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講演題目 **Why disruptive inclusive innovation (DII) is necessary for reaching SDGs? What are the features of eco-system for the new pathway towards sustainable development?**

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1. Introduction

In 2015, United Nations member states adopted the 2030 Agenda for Sustainable development (SDGs). This entails 17 goals, 169 targets and 232 indicators to follow the progress of nations until 2030 as the global agenda. Currently, each country is challenged to interpret global agenda into local context. Several scholars as well as research institutes claim that SDGs cannot be met without deep transformations (Schot and Kanger, 2018, Schot and Steinmeuller, 2018, IIASA, 2018). These studies emphasize the challenges for forging new pathways while “leaving no one behind”, and have identified disruptive and inclusive innovations as critical to success. This paper observes organizations that are attempting to generate disruptive and inclusive innovation and assess their characteristics. Particular attention is given to the collaborative networks (ecosystems) in coordinating global and ever more diverse local needs that were created as the result of their activities in meeting their mission in accordance to SDGs. Finally policy implications are suggested.

2. Concepts

A disruptive innovation is an innovation that creates a new market and value network that disrupts and eventually replaces existing market-leading firms, products, and alliances. (Christiansen et al, 1995). Such innovation requires acceptance by the masses to transform the way things are done. An inclusive innovation is an innovation that is accessible to all people, including those left out from the conventional market (market failure) and public services (policy failure). An inclusive (social) innovation should make product or services accessible to the people who are currently underserved (Heeks et al, 2013, Chattaway et al, 2014, George et al, 2012; Chesbrough and Di Minin, 2014, Christensen et al, 2006). These two concepts overlap when disruptive innovation includes underserved customers as the result of creating new markets and value networks and when inclusive innovation creates new market and value networks by serving underserved population. This paper focuses on innovations in the overlapping area which we term, “disruptive inclusive innovation (DII).” DII is expected to create larger systemic change with impacts (see figure 1). Moreover, innovation, in this paper, is not limited to technology but includes business models (product and business innovaiton) that make technology accessible to potential users (OECD/EUROSTAT, 2018).

DII is often associated with disruptive technologies, particularly those associated with Industry 4.0 (IoT, Robotics, 3D printers, 5G, big data) that bring in new aspects as follows:1) rapid technological change; 2)digital connectivity; 3) decentralized distribution system; 4) mass customization; 5) blurred technological boundaries (trans sector, &discipline); 6) service integrated product; 7) externalities via sharing[1]. (Mulas, 2016, Garret, 2015). These features are shaping catalytic grounds for disruptions to take place (Christiansen et al, 2006). However, technologies are only the half of the story because disruptions require other complementary

[1] For instance, shared economy is said to have generated US$15 billion in 2013 and it is expected to generate US$ 335 billion by 2015. (Pwc study, 2013 quoted in Min Finance website, Japan).

factors in a network of value creation that concerns: flow of finance, capable human resources, agile and adaptable physical and legal infrastructure (Shapiro and Glicksman, 2002, Marchant et al, 2011), complementary suppliers of services and inputs(Gawer and Cusmano, 2013), leading/strategic intermediary or coordinating entity((Jacobides et al, 2018, Gawar and Cusmano, 2008; Gawer and Cusmano, 2013, Iansiti and Levien, 2004, Adner and Kapoor, 2010) and shared value(Porter, 2011). These basically determine how networks are shaped, actors are aligned, open or closed, governed, shared value(Gawer and Cusmano, 2013). Such value network can be considered as eco-system, defined as "the alignment structure of multilateral set of particulars that need to interact in order for a focal value perspective to materialize" (Adner, 2017:40).

If leading entity wants technologies to be deployed and to have transformative societal impact, presence of sound eco-systems are critical (Christiansen et al, 2019 and Chesbrough and Di Minin, 2016). Eco-systems are increasingly considered to play critical roles in the strategies of firms and other actors to enhance competitiveness (Adner, 2017, Jacobides et al, 2018, Gawer and Cusmano, 2013). Emerging literature emphasizes that recent advances in digital technologies enable enhanced "modularity" and "platform capabilities", and as a result greater innovation system "complementarity" can be generated in swift manner. For the network to successfully execute its mission, governance, shared value, flow of financial resources are going to be critical. Hence, key elements of a successful ecosystem include technology/business/innovation model, financing, regulations and institutions, collaboration mechanisms, and mutual value.

An effective innovation ecosystem can accelerate the path toward social innovation[2]. This path has been described by the following chronology: 1) prompts (diagnostic and framing of problem), 2) proposal (idea generation); 3) prototyping and pilots (testing, application and refining); 4) sustaining (adaptation and routinization, income stream established) 5) scaling and diffusion(scaling up beyond original test bed), 6) systemic change (ultimate goal "systemic change") (Nesta and Young Foundation, 2012).

