

GROUNDING THEORY IN ICT4D RESEARCH

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ABSTRACT

Information and Communication Technologies for Development (ICT4D) has emerged as a separate research stream in its own right over the last three decades. However, a persistent concern in the field is whether ICT4D research is able to serve the very people whose lives get affected by it. This paper argues that most of the studies in ICT4D field are suffering from hegemony of the theoretical perspectives developed in very different contexts, often in developed countries. Researchers are not often immersed in the field either because of the limited exposure or for lack of understanding about how to interpret the cultural nuances in the least developed or the developing countries. The differences in philosophies of knowledge, language, cultural practices, social norms, power and politics all can affect how people accept and use different technologies and to what extent public policies are going to be successful. This study illuminates why grounded theory is a more suitable philosophical approach (ontological, epistemological, methodological, and axiological) for capturing the subtleties that may emerge in ICT4D research and successfully implementing the policy recommendations.

Keywords: ICT4D, Grounded theory

1. INTRODUCTION

Recent advancements and availability of ICTs make Information and Communication Technology for Development (ICT4D) an effective tool to impact the lives of the marginalized people in developing countries (Walsham, 2017). Heeks (2018) defines ICT4D as – “the application of any entity that processes or communicates digital data in order to deliver some part of the international agenda in a developing country” (p. 10). ICT4D research dates back to 1980s (Walsham, 2017) and progresses together with the changing development paradigms such as shifting focus from state intervention to ensure basic needs to neo-liberalism, to human development and then most recently sustainable development (Heeks, 2018).

From mid-1980s to mid-1990s, Information Systems (IS) field carries out the bulk of the ICT4D research that focuses on social implications of IS in developing countries; then mid-1990s to mid-2000s sees an emergence of interdisciplinary approaches together with big changes in technology landscape though the ICT4D field still remains strongly anchored in IS tradition; mid-2000s to present is a stage of explosion in terms of both the number of technology users (mainly because of mobile phones) and multidisciplinary research studies (Heeks, 2010, 2014, 2018; Walsham, 2017).

When it comes to the implementation of either economic policies or new technologies, developing countries have always been subjected to a peculiar prejudice (Qureshi, 2015). The bias originated

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from an unwarranted assumption that people who are going to be directly affected by those policies are not able to make better choices or decisions themselves (Díaz Andrade & Urquhart, 2012) or they do not have sufficient knowledge to articulate their own needs or usage dimensions. Moreover, many ICT4D research studies focus on testing existing technologies, mostly founded in Western countries without much concern for the local dimensions (Lund & Sutinen, 2010; Sein, Thapa, Hatakka, & Sæbø, 2019). The colonial history of exploitation and the associated politics undeniably have an impact on the grounding of these hegemonic perspectives and practices (Andoh-Baidoo, 2017; Escobar, 2001; Qureshi, 2015). Moreover, often unstable and different institutional and political situations of the developing countries have been a barrier in giving the local context its due importance (Sahay, Sein, & Urquhart, 2017). However, the rejuvenation of the some developing countries as emerging economic powerhouses points to the need to change the established norms in mainstream academic and practitioner research. Scientific research in Information Systems and later in ICT4D fields must come out of the superiority bias regarding theories developed in very different contexts (Qureshi, 2015) and stop trying to offer a 'one size fits all' solution (Davison, 2012; Zheng, Hatakka, Sahay, & Andersson, 2018). ICT4D researchers claim that they are interested in socioeconomic impacts of their research. However, that is less likely to occur if researchers have little user engagement while theorizing as well as sharing the findings with the main stakeholders i.e. the poor (Harris, 2016). Sahay et al. (2017) and Zheng et al. (2018) argue that even developed countries still have some underdeveloped areas / minority groups and learning from ICT4D research in developing countries can be useful to tackle the remaining inequality. Also, localized knowledge of ICT4D can open options for developing new theories that can be synthesized in broader IS research (Qureshi, 2015; Sahay et al., 2017; Walsham, 2017).

