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Framework for studying reflective social capital in ICT4D

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ABSTRACT

Social capital is an important concept in Information and Communications Technology for Development (ICT4D) research. It is tightly linked with reflexivity and more research is needed on how reflective practices contribute to the sustenance of social capital in ICT4D interventions. Also, there is a call for greater probe of how ICT4D interventions translate into quality of life. This exploratory study looks at the relationship between reflexivity and social capital and how this relationship translates into wellbeing of individuals using information and communications technology in the developing countries. The study is based on critical incident reflection methodology and analyzes twenty incidents from two ICT4D projects in India. Our study indicates that in ICT4D initiatives social capital helps achieve the desired individual outcomes, but its activation does not translate into overall wellbeing of the users of social capital. Also, users of social capital are reflective about its use and produce reaffirmation schemas about their social context.

Keywords: Developing countries, ICT4D, reflexivity, social capital, wellbeing

INTRODUCTION

Social capital is an important concept in information technology (IT) research. The concept has been applied to study digital inequalities (Ignatow & Robinson, 2017), inter-organizational relationships (Nawinna & Venable, 2019), public sector implementation of information technology projects (Bartelt, Urbaczewski, Mueller, & Sarker, 2020), vendor and client relationships in IT outsourcing (George, Hirschheim, Jayatilaka, & Das, 2014). In ICT4D research it is well acknowledged that ICTs that are embedded in the “existing community

structures” are more sustainable as they are better able to leverage the benefits of social capital (Vaughan, 2006). Empirical studies indicate that social capital lens when used with theories such as the Actor-Network theory, is a very powerful tool to understand the ICT links with development (Thapa & Sæbø, 2016). Leadership plays a pivotal role in the sustainability of ICT4D projects and is linked to social capital. Therefore, ICT4D research studies should consider social capital as a key construct (Renken & Heeks, 2013).

Social capital refers to tangible or intangible resources that one accrues due to social relations (Weiler & Hinz, 2019). Consequently, social capital has structural, relational, and cognitive aspects. The structural aspect of social capital looks at the positions of individuals in their social network (Burt, 1997). It lays its emphasis on social network structure and the positions of agents. The relational dimension of the social capital refers to the interpersonal relationship between people, such as the relationships of trust and friendship (Nahapiet & Ghoshal, 1998). The cognitive dimension of social capital concerns the shared understanding that may bond people together, resulting in strong social ties (Nawinna & Venable, 2019).

Social capital is tightly linked with reflexivity. People who can combine their social capital with reflexivity can use social capital sustainably (Rahadiano Sutopo, Threadgold, & Nilan, 2017). More research is needed on how reflective practices contribute to the formation and sustenance of social capital (Tomozumi Nakamura & Yorks, 2011). Within information technology research, there is a gap in the operationalization of cognitive and relational dimensions of social capital (Weiler & Hinz, 2019). Also, there is a call for a more significant probe of how the information technology interventions translate into better quality of life (Sarker, Chatterjee, Xiao, & Elbanna, 2019). This study addresses the gap in the cognitive dimension of social capital research and looks at the relationship between reflexivity and social capital in the context of ICT4D initiatives. Specifically, it answers the question: can reflective use of social capital in ICT4D projects translate into wellbeing of the users of social capital? It also seeks to present a framework that can guide the study of reflexivity-social capital links in ICT4D studies.

There are various ways to study reflexivity, such as storytelling, reflective conversation, reflective dialogue, reflective metaphor, reflective journals, repertory grids, and critical incident reflection (Gray, 2007). Our study is based on critical incident reflections, and we analyze twenty incidents from two ICT4D projects in India. The two projects are information technology led interventions initiated by the Government of India. One project interlinks the

agricultural market yards, while the second is related to the delivery of digital financial services.

The remainder of the paper is organized as follows. In the next section, we provide an overview of social capital. After this section, we develop a theoretical framework for studying social capital in ICT4D initiatives. Section four presents the research methodology of critical incident reflection and the data collection and analysis. In section five, we present the results from our qualitative analysis of twenty critical incidents. In the last section, we present our conclusions.

SOCIAL CAPITAL OVERVIEW

The concept of social capital seems to have first appeared in the early 20th century (Tomozumi Nakamura & Yorks, 2011). Since then, the concept has been widely applied to explain social phenomena in sociology, education, social psychology, organizational behavior, information technology, and management (George et al., 2014). According to (Lin, 1999, p. 30) social capital is the “investment in social relations with expected returns”. Social capital refers to the resources, tangible or intangible that one gets on account of the social relations (Weiler & Hinz, 2019). The works of Bourdieu, Putnam, and Coleman are the three primary sources of social capital-related knowledge (George et al., 2014). Coleman is credited with the socio-centric view of social capital and primarily uses social capital to explain the social or group outcomes such as family, social group, or organizations. Putnam is more concerned with applying social capital to explain the civic outcomes, like using social capital by voluntary organizations (George et al., 2014). Bourdieu uses social capital to explain both collective and individual outcomes (George et al., 2014; Lin, 1999; Weiler & Hinz, 2019). Bourdieu has an exclusionary understanding of social capital, while Coleman and Putnam provide the inclusionary version of social capital (Rahadiano Sutopo et al., 2017). According to Bourdieu, the privileged class uses social capital to exclude others from their social networks (Rahadiano Sutopo et al., 2017). Therefore, social capital is a tool for exclusion and domination (Lo & Fan, 2020). The major themes in social capital research relate to the conceptualization of social capital, its operationalization, and the consequences of social capital (Payne, Moore, Griffis, & Autry, 2011). For example, one central theme in the conceptualization of social capital is related to the major sources of definitions of social capital. Payne et al. (2011) reviewed over 100 journal papers covering twenty years and found that Burt and Coleman are two major sources of the definitions and conceptualization of social capital (Payne et al., 2011). They also found that the five most cited authors of social capital definitions are (Burt, 1997), Burt (1982), Burt (1992), Burt (2000), Coleman (1988), Coleman (1994), Adler and Kwon (2002), Nahapiet and

