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Digital Platforms and Community Development: An Institutional Perspective on the Evolution of Platform-Based Ecosystems

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ABSTRACT

Digital platforms are becoming an important catalyst for social transformation and development amongst a wide range of communities. However, prior studies have focused on the general structure of mature platform-based ecosystems and its impact on communities, with little research looking at the challenges facing digital platforms in their early stages of evolution to bring about change in a community. Using an interpretive case study approach, this study investigates how these platform-based ecosystems evolve and overcome institutional constraints to bring about social change. We build our theory development on the case of iGrow, which is a resource integration platform for the agricultural sector in Indonesia. The case indicates that an ecosystem needs to overcome different institutional constraints at various stages of its growth, and that the underlying digital platform helps the ecosystem in overcoming these constraints by offering an organizing vision that helps the ecosystem members construct meaning, provide legitimacy, and mobilize support for new practices and production activities. This analysis provides a theoretical foundation for understanding the mechanisms through which platform-based ecosystems evolve to enable or constrain community-driven change.

Keywords:

Digital platforms, platform-based ecosystem, community development, institutional constraints, societal change

Introduction

ICT-enabled community development can take the form of top-down professional interventions (McKnight and Kretzmann 1993) as it can be based on community-driven transformations (Leong et al. 2015; Mansuri and Rao 2004). These two forms of development can be observed in how ICTs provide underserved communities access to education (e.g. distant learning), healthcare (e.g. telemedicine) and markets (e.g. e-commerce). However, ICTs are increasingly empowering marginalized communities, not by providing access to products and services, but by creating ecosystems that provide spaces for community-centered development (Njihia and Merali 2013). Therefore, deepening our understanding of these ecosystems is critical for revealing the mechanisms through which they enable community-driven change.

Such ecosystems are now commonly built around digital platforms. Therefore, developing a conceptual understanding of ecosystems requires an exposition of how digital platforms provide a basis for the growth of ecosystems; how different platform roles emerge, adapt and align over time (Moore 1993) to support the social inclusion of community members. It requires identifying the critical actors who can bring about change and the role of digital artefacts in supporting change. This study aims to develop an empirically supported and theoretically grounded understanding of how ecosystems enable social change and inclusion by raising the following research question:

How do platform-based ecosystems evolve over time to enable community-driven change and social inclusion?

To address this question, we conducted a case study of iGrow, an acclaimed digital platform in Indonesia that allows investors to connect with farmers and landowners, allowing the integration of resources and thereby enabling the social inclusion of farmers who had limited access to land and funds. On iGrow, investors can choose from a variety of crops the one they wish to invest in according to their budget and expected return. The farmers then plant the crops while iGrow team monitors and uploads updates of the process via the platform. Once the crops are harvested, they are sold to iGrow's partner merchants and both the investors and farmers share the profits. Our case analysis indicates that, since its deployment, the iGrow platform provided and "organizing vision" for the various members of its ecosystem, which allowed the expansion of

the number and type of actors engaged and the broadening of its services and activities. Overall, this paper documents the dynamics of digital platform evolution and the mutually reinforcing nature of the various ecosystem processes that support the inclusion of marginalized groups.

Literature Review

Platform-based ecosystems and social change

Digital platforms can bring about the development of ecosystems that become vibrant environments, conducive for addressing complex social issues. Examples of such platforms include the case of M-Pesa in Kenya, which is a mobile money network that has created an ecosystem involving millions of citizens, service providers, and developers, enabling higher levels of inclusion and safer access to financial services (Kendall et al. 2011). The ecosystem view shifts the focus from internal optimization to external interaction (Van Alstyne et al. 2016). Obtaining most utility from an ecosystem therefore requires concerted effort from the multiple actors, who draw on their core competencies in collaborating with others to achieve maximum impact that is durable and self-sustaining. This represents a form of "convergent innovation" where individual stakeholders create value for themselves, but at the same time increase the pool of technological, human, economic and material resources that enhance collective actions that can address societal challenges (Dubé et al. 2014; Dubé et al. 2012; Jha et al. 2014).

Jha et al. (2016) noted that using an ecosystem approach to address complex social problems is promising, though understanding of this approach so far has been limited. They examined the emergence and evolution of an ICT platform-enabled ecosystem, called eKutir, which is aimed at lessening farmer poverty in India. Their study revealed that the eKutir's ecosystem has evolved through five phases. At each phase, the number and types of actors engaged increased alongside with the breadth of ICT-supported services provided. Using an incremental approach, eKutir developed an ICT infrastructure and a sustainable farmer engagement model that facilitated the sharing of information and coordination of actions among partners, gradually creating a robust ecosystem around the ICT platform. Within each stage, the ecosystem actors addressed critical complex problems faced by farmers in a coordinated and integrated manner.