ICT4D researchers themselves call for more context specific theorizing (De', Pal, Sethi, Reddy, & Chitre, 2018; Karanasios, 2014; Sein et al., 2019) and a bottom up approach for designing technology that cater to the needs of the local users (Lund & Sutinen, 2010). Heeks (2006) points out that due to lack of proper theorizing, ICT4D research has become oblivious to the practice of deeply understanding and interpreting what it wants to change and thus has developed a bias toward unwarranted 'actions'. In an editorial, Andoh-Baidoo (2017) calls for introducing more context specific research especially for studies using positivist epistemology. He rightly points to the issue of not being able to change the variables when the data collection phase already starts in the positivist research which runs the risk of becoming irrelevant in the local context (Andoh-Baidoo, 2017). Heeks (2018) argues that ICT context is different in developing countries and lists several contextual dimensions such as uncertainty in markets and supply chains, resource constraints, inequality in distribution of materials and power and control, hierarchical social structure, institutional differences, and localism that is preferences for closer connections such as face to face communication etc.

In their analysis of computerized land record system 'bhoomi' in India, Prakash and De' (2007) find out that the meaning of 'development' can be very different in local contexts. Using post-colonial theory and employing a critical realist perspective, Lin, Kuo, and Myers (2015) expose how Taiwanese aboriginals, for whom a seemingly successful and widely publicized educational and social welfare program was introduced, were feeling marginalized and ignored. Diniz, Bailey, and Sholler (2014) highlight how a family welfare program by Brazilian government took the local context (scarcity of banks) seriously and empowered service providers at local non-financial establishments such as grocery stores, lottery shops, post offices by designing a simple POS for

handling government transfers and bill payments. These studies highlight how context – aware ICT4D research can make larger contributions by revealing the nuances in local contexts and help build relevant theories.

Unlike mainstream IS research, ICT4D research still lacks discussion and critical perspectives about research paradigms (De' et al., 2018; Heeks & Wall, 2018; Lin et al., 2015). There is also a need to develop middle range theories to address local contexts in developing countries (Avgerou, 2017). Grounded Theory has the potential to help ICT4D field in this respect since, as Urquhart, Lehmann, and Myers (2010) argue, it “offers a comprehensive method of theory generation” (p. 358). This research aims to contribute to that knowledge gap by illuminating the appropriateness of Grounded Theory as a good fit with the objective of ICT4D research.

In section 2, I discuss the philosophical evolution of grounded theory by briefly discussing ontology, epistemology, methodology and axiology of grounded theory¹. In section 3, I summarize the current theoretical trends in ICT4D research. Section 4, based on the above discussion argues why grounded theory is a better fit for the current state and goals of ICT4D research. Section 5 points to the challenges that ICT4D researchers may face when they attempt to use grounded theory. The paper concludes with the expectation that ICT4D researchers, practitioners, and research fund providers understand the applicability and potential of grounded theory research for future ICT4D research.

2. GROUNDED THEORY: PHILOSOPHICAL EVOLUTION

Grounded theory was established as a methodology for qualitative research by Glaser and Strauss (1967) out of their then rising apprehension for the dominant approaches in mainstream sociological research that exclusively focused on empirically testing grand or middle-range theories (Flick, 2018). There was a lack of effort to develop new theories to understand new phenomena and as a result, no attention was directed to examine the process of theory development (Flick, 2018). It is important to note that Glaser and Strauss (1967) did not conceive grounded theory in a vacuum; the time and place (San Francisco during 1960s), evolution of other qualitative research paradigms such as Goffman's presentation of self (1959, 1963), Blumer's symbolic interactionism (1969a, 1969b), Garfinkel's ethnomethodology (1967) all created the milieu for grounded theory to emerge as one of the most influential qualitative research methodologies (Flick, 2018).

A detail analysis of the different philosophies of grounded theory is beyond the scope of this paper. But, Flick (2018) provides a summary which can be helpful for the readers to develop a basic background on the philosophical underpinnings and debates in the field. After the initial work by Glaser and Strauss (1967), the field takes many different turns. The ‘classic grounded theory’ that

materializes mainly from further work by Glaser concentrates on pure discovery of knowledge directly from the data and considers induction as the only principle for creating new theory from

¹ Guba and Lincoln (1994) propose four research paradigms – positivism, postpositivism, critical theory and constructivism and the differences among paradigms are represented by the distinguished ontological, epistemological, and methodological positions. Ontology refers to the nature of reality and what can be known about reality; Epistemology refers to the nature of relationship between the researcher and what can be known; Methodology refers to how the researcher carries out the process of finding what s/he believes is possible to be known (Annells, 1996); Axiology refers to the value position of the paradigm. Ontological assumptions guide the epistemological assumptions which in turn influence the methodological positions.