Ghoshal (1998) and Bourdieu and Richardson (1986). One major issue with the social capital definitions is that researchers apply definitions that have both macro and micro-level orientation, i.e., collective and individual orientation. Subsequently, while measuring social capital, researchers collect data at individual levels while measuring the collective level outcomes. Another issue is that there is inconsistency amongst definitions as some definitions conceptualize it as “goodwill” while other see it as “actual and potential resources” (Payne et al., 2011). Operationalization of social capital research is related to the structural, relational and cognitive dimensions of social capital research. The structural dimension of social capital stresses the positions of agents or organizations in the social network (Rowley, Behrens, & Krackhardt, 2000). The aspects studied in the structural dimension are engagement in the social network, the structure of network positions, and the resources available to the occupants or positions (Weiler & Hinz, 2019). The relational dimension of social capital refers to the assets created purely due to the relationships between people (Nahapiet & Ghoshal, 1998). When social capital is studied relationally, the focus is on the dyadic relations between the agents (or organizations) and the created assets (Nawinna & Venable, 2019). The cognitive dimension of social capital refers to the social capital that is accrued through the shared understanding. Similar understanding about the values may bond people and help create social capital (Nawinna & Venable, 2019). Language is an essential aspect of the cognitive dimension of social capital as it is an essential tool for combining information (Nahapiet & Ghoshal, 1998). One issue in the IS research on the operationalization of social capital is the over-emphasis on structural operationalization while relational and cognitive dimensions are ignored. For example, (Weiler & Hinz, 2019) suggest that in information technology research, operationalization of the structural capital is a dominating theme as nearly seventy-five percent of studies they reviewed discuss the operationalization of the structural social capital (Weiler & Hinz, 2019). Another research theme related to operationalization is the measurement of social capital. Authors have discussed tools that can be applied to measure social ties' strength and enclosure. For example, Van Der Gaag and Webber (2008) present the strengths and weaknesses of the name, position, and resource generator tools.

The use of social capital has consequences at an individual and collective levels. First, social relationships facilitate the exchange of resources, and therefore, the notion of social capital is essential (Van Der Gaag & Webber, 2008). Secondly, social relations contribute to the self-worth of individuals as there is a public endorsement of the resourcefulness of an individual (Lin, 1999). The extent of social capital is a measure of the sociability of an individual (George et al., 2014). Thirdly, social capital also plays a pivotal role in forming intellectual capital

(Nahapiet & Ghoshal, 1998). Social capital helps meet the performance outcomes (Payne et al., 2011). Social network relations are related to network ties. Depending upon the industry, strong network relations can positively or negatively impact organizational outcomes (Rowley et al., 2000). When combined with reflective organizational practices, social capital helps to reduce the time required for achieving organizational outcomes (Rahadiano Sutopo et al., 2017).

The use of social capital can also have detrimental impacts (Nahapiet & Ghoshal, 1998). For example, individuals may be excluded from group memberships if they do not comply with group norms or even start questioning them (Weiler & Hinz, 2019). Depending upon the inter and intra-group linkages, social capital can be of bonding, bridging, and linking types. Bridging and linking forms of social capital are more inclusive than bonding. A bonding form of social capital promotes nepotism, tribalism, and corruption (Lo & Fan, 2020). Social networks can also have an “exclusionary nature”, and therefore social networks can also have a detrimental impact on individuals (Rahadiano Sutopo et al., 2017). In some situations, actors cannot leave their social networks, and social capital may restrict their emancipation (Borgatti & Foster, 2003). Within information technology research, the negative aspects of social capital have not received adequate attention (Weiler & Hinz, 2019). Social capital use also has consequences for the reflexivity practices of individuals and organizations. Few studies have discussed the relationship between social capital and reflexivity, and more research is needed on how reflective practices contribute to the formation and sustenance of social capital (Tomozumi Nakamura & Yorks, 2011). Table 1 provides examples of the themes in the study of social capital and reflexivity. In the next section on the theoretical framework, we discuss the relationship between social capital and reflexivity.