4.Research Question and Methodology

This paper aims to extend existing literature from the firm perspective to see whether and how ecosystems can impact DII. The research question is **"What are the features of an eco-system that advance disruptive inclusive innovation (DII) pathways for achieving SDGs?"**

As there are no preceding studies and data, this research is based on case studies (Yin, 2003). To understand entities practicing DII, different types of entities are included. These are venture capitalists, crowd-funding platforms, ecosystem builders, and NPOs all involving in both types of innovation, disruptive and inclusive. Interviews are conducted to understand founder's philosophy and past history and ongoing plans and agenda. These are complemented with existing publications and internal documents being shared with permission.

5.Results

The preliminary interview results show ecosystems to be an important aspect of the innovation approach for all types of entities. A VC pioneer in Indonesia, **East Ventures**, noted for its success in supporting several "unicorn" ventures there, has developed the strategy of building its own ecosystem among invested companies in order to foster the financial, production, and market synergies needed for business success. A crowd-funding leader in Japan, **Makuake**, has been evolving its model to include early market feedback and virtual collaborations which are enabling a

[2] Social innovation is defined as innovation that creates social change"(Chesbrough and DiMinin, 2014, Kemp et al, 2017, Edward-Schacher and Wallace, 2017). Its focus is securely placed on 'solving the problem" of unmet needs through neither private and public sectors. (Pol and Ville, 2009, Nicholls and Murdock, 2012). Inclusive innovation also have similar chronological path (Heeks et al, 2013)

multi-sided platform offering to customers to accelerate new products and services to market. Not only entrepreneurs but also large corporations are finding new value in this model. **Samurai Incubator,** an early and successful innovation incubator and seed investor in Japan, is applying its knowledge to Rwanda and Palestine, where they are fostering innovation ecosystems that they hope will be launching pads of venture success in these economies. In the case of Palestine, there is also a high impact factor because 60% of engineers are women, many of whom have the dual challenge of raising a family along with their careers. Finally, **Kopernick**, an NPO in Indonesia, works with international funders to deliver the "last mile" of innovations to reach customers. Their case illustrates the importance of connecting funders to users to sustain the virtuous cycle of essential support.

These cases demonstrate the central role of building ecosystems in the process of meeting their primary aim. These ecosystems enhance the value generated from the networks, enlarge financial streams, and improve market access via better adaptability to mass customization (catering to local diverse needs) emerged as the result of meeting unsatisfied needs for clients by enabling access to the full package of lacking services: finance, infrastructure, trusting partners, and technology. Also, in many cases, as eco systems are created with active members in the network, new business / activities are being formed within the network, self-generating new activities. In fact, by belonging to a same network, members are likely to share value, have mutual trust and sound understandings of each other's expertise. There, virtuous circle of value of network have more facility to reproduce successful implementation of new value creation.

6. Discussion

All the cases indicate the emergence of ecosystems led by unconventional actors (VC, crowdfunding site, foreign incubator, and NPO). They are new types of entities with new business models whose businesses are not confined to conventional ways of thinking. Not all firms are aiming for social and inclusive aims for doing their business. Yet to develop business in difficult markets with policy and market failures, these network starts serving new customers, namely, providing new services and products to underserved customers. In this way, approaches of organizations discussed here show how inclusive innovation strategies can fill the gaps for underserved customers, thereby being DII. To put it differently, modularity of network make the network agile and flexible because new actors with new expertise enable to be a complementary part of network if they shared same purpose. The entering entity also enable to transmit important information(on regions, in specific areas of specialization) which may not concern the mainline of activities of the leading entity; however, it does make a difference in "mass customization" or meeting local specific needs. It is the refined coordination of network that are also required by the lead firms to balance and shape value within the network to maintain its efficacy.

7.Conclusion and policy implications

To successfully achieve DII, thoughtful ecosystem building strategies are valuable. Although there is a rapidly growing list of inclusive innovations in many emerging economies, gaining broader, higher impact and greater business success, achieving DII, requires a synergy among critical assets, market delivery mechanisms and partners, and supportive policymakers. Pioneering innovators find that in the absence of adequate innovation ecosystems, they need to create their own. Policy leaders can certainly accelerate this process by supporting ecosystem elements and by partnering with specialists in ecosystem building such as global incubators.

The studies here present intriguing promise for the role of ecosystems in achieving DII, but more research is needed on such questions as the benefits of "open" versus "closed" ecosystems, conflict resolution within ecosystems, and rule making with ecosystems to enhance repeatability.

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Figure 1