the data. Glaser (1992) argues that the theory is already embedded in the data and the job of the researcher is to discover that. No emphasis is given to how the researcher engages with the field and therefore, the 'classic grounded theory' is not concerned about the epistemology. The ontological assumption in classic grounded theory seems too close to rigid positivist paradigm and has been criticized by researchers as "naive empiricism" (Kelle, 2014). After developing the basics of grounded theory with Glaser, Strauss (1987) chooses to differ. Later Strauss and Corbin (1990, 1998) develop a methodological approach using 'coding paradigms' and increasingly recognize the role of both induction and deduction in their approach of moving from open coding to categorization of evidence under existing codes. In later research, Charmaz (2011, 2014) builds an approach that emphasizes on both constructivism and pragmatism. She conceptualizes methods as an inductive exercise and acknowledges the active roles of the researcher and participants. She perceives the act of knowledge development as a reflexive process by emphasizing the role of abductive reasoning (Flick, 2018). Clarke (2005) introduces a postmodern turn in grounded theory. Remaining close to Strauss and Corbin's approach, she updates the understanding about the expected outcome of a grounded theory research and points to the emerging research directions. The point at issue here is that the field of grounded theory has moved from a rigid emphasis on discovery of theory toward construction of theory by engaging profoundly with the data (Annells, 1996; Flick, 2018).

2.1 Philosophical foundations of grounded theory: Research paradigm, ontology, epistemology, methodology and axiology

The abovementioned debate reveals the disagreement regarding the core philosophical assumptions in grounded theory. It is clear at this point that grounded theory fits under qualitative empiricism (Urquhart et al., 2010) but has also been dubbed as post-positivist, interpretive and critical. Annells (1996) places grounded theory under critical realism paradigm. Grounded theory has also been claimed as interpretive that falls under the ontology of social constructivism (Urquhart, 2001). Charmaz (2014) argues that a search for a specific ontological position is pointless because the foundational work by Glaser and Strauss lacks clarity about it (Urquhart et al., 2010). The point at issue is that grounded theory can be used by researchers coming from different ontological positions. Therefore, one of the strengths of grounded theory is that it transcends seemingly impenetrable philosophical boundaries in terms of understanding the nature of reality. As indicated by Urquhart (2001), grounded theory, above all, "is a method and as such, can be used comfortably in most paradigms" (p. 16).

In case of epistemology, Annells (1996) argues that the initial work of Glaser and Strauss (1967) suggests a separation of the researcher and the method. As such, grounded theory, at least in the early stages, has a distinct objective epistemological position. Later, Glaser (2007) reemphasizes that grounded theory is 'epistemology-neutral' meaning that grounded theory is practical and is essentially about how researchers use grounded theory as a method for theory building; data collection methods do not have a systematic task (Flick, 2018). However, as discussed in the last section about evolution of grounded theory, later works acknowledge the role of researchers and their experiential knowledge as relevant in the research process. Seidel and Urquhart (2013) analyze Straussian grounded theory utilized in IS research and argue that grounded theory are not discovered but constructed based on the researchers' conscious interpretation.

As a methodology, grounded theory does not test theory, but develops either theory embedded in the data or provides rich description of the phenomenon under investigation. However, as clear from the above discussion on philosophical evolution, researchers adopt different methodological positions. Classic grounded theory by Glaser assumes that grounded theory research is a purely inductive exercise while later researchers bring a combination of both deductive and inductive assumptions. The specific research methods that the researchers follow must corroborate with the ontological and methodological assumptions.

