapped members of the discipline wish to give back and be a part of growing IS scholarship in LDCs. So how do we tackle this issue without the intervention of serendipity? How do we mobilize a group of IS scholars from developed countries to give back and participate in higher education initiatives in LDCs? How do we bring the needs and the members of the LDC institutions to the table?

One possible solution for bringing together scholars interested in participating in advancing doctoral education in LDCs and administrators and program directors in the LDC institutions is to develop a searchable registry. We believe that one needs to be able to connect individuals who can help with those who need the help to mobilize a lineup of scholars to participate in delivering a replicable and sustainable doctoral course or seminar. The AIS could serve as the conduit for a database for such connection and acknowledge scholars' service so they can include it in their portfolio.

5.4 A Replicable Business Model

A venture's financial mode also represents another issue that can affect whether one can create a sustainable and replicable course in any environment but especially in a LDC. As we mention above, ICTU offered only a modest honorarium to facilitate the course. Further, in our course, guest scholars volunteered their time and talent to contribute. The model we propose calls for each contributing scholar to give three hours of their time (ideally on a topic in which they have expertise).

We believe this model is sustainable. Our experience and the feedback from our participating scholars indicate a desire among senior and established scholars to give back without expecting compensation. In addition, each of the individuals who participated in our course indicated a desire to do it again. We have

¹⁰ Of course, using such resources gives rise to potential copyright issues, but we are optimistic that, given the context for these courses, publishers will be all too happy to allow researchers to distribute the papers freely (given the short notice, we operated within fair use guidelines).

found from our experience that senior scholars, such as the second author, who would want to share in the coordination will likely have the network to make it happen.

The first author's time significant commitment to coordinate the logistics of the course constituted largely to make the entire effort possible¹¹. As we note above, the first author coordinated the scheduling of the live sessions with the guest scholars and with ICTU. She tested the system, including connections, with every guest scholar prior to the live session and liaised as needed with the ICTU technical support. She also attended all live sessions so they went smoothly. Due to the extensive amount of work we did to flush out the technical issues, we should not have to repeat some of these efforts should we repeat this course at ICTU with this slate of guest scholars. Nonetheless, the course has a substantial time commitment. Knowing the performance review system at our university and universities in general, the reward for our contribution is more personal relative to the effort than it is in terms of recognition or other tangible benefits. Finding like-minded people to contribute may not be trivial. Perhaps importantly, to make such a course scalable and sustainable, a masters or PhD student GA may need to help either in coordinating the content (which the second author handled in this case) or handling the logistics (which the first author handled).

In addition to actually instructing the course, the course also has administrative and technology costs, which the LDC university should bear (as was the case in our model). For those institutions not as skilled at seeking funding (particularly in terms of development grants), AIS members could provide assistance through workshops, mentorship, and so on to assist in the effort. Extending the initiative ever further, we could even consider developing a series of courses that can be made available for LCD member institutions.

6 Conclusions

Despite the ubiquitous nature of online courses, using a digital platform both synchronously and asynchronously provides the impetus to bring together top scholars from around the world directly into the classroom of a doctoral course in a university in an LDC. In developed countries today, we take for granted the availability of learning management system (LMS) platforms, such as Moodle or Blackboard. However, only with an LMS can one efficiently and cost-effectively provide course content in the manner we did with this course. In this context, online courses allow one to create rich and unique course experiences for doctoral students in LDCs.

The value of sharing our experience, lessons learned, and a model for replication extends far beyond the immediate goals of pedagogically sound course delivery or meeting the immediate needs of a doctoral program in an LDC. Above all, however, the passion and commitment to give back to our community, especially in LDCs, is critical to academia. We hope our story inspires individuals in the broader academic community to contribute to LDC doctoral education initiatives. The long-term impacts are valuable ones such as disseminating knowledge, research techniques, and standards to all regions; further developing community among scholars across the globe; and sharing ideas to solve global problems. Most importantly, perhaps, it is through doctoral education that we can develop scholars in the LDCs to equip them with the scientific knowledge and tools that complement their contextual knowledge to help their homelands and communities solve difficult problems and achieve the lofty ideals set forth in the United Nations' Sustainable Development Goals.

¹¹ Second author

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Viswanath Venkatesh, who completed his PhD at the University of Minnesota, is a Distinguished Professor and Billingsley Chair at the University of Arkansas. He is widely regarded as one of the most influential scholars in business and economics, both in terms of premier journal publications and citations (e.g., Thomson Reuters' *highlycited.com*, Emerald Citations, SSRN). His research focuses on understanding the diffusion of technologies in organizations and society. His favorite project focuses on improving the quality of life of the poorest of the poor in India—which he has presented in various forums including at the United Nations. The sponsorship of his research has been about US\$10M. His work has appeared in leading journals in human-computer interaction, information systems, organizational behavior, psychology, marketing, medical informatics, and operations management. His works have been cited over 75,000 times (Google Scholar) and 20,000 times (Web of Science). He developed and maintains an IS research rankings web site that has received many accolades from the academic community including AIS' Technology Legacy Award. He has served in editorial roles in various journals. He is a Fellow of the Association of Information Systems (AIS) and the Information Systems Society, INFORMS.

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