

**Conditional Acceptance of Digitized Business Model Innovation at the BoP: A  
Stakeholder Analysis of *eKutir* in India**

Tuhin Sengupta  
Goa Institute of Management  
Near Ravindra Bhavan, Sanquelim, Poriem, Goa 403505, India  
Email: [f13tuhins@iimidr.ac.in](mailto:f13tuhins@iimidr.ac.in)  
Phone: +917869911057

Gopalakrishnan Narayanamurthy\*  
University of Liverpool Management School, Liverpool, UK  
E-mail: [G.Narayanamurthy@liverpool.ac.uk](mailto:G.Narayanamurthy@liverpool.ac.uk)  
Phone: +44 (0)151 795 3802

Pradeep Kumar Hota  
ANU College of Business and Economics, Australian National University, Canberra,  
Australia  
LM Thapar School of Management, Thapar Institute of Engineering and Technology, Punjab,  
India  
Email: [pradeep.hota@anu.edu.au](mailto:pradeep.hota@anu.edu.au)

Tapan Sarker  
Griffith Business School, Griffith University, Nathan Campus, Australia  
Email: [tapan.sarker@griffith.edu.au](mailto:tapan.sarker@griffith.edu.au)  
Phone: +61 401 735 265

Subhendu Dey  
Indus Business Academy, Bangalore, India  
Email: [subhendudey1971@gmail.com](mailto:subhendudey1971@gmail.com)

\*Corresponding author

**Accepted for Publication in**

***Technological Forecasting & Social Change***

## **Conditional Acceptance of Digitized Business Model Innovation at the BoP: A Stakeholder Analysis of *eKutir* in India**

### **Abstract**

The current research explores the contingencies behind the acceptance or rejection of digitized business model innovation at the Bottom of the Pyramid (BoP). Building on the existing literature on business model innovation and using the lens of stakeholder theory, we explore the contingencies that decide the success or failure of digitized business models at the BoP. We conducted an inductive case study of eKutir, an Indian social enterprise that uses a digital platform to deliver value for farmers in Orissa. Our analysis reveals that stakeholder's stability and stakeholder's incentives are the critical contingencies deciding the conditional acceptance of the digitized business model innovation. Our results also confirm that accessibility, availability, affordability, awareness and acceptability are the most important factors contributing to the stakeholder's adoption of digitized business model innovation. Further, we infer that age, respect, power and authority are key differentiating factors contributing to stakeholder's stability which can significantly influence the acceptance of digitized business model innovation. We conclude with a framework that can guide the successful implementation of digitized business model innovation at the BoP.

**Keywords:** Business Model Innovation, Digitization, Bottom of the Pyramid, Stakeholder Theory, Agri-Supply Chain, Social Enterprise

# Conditional Acceptance of Digitized Business Model Innovation at the BoP: A Stakeholder Analysis of *eKutir* in India

## 1.0 Introduction

According to an estimate by the Boston consulting group<sup>1</sup>, the average business model lifespan has decreased from fifteen to five years in the past few decades. As a result, business model innovation (BMI) has become one of the essential capabilities of an organization to ensure a higher than normal growth trajectory (Love et al. 2011; Pohle & Chapman 2006). Further, BMI helps organizations to defend against possible industry disruptions due to the emergence of new players or technologies.

While pursuing BMI, organizations need to bring in changes at the value proposition level with the objective of catering to a certain target segment by offering a different product or service, designing a different revenue model, achieving financial viability, securing stakeholder credibility or a combination of these (Fround et al. 2009; Amit & Zott 2012). Although organizations follow such procedure in order to drive competitive advantage and profitability, challenges remain in terms of how to deliver the value proposition (Chesbrough 2010). Organizations need to decide where in the value chain they need to redesign to produce the value they intend to create (Kuehnl et al. 2017; Thorpe et al. 2011). In order to create that value, organizations have to invest in capabilities to ensure that they achieve the target value from their BMI. For instance, Sengupta & Ray (2017) examined how universities choose specific organizational models for their knowledge transfer offices to develop a unified theoretical framework around the structure, business model and strategic preferences linked to university-specific contextual factors.

---

<sup>1</sup> Available at <https://www.bcg.com/en-in/capabilities/strategy/business-model-innovation.aspx> (last accessed on 8 March 2021)

The Bottom of the Pyramid (BoP) has emerged as one of the dominant areas of BMI in the last decade (Prahalad 2009; Karnani 2007). The BoP proposition argues that firms can make a fortune by selling to poor people and at the same time help improve livelihood conditions in the region (Karnani 2007). As a result, there have been numerous studies on the application of business model innovation at the BoP market. For instance, Schaefer et al. (2018) show the role of an access-based business model in reducing non-consumption at the BoP population in rural India. Sanchez and Ricart (2010), through multiple case study analysis in low income countries, explored the factors influencing business model innovation in such contexts. Anderson and Billou (2007) through the lens on 4A's (availability, affordability, acceptability and awareness), explored the case of a mobile network operator that not only delivered innovative prepaid mobile telecommunication systems to the BoP population in the Philippines but also achieved substantial profits for the company. There are many such examples exemplifying the use of BMI in the BoP market.

Due to digital convergence in the modern world, the innovating process is taking a significant shift in terms of its design and the way it is perceived (Yu et al. 2019; Yoo et al. 2009). Integration of digital technologies into non-digital products and processes has led to radical innovation in business models. Through digitalization, products and services are not only becoming "smarter" but are also possessing the potential to "transform" the entire value chain. This has changed the way in which they are experienced and consumed in the market (Yoo et al. 2012). However, not much focus has been given to understand the acceptance or rejection of digitized business model innovation (DBMI) at the BoP (Wiprächtiger et al. 2019).