Despite the later disagreement regarding the coding process, at the beginning stage of grounded theory, Glaser and Strauss (1967) establish a detail research process that has been refined by subsequent research conducted in many different fields (Apramian, Cristancho, Watling, & Lingard, 2017). The purpose of data collection in grounded theory is to infuse more contexts into the research. Unlike traditional research process, grounded theory introduces more complexity by adding contexts (Flick, 2018). The researcher immediately analyzes the first set of data and based on the understanding, the s/he adds more cases and thus starts an integrated cycle of collection, analysis and sampling (Flick, 2018). After analyzing data (with the help of analytic memos) from multiple perspectives and by constantly comparing those perspectives, all the codes developed till now are moved to a level of abstraction (Gasson & Waters, 2013). The higher level concepts are then get related with each other and if possible to the extant literature (Birks, Fernandez, Levina, & Nasirin, 2013; Matavire & Brown, 2013). Researchers collect data until a saturation point when no further addition is possible to the theoretical sampling that aims to augment emerging concepts, not to identify representative population (Birks et al., 2013; Gasson & Waters, 2013). One important feature of grounded theory is that it does not use existing theories to interpret the findings. However, it is permissible to consider extant theories to place the results into the broader literature of the field. The ultimate aim in grounded theory is to build a theory of the problem under investigation. Flick (2018) summarizes the difference between traditional research process and circular model of grounded theory (See Figure 1).

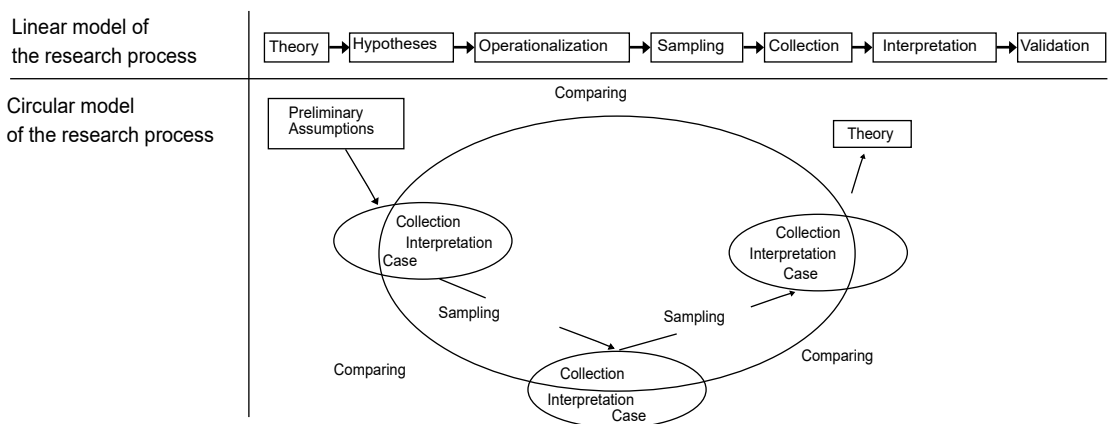


Figure 1: The circular research process in grounded theory as opposed to the traditional linear process. Source: Flick (2018), p. 21

The axiological assumptions of grounded theory should follow from the inquiry paradigm that is generally put under critical realism and / or constructivism. The research process under these paradigms is not value neutral. Basically, any critical research should draw from the value of emancipation by investigating the oppressive social mechanisms (Heeks & Wall, 2018).

3. ICT4D RESEARCH: EVOLUTION AND THE WAY FORWARD

ICT4D research, potentially, has a unique position to influence peoples' lives by making significant theoretical and practical contributions in the context of developing countries. Qureshi (2015) provides a typology of ICT4D research and identifies possible analytical levels, unit of analysis and development outcomes. She points to the broad reach of ICT4D research in the contexts of individual, organizational, regional and global levels. However, Avgerou (2017) points to the fact that ICT4D research has not enjoyed a linear journey. During the 1980s, researchers focus on government policies regarding computer diffusion since many governments in developing countries were hesitant in adopting computers. The main theme that echoes in ICT4D research during 80s is that effective computer adoption would eradicate almost all the problems in developing countries (Avgerou, 2017). In the 1990s, advancement of 'neoliberalism' and falling confidence on Government actions make ways for NGOs and different international developing agencies to emerge and promote a causal link of ICT use with many social development indicators such as poverty reduction, healthcare access, equality, education etc. (Avgerou, 2017; Qureshi, 2015).