Table 1 Examples of the themes in the study of social capital and reflexivity

Theme	Study
Techniques for developing reflective organizational practices	(Gray, 2007)
Relationship between social class and reflexivity (reflexive habitus)	(Threadgold & Nilan, 2009)
Reflective practices and sustainable social capital	(Tomozumi Nakamura & Yorks, 2011)
Relationship between reflexivity, social exclusion, and power	(Lo & Fan, 2020)

Relationship between social capital, reflexivity, and risks	(Rahadiano Sutopo et al., 2017)
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THEORETICAL FRAMEWORK DEVELOPMENT

To study the relationship between ICT4D, social capital, and its impact on the reflective practices of the users, we developed a theoretical framework based on the past social capital research. Studies have suggested that a forms of social capital (for example, bonding or bridging), the orientation of the social network ties and the outcomes of social capital are important considerations in the study of social capital (Payne et al., 2011). We developed a framework for studying social capital that included these elements as well as reflexivity. Each of these elements is described below.

Social Capital and Reflexivity

The concept of social capital is intricately linked with reflexivity. Reflexivity lets people learn from past experiences and can therefore inform future social networking practices (Tomozumi Nakamura & Yorks, 2011). Empirical studies indicate that the strategic use of social capital is linked to the reflexive abilities of individuals (Rahadiano Sutopo et al., 2017). The sustenance of social capital also depends on the levels of reflexivity of the social network participants (Rahadiano Sutopo et al., 2017). Lo and Fan (2020) suggest that reflexivity is a crucial consideration in the inclusive use of social capital. Reflexivity is essential as social capital use can result in the dominance of influential people. Therefore, it is important to be reflective of the practices of the elite so that there is no social exclusion (Lo & Fan, 2020). Social capital is often accumulated to protect oneself from an anticipated risk. In such situations, the role of reflexivity becomes essential in averting the risks. When accumulating social capital, the agents reflect on their current positions and are reflexive about the positions in the other networks. Therefore, when social capital is used with reflexivity, individuals can access otherwise inaccessible networks (Rahadiano Sutopo et al., 2017). The relationship between reflexivity and social capital needs more exploration, and a one important area of research is how reflective practices contribute to the formation and sustenance of social capital (Tomozumi Nakamura & Yorks, 2011).

Forms of social capital

Based on inter and intragroup linkages, the social capital literature identifies three forms of social capital: bonding, bridging, and linking. Bonding is the same group cohesion. It arises from a shared sense of identity. Bridging is cohesion across different groups and links the

members of different groups. The linking form of social capital is vertical cohesion and links people from diverse groups and those belonging to different classes or statuses (Lo & Fan, 2020; Nawinna & Venable, 2019). According to Lo and Fan (2020), the linking form of social capital has symbolic violence inbuilt into it as it links the dominant power elites with the underprivileged people. Social capital can be used both within a social network or outside. Thus, these forms of social capital are not mutually exclusive (Payne et al., 2011).

Network ties

Related to the forms of social capital is the location of the network ties. The ties in a social network can be directed inwards or outwards, or both. Based on these locations of ties, the frameworks for the study of social capital are developed. For example, (Payne et al., 2011) have developed a framework that has two dimensions, namely levels of social capital (individual or collective) and location of social ties (external or internal). From their review of over one hundred journal papers covering twenty years, the authors found that Burt and Coleman are two major sources of the definitions and conceptualization of social capital. The difference between these two sources is their focus on network locations. The focus of Burt is on the external social ties that are external while Coleman focuses on the internal social ties (Payne et al., 2011). Coleman, therefore, uses social capital to explain the social or group outcomes such as of family, social group, or organizations (George et al., 2014). Coleman argues that stronger social ties result in relationships of trust, while Burt sees the disconnectedness between different social networks and the brokerage opportunities that are made possible due to these disconnections (Rowley et al., 2000). Burt's structural hole theory suggests that there are holes in the social networks due to which information does not flow, and there are brokerage opportunities through which information can be made accessible. A structural hole between two social networks is a gap arising due to a lack of information sharing. The actor between two disconnected networks has information from both networks and has brokerage opportunities (Burt, 1997).

Outcomes of social capital

Social capital can help in reducing the time required for achieving outcomes. Researchers have argued that people who combine their social capital with reflexivity can timely achieve their outcomes (Rahadianto Sutopo et al., 2017). One primary theme of interest in social capital research is the study of social capital outcomes. The outcomes of social capital can be individual or collective (George et al., 2014). Consequently, authors have developed theories

to explain social capital's individual or collective outcomes. For example, Bourdieu is concerned with explaining the individual outcomes of social capital.

On the other hand, Coleman is more concerned with applying social capital to explain the civic outcomes, like using social capital by voluntary organizations (George et al., 2014). Researchers have studied collective outcomes such as organizational success and organizations' procurement of resources (Payne et al., 2011). Individually, social capital is used to achieve power, rewards, innovation, and leadership (Borgatti & Foster, 2003). Thus, one crucial aspect of social capital is related to the individual or collective outcomes it helps achieve.

We use the above themes to develop a framework for studying the relationship between social capital and reflexivity. The framework is presented in Table 2. The first column of the framework presents the dimensions of social capital and reflexivity. The second column presents the research question related to the dimension. We use this framework to analyze the twenty critical incidences from two information technology interventions. The next section on research methodology provides more details of the critical incident technique and data collection.