A dominant stream of research on the relationship between ICTs and development focuses on interventions involving a single actor designing and deploying an ICT solution to resolve a specific problem. An example of this research stream is the study by Monga (2008), which looked at the implementation of computerized land record kiosks by the government of Karnataka (a state in India) for farmers to secure proof of land holding instantly for a nominal fee. In contrast, another research stream relies on a more integrative approach involving two or more actors coming together to address a set of issues. One example is the study by Kuriyan et al. (2008) that investigated an initiative by the state of Kerala, India, to promote computer literacy and provide computer-enabled services in a public-private partnership model. Dossani et al. (2005) also documented several initiatives that involved partnerships among the public sector, the private sector and non-government organizations (NGOs).

Despite the presence of some research that accounts for the multiplicity of actors and technologies, prior research tended to focus on more sequential processes of ICT for development – from assembling actors to designing the ICT solution to implementation. Little is known about how the different components of an ecosystem interact, influence each other and evolve over time to create an integrative and sustainable community-based solution. It is therefore important to develop a theoretical understanding of how ICT brings together multiple actors to facilitate their collaboration and create a self-sustaining ecosystem. For this purpose, we draw an a theoretical perspective that is grounded on the concept of community.

Organizing Vision

Swanson and Ramiller (1997) proposed the concept of "organizing vision" to represent "a focal community idea for the application of information technology" (p. 460). The concept of organizing vision has since been used to study a variety of IT innovations (Currie 2004; Kaganer et al. 2010; Ramiller and Swanson 2003; Wang and Ramiller 2009; Wang and Swanson 2008). This literature emphasizes IT innovation as interwoven with institutional arrangements that are shared amongst a community of organizations (Vargo and Lusch 2014). The institutional arrangements reflect the "schema, norms and regulations" that organize and regulate the social life in and between organizations within a socio-economic sector (Hargrave and Van de Ven 2006, p. 866).

Thus, organizing vision draws on institutional theory to explain how new IT innovations diffuse amongst organizations through discursive processes. Swanson and Ramiller (1997, p. 461) posit an organizing vision serves three critical functions in the early stages of the diffusion process: ***interpretation*** (interpreting the expected uses and usefulness of the innovation), ***legitimation*** (legitimating the innovation by linking it to commonly acknowledged and accepted business problems), and ***mobilization*** (mobilizing industry actors to participate in the innovation). The organizing vision addresses uncertainties in an IT innovation by providing a community-level interpretation or public account of the innovation's purposes and goals. This organizing vision shapes and is shaped by the innovation community. It evolves as adopters gain experience with the innovation and their engagement with its implementation refine the community's shared understanding of its purposes (Pollock and Williams 2011; Wang and Ramiller 2009).

Research Methodology

We adopted a case study methodology (Pan and Tan 2011; Siggelkow 2007). Particularly, case research is suitable for examining processes (Gephart 2004; Majchrzak et al. 2000) and tackling the "how" and "why" research questions (Walsham 1995). Our research question looks at the developmental process of digital platforms and how the ecosystem that forms around each digital platform organizes itself for long term sustainability. Moreover, our phenomenon of interest – digital platforms on enabling social inclusion – is a multi-dimensional complex issue. Having social, technological and business dimensions, the inherent complexity of the phenomenon makes an objective approach to research tricky (Koch and Schultze 2011). It is thus more appropriate to investigate the phenomenon by interpreting the relevant stakeholders' shared understanding (Klein and Myers 1999). Our data has been collected from interviews and archival sources.

Case Selection and Description

Several criteria guided our selection of the case study. First, the case organization should be a platform that operates and establishes its own ecosystem of stakeholders and businesses. This allows us to identify and study how platform roles and critical actors emerge, adapt to drive ecosystem development. Secondly, the case study and organization needed to possess a social

vision or serve a social purpose. This aligns to our focus on social inclusion, its key inflection points in their strategy, and associated activities. Finally, the platform must be recognised as an organization that demonstrates the use of technology to alleviate poverty and social challenges for a community. This allows us to better understand how the implementation of technology addresses multiple facets of social development in the community. For these reasons we chose iGrow, a platform organization based in Jakarta, Indonesia that connects under-employed farmers, sponsors and investors to leverage on under-utilized land to produce high-quality organic food and sustainable incomes for all stakeholders in its ecosystem. iGrow has been recognized across the country as having more than a commercial purpose but a social mission to link farmers, landowners, investors, to crop buyers and to develop under-used arable farm land across Indonesia. Amongst other technologies, iGrow uses a cloud-based agricultural management software to develop the working relationships between farmers, landowners, and investors.