However, even after decades of ICT4D research by academics and practitioners, the straight forward causal link between ICT use and development cannot be established (Omland & Thapa, 2017; Qureshi, 2015) though it is clear that ICTs have immensely affected lives in developing countries. Therefore, ICT4D research starts acknowledging that ICTs have a complex relationship with peoples' lived experiences that are influenced by many other conditions. For example, Amartya Sen's capability approach and the conceptualization of 'development as freedom' have been utilized by ICT4D researchers (Kleine, 2010; Poveda & Roberts, 2018; Sein et al., 2019). Njihia and Merali (2013), by using a morphogenetic approach, highlight the global normative pressure, national socio-economic and political environment and argue for deeper context specific research to understand the nuances that may affect the emancipation goal of the public ICT4D projects. Ramadani, Kurnia, and Breidbach (2018) also recognize the need of holistic approach in ICT4D research by pointing out the technologist versus contextualist debate. Based on Avgerou (2008), they identify three separate ICT4D research streams – technology transfer, social embeddedness and transformative ICT4D. Technology transfer refers to the aim of developing countries to catch up with the developed countries and in reality has a western bias in using theories like TAM, UTAUT etc., developed in mainstream IS field; Social embeddedness recognizes the roles of sociotechnical structures and actors (both individuals and groups) and mainly uses social science rooted theories like Actor Network Theory (ANT), institutional theory, social network theory etc.; Transformative ICT4D adopts a broader view and aims for meaningful socio-economic changes through ICT diffusion (Ramadani et al., 2018). Overall, even after acknowledging the importance of technology transfer stream, there is a drive toward incorporating more contexts in ICT4D research.

The concept of 'socio-materiality' developed in mainstream IS research can be a helpful but incomplete tool to incorporate context in ICT4D research. 'Socio-materiality' conceptualizes IS phenomena as

a co-creation of IT artefacts and human participants in a situated contexts but fails to establish how IS phenomenon is connected with the broader contexts (Avgerou, 2017; Zheng et al., 2018). ICT4D research deals with broader contexts such as national, regional and community contexts and the sole focus on the 'intra-action' between technology and humans by 'socio-materiality' research is inadequate (Avgerou, 2017). This disconnect with the broader context may explain why significant investments in ICT4D intervention has not yet produced desired results (Zheng et al., 2018). The history of IS field to borrow theory from other areas can be one reason why it lacks immersion in contexts and that rings true in ICT4D research also. Urquhart et al. (2010) argue that grounded theory can be an answer to this problem by generating theories from the field under study.

4. WHY IS GROUNDED THEORY A GOOD FIT FOR ICT4D RESEARCH?

Researchers use grounded theory in different fields and claim to appear from different paradigms such as positivistic, interpretive, critical realism and constructivist. Consequentially, the ontological, epistemological and methodological assumptions vary. This difference in philosophical assumptions may seem as a problem. But, this multiplicity is, in fact, a strength of grounded theory since it elicits an epistemologically neutral position that makes grounded theory an exceedingly practical research method (Urquhart & Fernández, 2013). ICT4D research is in need of infusing more contexts to become more relevant for the very people it wants to help by implementing the findings. Grounded theory has the potential to help ICT4D researchers in introducing multiple perspectives in research and therefore, can help in connecting the ICT4D research with the aim of development.

The ontological freedom eliciting from the paradigm neutrality of grounded theory can become very useful for ICT4D research in conceptualizing the research problem. As Urquhart and Fernández (2013) indicate, a general misconception that can result from incomplete reading of early grounded theory literature is that the theory is something neutral and objective that is discovered from data. This misconception makes grounded theory essentially positivistic. But, this is a misinformed position. In fact, grounded theory is compatible with different ways of understanding the nature of reality. ICT4D researchers can benefit from this by attempting to understand the reality of the people whose lives they aim to affect. The life experiences of the people are different and grounded theory can help ICT4D researchers to break free from the hegemonic western bias regarding 'what is development?', 'what should be perceived as a good life experience?', 'what life situations should be improved?' etc. Grounded theory can also allow ICT4D researchers to engage in the political reality of the lived experiences of the poor people.

Grounded theory is epistemologically neutral meaning there is no explicit correct epistemology. The relation between the researcher and what can be known can be negotiated depending on the ontological position that a researcher adopts. Grounded theory is better conceptualized as method that researchers employ in carrying out a research process. Even though in grounded theory the researcher is expected to discover the theory from the data, the relationship between the researcher and what can be known is not static, rather it can be decided by the researcher (Urquhart & Fernández, 2013). This can be quite liberating for ICT4D researchers to understand the multiple perspectives of different stakeholders involved in the research process. As any qualitative researcher using grounded theory, the ICT4D researcher should explicitly establish and make the epistemological position clear.