Table 2 The framework for studying social capital and reflexivity in current research

Dimension of social capital and reflexivity	Question
Reflexivity	What is the topic of reflection when interacting with social capital?
Use	What is the purpose of using social capital?
Form	What is the form of social capital (bonding, bridging, or linking)
Location of ties	What is the location of ties (external or internal)
Outcomes: Collective	What are the collective outcomes of social capital use?
Outcomes: Individual	What are the individual outcomes of social capital use?
Role of agent	What are the roles that agents play while interacting with social capital

RESEARCH METHODOLOGY

Critical Incident Technique

This study uses the critical incidents technique (CIT) developed initially by (Flanagan, 1954) and is widely used in many disciplines such as aviation, psychology, marketing, and human resource studies. Within information systems research, CIT has been applied to study online

shopping behavior, use of mobile services, trust issues in workplaces, and risk management (Kutsch, Browning, & Hall, 2014; Salo & Frank, 2017; Thielsch, Meeßen, & Hertel, 2018). CIT focuses on collecting data on critical incidents, categorizing these incidents, and presenting the findings. An *incident* is a specific activity that is complete for concluding. It is *critical* if the incident and its effects can be identified. Flanagan (1954) defines the critical incident technique as a “procedure for gathering certain important facts concerning behavior in defined situations.” The uniqueness of the technique lies in its ability to reveal the “non routine” aspects of the incidents (Edvardsson & Roos, 2001).

There is debate about whether CIT should be conceptualized as a method or methodology. Viergever (2019) has looked at various features of a research methodology (such as philosophical assumptions) and has made strong arguments about it being a methodology. In Table 3, we present the features of a research methodology and how CIT addresses each dimension. The specific steps that are applied in CIT are establishing research objectives, developing a research plan, data collection, data analysis, and reporting the findings (Butterfield, Borgen, Amundson, & Maglio, 2005). In Table 4, we present these steps and the application of each step in the current study.

Table 3 Features of methodology based on (Creswell & Poth, 2016; Viergever, 2019)

Features of methodology	Applications in CIT
1. Focus	CIT focuses on critical incidents, i.e., incidents that are sufficient for drawing conclusions
2. Suitability for specific types of research inquiries	CIT is suited for the identification of the factors/ preconditions that facilitate or desist an activity or experience
3. Research traditions in the discipline	Initially applied in industrial psychology/ aviation research but later extended to other disciplines
4. Unit of analysis	Critical Incidents
5. Ways of data collection	Multiple (usually) qualitative methods
6. Data analysis approaches	Categorization of the critical incidents in a manner suited to the inquiry
7. Ways of presenting the findings	Such as journals and conference submissions
8. Justification	Focused on incidents and flexibility

9. Philosophical assumptions	An inductive approach, descriptive analysis, incidents should be sufficient for drawing conclusions
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Table 4 Steps in critical incident analysis and their application in the current study

Main steps in critical incident analysis (Based on Butterfield et al., 2005)	Applications in current research
<i>Step 1: Establish the objectives of the research</i>	
Research Objectives	Develop a framework to guide the study of reflexivity-social capital links in ICT4D interventions in developing countries. Investigate the relationship between ICT4D interventions, the use of social capital to achieve the individual outcomes in these interventions.
Research Question	Can a reflective use of social capital translate into the well-being of the users of social capital in ICT4D interventions in developing countries?
<i>Step 2: Develop a research plan</i>	
1. Specify the research situations/ events to be observed	Identified twenty critical incidents where the participants interacted with social capital and were reflexive about the incidents
2. Relating the situations/ events with the objectives/ questions	Related the incidents with the social capital and reflexivity in the study framework (topic of reflexivity, excerpt on reflexivity, social capital purpose. form of social capital, location of ties)
3. The extent of the impact that the situations/ events have on research objectives/ questions	Related the impacts of the incidents with: <ul style="list-style-type: none"> 1. Individual outcomes 2. Collective outcomes
4. Identifying people who will collect data	<ul style="list-style-type: none"> 1. Author 2. Co-author
<i>Step 3: Data collection</i>	

Report the details about the number of critical incidents observed	Data collected from: 1. Two ICT4D projects in India 2. Reported the data of the critical incident in Table
<i>Step 4: Analyzing the data</i>	
Create a scheme/ framework for categorizing the data of the critical incident	Created a theoretical framework on critical incidents, reflexivity, and social capital
<i>Step 5: Interpreting and reporting the data</i>	Present the research results in IS community forums/ platforms (journals, conferences, research seminars).