Data Collection and Analysis

Data collection began in September 2016 and continued until February 2017. Data collection occurred through fieldwork in Jakarta and rural parts of Indonesia where the team of researchers interviewed farmers, landowners, investors, to crop buyers and recorded these interviews whenever possible. The purpose of the data collection is to investigate how platform-based ecosystems orchestrated actions from various community players to enable social change. We first seek to comprehend the small land-holder and farmer poverty in the communities. We seek to understand the role of sponsors, who helped reach out to farmers, their relationship with iGrow and other actors, and how their economic and social standing has changed over time, and the change they see in farmers' lives. With farmers, we focus on their economic standing prior to iGrow and how with the digital platform that has changed, and their perception of technology. We probed the key inflection points of the organizational strategies and the impact of technology on other constituents. We ensured these were validated across all respondents in order to increase the internal validity of the study and minimize any retrospective bias of individual respondents. For interviews with the farmers, a translator was used. In addition to the data gathered from these interviews, we relied on secondary data from online information about iGrow's development and

activities. This further enriched our understanding and enabled us to triangulate (Neuman 2010) the data.

In all, we conducted a total of 15 interviews. The respondents include iGrow, Chairman, Co-founder and CEO, Finance Officer, Business Development Manager and one Surveyor, and from Jonggol Farm, one Farm Coordinator and eight Farmers. The interviews helped us to map out the key stakeholders/constituents in the iGrow ecosystem, as shown in Table 1. In particular, the table also reveals critical actors of each stage and the interaction between the actors and technology in a particular farm in Jonggol community. For example, we conducted interview with the co-founder and CEO, Andreas Senjaya of iGrow, to develop a preliminary understanding of the various stages through which iGrow has progressed for Jonggol. We analysed the data as it was collected to take full advantage of the flexibility of the case research approach (Eisenhardt 1989). We have applied Klein and Myers's (1999) seven principles for conducting interpretive field research. As part of our data analysis, performed open, axial, and selective coding (Strauss and Corbin 1990) on the translated notes and documents from the secondary data collection. By moving between the empirical data, our guiding lens of organizing vision, and the related literature (Eisenhardt 1989), we uncovered new themes in the data, developed further mappings of the coded responses, and, subsequently, extended our understanding of the iGrow ecosystem.

Table 1. Critical Actors and Constituents of the iGrow Ecosystem	
Actors	**Roles and Activities**
Farmers/Landowners Farm Workers	*"The farm workers usually are already attached with the landowners. So they are in the same team ... The farmers only do the technical job in the field."* (Surveyor)
Sponsors/Investors	*"Our investor consists of more than 1000 people. Maybe around 1100 persons right now. Half of them become our repeated investors ... 99% of our peanut investors became repeat investors in next term*

	of plantation." (Founder)
Farmer/Field Coordinators	*"I will report what I get on the field to Mr. Muhsin or Mrs. Ulya."* (Farmer Coordinator)
Supervisors/Surveyors	*"My job is giving plant updates to the investors ... The technology is only used by the surveyor. So I have a mobile application that can be used 24 hours a day to give updates about the plant to the investors every day."* (Surveyor)

Findings

Since its initiation, iGrow has generated an organizing vision amongst a community of farmers, landowners, and investors. Our preliminary findings indicate that the evolution of the ecosystem that emerged around the iGrow platform was supported by its organizing vision because it provided *meaning*, *legitimacy*, and *agency* to the various ecosystem participants, particularly those from marginalized groups such as the farmers.