From a methodological perspective, grounded theory has immense potential to inform ICT4D research. As previously discussed, one of the main concerns about ICT4D research is its lack of contextualized theory. Most of the theories are directly adopted from information systems field with an inherent western bias. Moreover, information systems research has a history of focusing on organizational technologies that may not be directly applicable to the new information and communication technologies being diffused in very different cultures and contexts. Grounded theory does not start from any grand theory even though it is permissible for the researchers to sensitize themselves with the extant literature at a minimum level (Urquhart & Fernández, 2013; Urquhart et al., 2010). Researchers are expected to build contextualized theory to understand the phenomenon under investigation. In so doing, grounded theory research addresses the theoretical hegemony that has been pervasive in ICT4D research till date. Researchers carry out data collection, comparison and analysis simultaneously in grounded theory until a theoretical saturation phase is reached. The aim is to identify emerging theoretical categories by constantly comparing the cases with each other. This focus on the emergent nature of insight can be helpful in ICT4D research to embrace local contexts even at a later stage of research. Therefore, including the voices of the un/under-represented becomes an important part of the final outcome of research that is a substantive or formal theory of the phenomenon under investigation.

Grounded theory researchers can assume different ontological positions such as critical realism and constructivism that acknowledges the value position of emancipation by pointing out the social structures that limit human development. The goal of ICT4D research is to improve the lives of poor people and grounded theory gives a fresh opportunity to the researchers both from academic and industry backgrounds to immerse in the field with the understanding of what is right or wrong. By so doing, it allows researchers to clarify the axiological assumptions of the research.

In summary, ICT4D research must go beyond immediate problem solving by ICTs and needs to emphasize on how to determine the underlying structural causes of inequality and disadvantage as argued by Poveda and Roberts (2018). Grounded theory can help ICT4D researchers to adopt this holistic perspective because of its inherent advantage of immersion with the data.

5. CHALLENGES ICT4D RESEARCHERS MAY FACE WHILE USING GROUNDED THEORY

A big challenge of using grounded theory in any study is how researchers engage with the very public disagreement of two co-founders that is Glaser and Strauss. Researchers must have a full understanding of the grounded theory literature and consciously choose the version they are going to use.

Another challenge of using grounded theory stems from a general problem in ICT4D research that these topics and methods are not glamorous and easy to carry out (Harris, 2016; Qureshi, 2015). Davison (2012) argues that changes must be made in a citation – obsessed research culture where important issues may fall through the crack because those are not institutionally promoted. Grounded theory research needs immersion in the field and researchers may not get enough funds and time to carry out a proper in – depth study in ICT4D field.

Also, grounded theory research requires researchers to get access to participants' lived experiences. In most cases, that access needs to be negotiated utilizing deeper understanding about nuanced

cultural practices that calls for including local researchers in ICT4D projects. But, how counter – intuitive it may seem, there is a lack of indigenous researchers in this field as most ICT4D researchers are not local and do not live in developing countries (Joia, Davison, Diaz Andrade, Urquhart, & Kah, 2011). Therefore, carrying out grounded theory research can be challenging if local researchers are not invited in the scene.

6. CONCLUSION

ICT4D research is unique in its requirement to understand contexts in both granular and broader level and it is a rather challenging feat to achieve. This paper argues that grounded theory has the potential to help researchers doing just that because of its ontological, epistemological and methodological strengths. Grounded theory is applicable in understanding different conceptions of reality by researchers and has established epistemological and methodological rigor that can guide even a novice investigator to understand the realities of the target users of ICT4D projects. Grounded theory also accommodates the axiological assumptions of the researcher.

In addition to the use of grounded theory in academic ICT4D research, I also expect that practitioners who have access to significant amount of fund for ICT4D research in developing countries see the potential of grounded theory to reveal the nuances in the lived experiences of the very people they want to help. It will only make their contributions more effective due to the application of a bottom up approach in recommending policies.

In summary, the novel contribution of this paper is theoretical as it identifies and clarifies the potential of grounded theory for future ICT4D research in terms of theory building. In doing so, the paper also points to the applicability of grounded theory perspective and methods for ICT4D project managers. The paper also specifically mentions the challenges researchers may face in this respect. For further promotion of grounded theory research in ICT4D field, research institutions should publish journal issues and arrange workshops that can help researchers from both academic and managerial backgrounds to understand the applicability and challenges of grounded theory perspective for their future endeavors.

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