Data Collection

The first study was related to digital financial services (DFS) provided by the various government and private financial organizations in India. ICT plays a significant role in providing access to financial services to isolated and underserved communities (Bishnoi & Devi, 2017; David-West, Iheanachor, & Kelikume, 2018; Rana, Luthra, & Rao, 2019). The ICT enabled financial technologies are known as digital financial services (DFS). DFS “rely on digital technologies for their delivery and use by consumers” (Pazarbasioglu et al., 2020, p. 1). DFS offer people a range of banking and financial services in a flexible, affordable, and faster manner through various digital channels such as mobile devices, automated teller machines, debit and credit cards, electronic money and internet banking platforms (Bishnoi & Devi, 2017; Rana et al., 2019). Since digital technologies make financial services more efficient than brick-and-mortar delivery platforms, DFS can help the underserved (e.g., rural individuals) to reduce operational cost and constraints (Finau, Rika, Samuwai, & McGoon, 2016; Manyika, Lund, Singer, White, & Berry, 2016) as well as the poverty level by providing opportunities to participate in economic activities (Aker, Boumnijel, McClelland, & Tierney, 2016; Joia & dos Santos, 2019; Wang & He, 2020). For this first study, the site was the Indian state of Uttar Pradesh – the most populated state in India with 200 million people. Nearly 80% of the state’s population lives in rural areas, which account for almost 20% of the total rural population of the country (MOSPI, 2017). Recent trends in banking indicate that there has been a progressive adoption of DFS in rural areas of Uttar Pradesh (RBI, 2018). The major stakeholders in delivering digital services in India are rural individuals (farmers, rural support workers, traders), bank officers, and banking agents. The second study was conducted in the central Indian state of Madhya Pradesh where nearly one-third of the state's population is rural

and agricultural occupations are a major livelihood source for the people. The farmers of the state produce their agricultural commodities and sell these at the state-owned agricultural market yards. The agricultural yards are popularly called as *Mandi*, controlled by the government, and provide a platform for farmers to sell their commodities. The farmers' commodities are auctioned to the traders and the government certifies these transactions charging a service fee from the traders. The manual system of trade transaction resulted in many data reconciliation problems that led the government to initiate an information technology project. Before 2000 these auctions were conducted manually, but the government decided to computerize this process by involving the private vendor employees. Latest information technology was used to connect the agricultural markets located across the states. The state government argued that interconnected markets would also prevent farmers' exploitation by getting the best available market rate information. The project has been under implementation for over fifteen years now as it faces multiple challenges. This project has been widely studied in ICT4D research and the core stakeholders in this study are traders, government officers, private partners who implement the ICT, and farmers (Bhatnagar, 2007; Singh, Díaz Andrade, & Techatassanasoontorn, 2018).

According to (Edvardsson & Roos, 2001), the data on critical incidents can be collected using variety of methods such as personal and focused group interviews as well as observation. Personal interviews have some advantages over other methods as further questions can be asked to have a better understanding of the critical incidents. For the first study, the data was collected from September 2021 till November 2021 by one of the authors. The target participants of study were the DFS users (i.e., rural individuals) and DFS providers (i.e., rural bank officials and business correspondents). The data was collected from two different districts of Uttar Pradesh state. Overall, 45 participants, including 32 rural individuals and 13 DFS providers were interviewed using semi-structured interviews. For the second study the data was obtained from twenty-three participants through semi-structured interviews from six sites in the central state of Madhya Pradesh.

Overall, the authors collected twenty critical incidents (CI) from the interview transcripts that were related to the use of social capital. Also, one important consideration in the identification of the critical incidents was that it should include excerpts that indicate reflexivity. For example, one of the identified critical incidents included an excerpt that "since then, I have become recalcitrant, I have just come out of these things...." The critical incidents were extracted from five stakeholder groups: government officers, private partners implementing ICT4D in the agricultural marketing project, farmers, traders, and rural worker. The number of

words in the incidents varied from 92 to 308. Themes such as job promotion, power of farmers, traders, and social bonding of farmers were present in the critical incidents. We list the word length and the theme of each incident in Table 5. Table 6 presents the details of critical incidences analyzed across the stakeholder groups. In the Tables, the stakeholder groups are mentioned as government officers (GO), private partners (PP), farmers (FR), traders (TR), and rural workers (RW).

Table 5 Themes in critical incidents and word counts

CI Number	Stakeholder Group	Word Count	Theme
1	GO 1	179	Job promotion
2	GO 1	243	Illegal yard trade
3	GO 1	175	Job transfer
4	GO 1	172	Power of farmers
5	GO 1	266	Social connectivity
6	PP 1	211	Power of traders
7	PP 1	154	Power of traders
8	PP 2	111	Power of traders
9	PP 2	190	Powerful lobbies in yards
10	FR 1	126	Alacrity of traders
11	FR 2	134	Trader cartel
12	FR 2	204	Power of traders
13	GO 1	93	Power of traders
14	GO 1	92	Power of yard employees
15	FR 3	126	Power of traders
16	TR 1	244	Social bonding of farmers
17	FR 4	244	Social bonding of farmers
18	TR 2	297	Social bonding of farmers
19	TR 3	212	Consequences of social connections
20	RW	308	Trust on digital receipts/ artefacts

Table 6 Number of critical incidences analyzed across the stakeholder groups

Stakeholder Group	Number of Critical Incidences	Study Domain	Total Critical Incidences (across stakeholder groups)	Total Critical Incidences (across study domain)
Government Officer 1 (GO 1)	06	Agricultural Marketing	07	15
Government Officer 2 (GO 2)	01	Agricultural Marketing		
Private Partner 1 (PP 1)	02	Agricultural Marketing	04	
Private Partner 2 (PP2)	02	Agricultural Marketing		
Farmer 1 (FR 1)	01	Agricultural Marketing	05	
Farmer 2 (FR 2)	02	Agricultural Marketing		
Farmer 3 (FR 3)	01	Agricultural Marketing		
Farmer 4 (FR 4)	01	Digital Financial Services		
Trader (Money Lender - TR 1)	01	Digital Financial Services	03	05
Trader (Small Business Owner - TR 2)	01	Digital Financial Services		
Trader (Retail Shop Owner - TR 3)	01	Digital Financial Services		