Constructing Meaning: Connection and Integration

A major challenge for farmers in Indonesia is securing funds to support agricultural production. Another challenge for the sector is that large swaths of arable land remain unused because of lack of organizational capacity to support production. The discourse surrounding iGrow presented the platform as a solution to these two challenges. The digital platform was presented to the various stakeholders as a bridge between investors, farmers, and landowners. The basic idea was enabling people from urban areas (who are known as sponsors) to fund local farmers to grow specific produce on land that the platform sources from its network of landowners. The platform thus allows the sponsors to get a return on their investment without requiring any expertise in agriculture, it allows landowners to turn their dormant lands into productive spaces, and allows farmers to have access to much needed capital. This established an interpretation of iGrow as a resource integration solution and provided a meaningful narrative to the various ecosystem participants:

Before iGrow, there are so many uncultivated lands. It was such a waste. On the other hand, there are many farmers that want to plant but they don't have any capital. So, iGrow provided the solution to connect them. (iGrow Surveyor)

Providing Legitimacy: Process Monitoring

iGrow provides a system for supervision and administration of agricultural activities. The growth of the plants is monitored by independent surveyors. The surveyors send regular updates on the state of the crops to the sponsors via the platform. Once the harvest is ready, iGrow uses its existing distribution channels to sell the produce. After sponsors get a return on their investment, they continue to gain 40 percent of the profits brought in by the plants thereafter. The sponsor can decide to turn their yields into cash, as they can choose to donate the results to local schools, hospitals or other non-profit organizations.

Thus, part of the organizing vision supporting the iGrow ecosystem was legitimating the platform innovation as addressing key business problematics in the area of linking small urban investors to farming opportunities. These include the challenge of investing in farming without the need for large capital and the challenge of moral hazard associated with the inability of urban dwellers to monitor their farming investments in rural areas. This latter challenge was addressed by the development of the surveying system and its accompanying discourse of control and visibility:

I have a mobile application that can be used 24 hours a day to give updates about the plant to the investor every day. (iGrow Surveyor)

However, the legitimation provided by the iGrow organizing vision was limited to profit making objectives. The strategic discourse shaping the presentation of the platform's mission emphasizes the significance of having a social and environmental impact:

The idea came from our day to day problem, which is (how to provide) massive food supplies for Indonesia's 250 million population. We have enough fertile land but we import so much food supplies, because a lot of our land is idle or under-utilized, therefore we want to maximize the

land utilization and to improve the environment as well. (iGrow Chairman, as quoted in (Guerrini 2015))

Supporting Agency: Participation and Learning

To date, iGrow has employed more than 2,200 farmers in almost 2,000 hectares of land. However, this only covers a small portion of under-utilized land in Indonesia, which totals more than 16 million hectares. Yet, to be able to expand, iGrow needed to mobilize a wide range of stakeholders and sustain their participation in the ecosystem. In the process, it faced various capacity bottlenecks, particularly in terms of finding participants with appropriate skills. However, by being a source of a new organizing vision, iGrow was able to provide its ecosystem with the thrust to overcome the capacity bottlenecks it was facing in its growth. A key element of this thrust is iGrow's ability to support the stable participation of farmers:

They did not have any fixed income before iGrow was established. Their job was unstable and seasonal. But after iGrow, they can cultivate the land and get fixed income. (iGrow Surveyor)

iGrow was having an impact on the lives of the farmers by providing them flexibility and the opportunity to learn new farming skills:

I like it here because working here is more comfortable, flexible, and also it can be applied in my hometown. (iGrow Farmer)

There are plenty of things to learn here. How to fertilize, how to plant, also how to make organic fertilizer. (iGrow Farmer)

iGrow's social mission was the drive behind its establishment. However, its ability to not just provide help to the farmers but to support their agency and ability to act on their own conditions was the basis of the growth and sustainability of its ecosystem.

Discussion and Conclusion

Increasingly, digital platforms are gaining complexity and becoming multi-sided in nature. However, the literature lacks theoretical approaches that can help us deepen our understanding of the growth of the ecosystems that emerge from these multi-sided platforms. Such an understanding is particularly important for our ability to explain how such ecosystems can

empower local communities and foster social inclusion. Our paper draws from the organizing vision perspective to look at the evolution of platform-based ecosystems over time. It highlights the role of the organizing vision accompanying a platform, as a form of digital innovation, in supporting the growth and sustainability of the ecosystem. In particular, the iGrow case reveals the role of the organizing vision in achieving increasing convergence of the interpretations of the different platform participants; in this case, towards a view of the platform as a resource integrator. The case also highlights the role of the organizing vision in legitimating the platform both in terms of its business value and its social mission. Finally, the organizing vision supports the mobilization of various stakeholders in the ecosystem by emphasizing the role of the platform in opening spaces for their social and economic inclusion.

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