Rural Worker (RO – 1)	01	Digital Financial Services	01	
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Data Analysis

Past ICT4D studies have analyzed the social capital data by categorizing the empirical data into constructs related to social capital. For example, (Sein, Thapa, Hatakka, & Sæbø, 2019) analyze their data by categorizing it into three forms of social capital i.e. bonding, bridging and linking. We follow a similar approach and categorize the social capital data according to the framework developed in the previous section. Each critical incident was related to the *role of the actor*, the *topic of reflection*, the *purpose of using social capital*, the *form of social capital* (i.e., bridging/ bonding), the *location of the ties* (external/ internal), and the *collective and individual outcomes* of social capital. The categorization of the critical incidence is in line with the steps recommended by (Flanagan, 1954).

RESULTS

Our analysis of the critical incidences reveals that agents perform different roles during their interactions with social capital. The extant IS literature has not associated the use of social capital with the different roles that agents perform while interacting with social capital. For example, in some situations, individuals do not use social capital and are merely observers of its use, either on themselves or on some other stakeholder group. These roles can be of four types: *observer*, *users*, *brokers*, and *targets of social capital*. *Observers* of the social capital typically take cognizance of other individuals who actively use their social capital. An example of this role comes from incidence 10 (FR 1), in which the farmer mentions, “The person we are going to meet is a farmer...he is a well-connected farmer...he just makes calls to the farmers asks them the selling price...”. In our data, the observers of social capital have observed the activation of social capital for making significant policy changes (GO 2), information sharing (PP 2), and the resistance of the IT-based changes (PP 2).

Users of social capital actively use their social networks and relationships to pursue the intended outcomes. For example, in incidence 3, the government officer (GO 1) activated his network for getting favorable transfers (“yesterday I talked to a senior officer in that yard...see this senior officer knows the highest authority”). Individuals also act as *brokers* of social capital in which they facilitate social capital for other people. For example, in incidence number 5 the government officer (GO1) mentions to the journalist, “I will also introduce you to some resourceful people.” Also, we find that social capital can be targeted against or in favor of

individuals. For example, in incidence 15, the farmer mentions that the traders and labors have come together to exploit the farmers (FR3: “the trader and the labors have joined together to exploit the farmer”). We also find that the same individual can play different roles. For example, the government officer (GO 1) plays the user's role and *broker* of social capital. An essential aspect of the social capital-related roles is that farmers are primarily the targets of social capital used as we were not able to find any incidence where the farmers have discussed their activation of social capital. Therefore, it seems that the powerful stakeholders are better at activating their social capital than the powerless stakeholders, who are essentially the targets of social capital use.

We also find that use of social capital is interlinked with reflections. While recollecting the incidences, the users, observers, brokers, or targets of social capital show signs of reflection. These signs of reflection are revealed in statements such as “Since then, I have become recalcitrant” (GO 1). Table 7 provides one example of reflection and the full text of the critical incident. We find in the data that the reflections are about various topics such as changes in one’s personality, self-realization, day-to-day hardships of yards, exploitation by influential stakeholders, lack of power, and psychology or mentality of the influential stakeholders.

Table 7 Example of critical incidents data and text (Includes topic of reflection)

Stakeholder group	Government Officer 1 (GO1)
Social capital role	User
Topics of reflection	Reflections about impacts on one’s personality
Indicative excerpt	“Since then, I have been a little bit recalcitrant, I have just come out of these things...”
Social capital purpose	Organizational Promotion
Social capital form	Bonding
Location of ties	Internal
Collective outcomes	Bribery money (group of individuals); reaffirmation about changes in one’s personality
Individual outcome	Position Enhancement; Feeling of resignation
Critical Incident Text	

“see, there is something called the Confidential Report (CR) that the senior officers write for their subordinates...so I submit a report to my seniors on the works that I have accomplished during my tenure... my seniors analyze this report, and then they write a Confidential Report about my work...this CR is decisive in the promotions...so see I did not submit my report and yet the yard secretary presented the report on my behalf...and the deputy director who is the deciding authority gave a lower grade to me...and made a comment on my CR “that his behavior is extremely bad, highly objectionable and the data that he has presented are all false and misleading”...so my promotion was canceled...so what I did was presented my justification...did many things here and there...used my contacts...went a couple of times to the state capital...tried to convince the people there...and at last when nothing worked...I used money...I had to give money...and I got promoted...since then, I have become recalcitrant, I have just come out of these things....”

We looked at the purpose for using social capital by the yard stakeholders. As users of social capital, the government officers activated their social capital for getting transferred to desired locations, establishing control and authority at new postings, organizational promotions, and connecting people with each other. The private partners activated their social capital to protect themselves and their colleagues from the influential stakeholders in the yards. For example, PP1 mentions in incidence six that “I was able to resist the threats because my father was quite an influential person”

Social capital literature identifies social capital as bonding or bridging depending upon the network ties it facilitates, i.e., internal, or external. We find strong bonds between stakeholders, and the influential stakeholders have strong ties with external stakeholders. Therefore, the influential stakeholders can use the bonding and bridging forms of social capital. For example, in incidence 13, GO 2 mentions that “...earlier the tax was calculated based on multiple points...this was changed to a single point only because of the influence of the traders...The most significant stakeholders are the traders ...the traders influence the policy...they also donate the funds for the political parties...so they are quite influential”

One distinguishing aspect of our study relates to the outcomes that the stakeholders achieve by activating their social capital. We collected these outcomes for all incidences. Our findings are that social capital helps achieve the desired individual outcomes, such as promotions of government officers or transfers to the desired locations, but its activation may not yield positive socio-psychological outcomes. For example, in incidence 1, GO1 activated his social capital and managed to secure a promotion. However, this has not necessarily resulted in the

overall wellbeing of the officer. He mentions, “since then, I have become recalcitrant, I have just come out of these things.” The use of social capital made the officer “recalcitrant.” We find multiple instances where the users, as well as the observers of social capital, are left with feelings of resignation (PP2, GO1), exploitation (FR2), helplessness (GO1), and realization of the hardships of life (GO1). Therefore, we conclude that in ICT4D projects a reflective use of social capital brings in the feelings of feelings of resignation. In critical incident technique, reflections can happen at various stages namely, “reflection-in-action”, “reflection-on-action” as well as “reflection-for-action” (Lavoué, Molinari, Prié, & Khezami, 2015; Moghaddam, Davoudi, Adel, & Amirian, 2020). In our study the reflection belongs to the category of “reflection-on-action”, and we find that this reflection on the use of social capital leaves a feeling of resignation in the users.

We also find that when agents reflect on their interactions with social capital, they also reaffirm the characteristic of their social context. This reaffirmation can be at levels of the society or the organization. The interview participants communicate these reaffirmations to the researchers and within their organization or community groups. For example, when the trader (TR 1) mentions “people in our village live in a close network and support each other,” he affirms the village's social characteristics. Similarly, when the farmer (FR 4) mentions “rural people are ready to help each other,” the farmer is reaffirming the characteristics of their group (rural) to a person who is external to that group, i.e., the researcher. The government officer (GO 1) mentions, “but the officers hardly care to listen” the officer is reaffirming to himself and the researcher that the senior officers are generally apathetic. Such reaffirmations are helpful to develop models or schemes about the expected behavior of the government officers. In the next section, we discuss the implications of our findings for social capital based ICT4D research.

DISCUSSION AND CONCLUSION

This section discusses the implications of our findings for ICT4D research related to social capital. Given that the research studies were conducted in India; our discussion is more relevant to the stream of ICT4D research. First, we find that both inclusionary and exclusionary versions of social capital use are present in our study. The exclusionary version of social capital is evident when PP 2 (critical incident 9) mentions, “it is the nexus between the traders, politicians, corrupt officials, goons... if you do anything against their will...they threaten you”. Similarly, FR 2 mentions (critical incident 11) “traders...have formed the cartel...the farmer is exploited everywhere...”. The inclusionary version of social capital is evident when FR 4

mentions (critical incident 17) “villagers live like a family.” Therefore, ICT4D research in developing countries will need to consider the inclusionary and exclusionary conceptualization of social capital.

ICT4D studies have suggested that in situations of strong bonding capital (such as mentioned by FR4 above) but weak bridging and linking capital, exclusion proliferates. Also, the reduction in the bonding form is accompanied with an increase in bridging and linking forms and results in better potentials for development (Mukoya & Mukherjee, 2020). Similarly, when communities are exposed to ICTs, bridging capital may be used to gain technical knowledge while bonding capital may be used for encouraging the use of ICTs by a closely knit circle of users (Gaved & Anderson, 2006). ICT4D research studies that intend to study the ‘development’ aspect in ICT4D will need to study how ICT has altered the inclusionary as well as exclusionary social capital? Studies from psychology suggest that the critical incidents that have a negative outcome, have a greater influence than those with positive outcomes (Edvardsson & Roos, 2001). For ICT4D research, studying the exclusionary form of social capital becomes more relevant especially when the focus of the study is on emancipation of the marginalized communities. Therefore, ICT4D researchers studying social capital will need theories for studying both exclusionary and inclusionary social capital.

Bourdieu has an exclusionary understanding of social capital, while Coleman and Putnam provide the inclusionary version of social capital (Rahadiano Sutopo et al., 2017). In Table 8, we compare Bourdieu, Coleman, and Putnam’s version of social capital. According to Bourdieu, social ties are used to exclude people from groups; therefore, social capital serves the function of exclusion and domination (Lo & Fan, 2020). The context of emancipatory IT projects (for example, see Kanungo, 2004) in developing countries is marred by inequality and marginalization of communities, and therefore Bourdieu’s conceptualization of social capital can be a powerful tool in such situations. For Putnam, trust is the crucial constituent of social capital, and therefore, ICT4D studies that focus on trust relationship can use Putnam’s conceptualization. Similarly, studies that focus on the relationships between norms, social capital and information system relationships can use Coleman’s conceptualization of social capital.

Table 8 Comparison of Bourdieu, Coleman, and Putnam's version of social capital

Author	Focus on	Functions of social capital	Key elements

Putnam	<ul style="list-style-type: none"> - Volunteerism - Trust relationships - Social capital in organizations - Forms of social capital 	<ul style="list-style-type: none"> - Solution of community problems - It brings feelings of cohesion - Helps philanthropic activities 	<ul style="list-style-type: none"> - Social tie - Social Network - Trust (thick trust, thin trust) - Bonding/ bridging social capital
Coleman	<ul style="list-style-type: none"> - Family-led social capital - Links between structure and agency - Social norms 	<ul style="list-style-type: none"> - Fulfilment of actor interests 	<ul style="list-style-type: none"> - Structure - Actor - Norms (norms of expectations, obligations, reciprocity, altruism) - Trust
Bourdieu	<ul style="list-style-type: none"> - Perpetuation of inequality - Marginalization of communities - Position/ field/ habitus centric view 	<ul style="list-style-type: none"> - Dominance, inequality, and social exclusion 	<ul style="list-style-type: none"> - Structure - Position - Field - Habitus - Symbolic violence

In ICT4D and social capital research, the links between social capital use and its goal orientation has interested researchers. For example, a goal oriented use of social capital differentiates ICT4D leaders from other participants (Renken & Heeks, 2018). Our study corroborates the goal orientation of social capital, but it also identifies that goal orientation does not always translate into well-being and higher happiness levels of social capital users. Another finding from our study relates to translating social capital use into individual wellbeing. We find from the situation of GO 1 (critical incidence 1) that the use of social capital does not necessarily translate into higher enthusiasm, happiness, or wellbeing (for example, GO 1 says: “since then I have become recalcitrant”) even when the desired outcome is met (promotion for GO 1). Therefore, social capital studies in ICT4D research will need to transcend the study of the “outcome” aspect and focus on the wellbeing or “quality of life”

aspect. This transition is particularly applicable for emancipatory ICT4D interventions (Kanungo, 2004). Sein et al. (2019) suggest that to understand how ICTs contribute to development of marginalized people, theories related to ‘development’ are as important as the theories on ‘ICT’ and ‘4’. Our findings contribute to the theory on ‘development’ aspect as it suggests that mere goal orientation in the use of social capital does not translate into increased satisfaction or levels for the users or observers of social capital (for example, in the case of GO1 above). Recent studies have also called for a quality-of-life perspective of information technology research against the instrumental perspective (Sarker et al., 2019). By its very nature, social capital theory is concerned with the study of capital arising due to social interactions and is therefore suited for the study of organizations concerned about social wellbeing (Bartelt et al., 2020).

Lastly, our finding relates to the reaffirmation aspect discussed in the previous section. People reflect on their use of social capital and then reaffirm their conclusions on platforms such as interviews with IS researchers or within group discussions. Through such reaffirmations, they communicate the mental schemas about the expected behavior. For IS researchers studying the emancipatory projects in developing countries, it is important to study these “reaffirmation schemas”. These schemas can be studied at ICT4D intervention's planning, design, development, or implementation stage.

Further research is needed to develop frameworks for studying these schemas and their relationship with ICT4D implementation. Patterned responses of such reaffirmations indicate the nature of the context in which the intervention is implemented. To our knowledge, there are currently no ICT4D studies that discuss these “reaffirmation schemas.” Studies from psychology suggest that such reaffirmation schemas also result in behaviors suitable to the reaffirmation schemas (Murray, 2007 for example, mentions that stigmatized people start behaving in a stigmatized manner). The study of reaffirmation schemas can be helpful in studies where it is vital to study the role of context. A critical incident methodology is a valuable tool in studying these schemas.

Bourdieu’s concept of *habitus* may be a valuable tool for understanding the reaffirmation schemas as habitus refers to the mental and bodily schema, i.e., rules of behavior that agents develop based on their observations of appropriate behaviors (Ignatow & Robinson, 2017). The concept of habitus may also be helpful for the study of these schemas as these are only reaffirmed after reflexivity, and the propensity to be reflexive is related to the habitus (Threadgold & Nilan, 2009).

This study sought to answer can reflective use of social capital translate into the wellbeing of individuals in the context of ICT4D projects? It also intended to present a framework that can guide the study of reflexivity-social capital links. Using the critical incident technique, we found that in ICT4D projects the reflective use of social capital does not necessarily translate to wellbeing, even when the desired outcomes are met. It can leave people with feelings of depression. In ICT4D research, there is a gap in the negative impacts of social capital (Weiler & Hinz, 2019). Our study also contributes to this gap as it finds that the activation of social capital may have negative psychological consequences and leave people with intense feelings of depression, exploitation, and resignation. Therefore, in the framework for studying social capital-reflexivity interactions in ICT4D projects, we propose replacing the ‘outcome’ aspects with the ‘wellbeing’ aspects. Given that the reflective practices result in reaffirmations about society's features or behavioral characteristics, it will be interesting to explore further how these reaffirmations relate to different regions, cultures or groups or people.

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