To serve successfully at the BoP is not easy. For instance, Novartis launched the Arogya Parivar healthcare initiative in India. The scheme ensures affordable medication to the BoP markets as well as healthcare education to community members. According to a recent

report published in The Guardian<sup>2</sup>, the company took 30 months to break even highlighting the difficulty to successfully innovate in developing economies. The same report cites another example of CEMEX, a building company, started an initiative to address housing issues in low income communities. Ultimately, the model didn't work and the company had to redesign its strategies by creating migrant clubs to market its products. As a result, the main outcome of the report points out the fact that organizations need to learn from the successes and failures of doing business in BoP markets. Further, another report from Forbes shows that 84% of the firms have failed in an attempt to successfully transform their business processes or products digitally<sup>3</sup>. Therefore, research needs to focus on understanding the contingencies based on which a certain DBMI would succeed or fail. Extending this motivation, in this study, we answer the overarching research question “what are the contingencies that decide the acceptance or rejection of a certain DBMI's?”.

We adopt an inductive case study approach to understand the contingencies under which acceptance or rejection of DBMI happens at the BoP market. We conducted a single in-depth case study of eKutir, a firm which through its digital platform help find suppliers for agri-inputs and buyers for agri-produce of marginalized farmers at the BoP market in India. Since the majority of the farmers in India own less than two hectares of cultivable land (Mehta et al. 2014), our choice of case organization is more appropriate given the farmers' financial and infrastructural constraints.

Our results reveal that stakeholder's stability and stakeholder's incentives are the critical contingencies influencing the conditional acceptance of the digitized business model innovation. Accessibility, availability, affordability and acceptability drive the stakeholder's

---

<sup>2</sup> Available at <https://www.theguardian.com/sustainable-business/business-models-base-of-the-pyramid-poor-communities-live-chat> (last accessed on 8 March 2021)

<sup>3</sup> Available at <https://www.forbes.com/sites/brucerogers/2016/01/07/why-84-of-companies-fail-at-digital-transformation/#128aa34c397b> (last accessed on 8 March 2021)

adoption of DBMI. Stakeholder's stability can be increased through three differentiating factors such as age, respect, power and authority that can significantly influence the acceptance of DBMI. Finally, we synthesize a framework to guide the successful implementation of DBMI at the BoP.

Our research show how DBMI can prove to be an important tool to involve "*poor as suppliers*" and at the same time establish a sustainable business model for the buyer through the lens of stakeholder theory. We further identify and explain contingencies that have to be embraced by organizations in order to innovate successfully in BoP markets. Our paper makes an important contribution to the BMI literature at the BoP market as there is limited understanding of what makes a DBMI success or failure in such markets.

The remainder of the paper is structured as follows. Section 2 presents a brief overview of the literature on the acceptance and rejection of business model innovation at the BoP and provides a detailed discussion on the rationale behind choosing the theoretical lens. Section 3 details the methodology adopted in the paper by explaining the rationale for an in-depth case study approach and steps followed for data collection procedure and analysis. The findings of the paper are discussed in Section 4. Section 5 concludes by presenting the theoretical and managerial implications of our research.

## **2.0 Theoretical Background**

The literature on BMI is relatively vast, diverse and emerging (Naor et al. 2018; Wells 2018; Casadesus-Masanell & Zhu 2013; Sosna et al. 2010). Some of the articles discussing implementation studies of BMI documented in the literature have a specific focus towards certain industry (Olofsson et al. 2018; Karlsson et al. 2017; Karimi & Walter 2016; Sund et al. 2014). Very few focused on the BMI related to entrepreneurship (Ernkvist 2015). We observed that despite these studies conducted in multiple geographies, industries and

economies, the literature is relatively silent on documenting the reasons behind successful implementation in DBMI. Further, the literature on BMI or DBMI at the BoP is again very limited (Zhang et al. 2019; Wiprächtiger et al. 2019; Schaefers et al. 2018). Most of the papers just focused on documenting the social angle of the BMI (Pels & Kidd 2015; Basu 2014; Linna 2012), and very few conducted a thorough case study and documented the contributions of the innovation (Wiprächtiger et al. 2019).

The current literature can benefit by focusing on research in two major areas. Firstly, studying the implementation of DBMI at the BoP market, which will provide first-hand knowledge on how innovation is carried out under certain conditions. Second, understanding the reasons behind the outcome (success or failure) of DBMI implementation in the unique setting of BoP and thereby capture the differentiating factors for the outcome. Research in these areas will provide the missing understanding in the literature on what decides the acceptance or rejection (i.e. conditional acceptance) of a DBMI at the BoP. In this article, we attempt to fill this research gap by adopting an inductive case study approach.

Understanding the supply side of the agricultural supply chain, especially at the BoP, is important owing to the lack of understanding of the incentive schemes as well as the lack of traceability to the upstream players. This amounts to supply shocks (uncertainty in the supply market in comparison to the demand realized) in the entire value chain. To improve traceability, the buyer needs to integrate and redesign its business process through DBMI in order to keep track of the upstream supply chain. However, to ensure proper implementation of DBMI, one has to understand that the BoP markets do not have the necessary infrastructure (e.g. digital awareness and education, digital infrastructure in terms of internet bandwidth, and accessibility and affordability issues in procuring digital platform). As a result, the buyer needs to involve different stakeholders in between to aide the implementation of DBMI. The greater number of players are integrated to increase the efficiency and effectiveness of the buyer-supplier

transaction, more is the responsibility and accountability of the buyer to ensure that all stakeholders are benefiting from the business model. We, therefore, study our problem context through the lens of stakeholder theory (Freeman 1994).

The stakeholder theory essentially deals with the understanding of how firms and its associated people create value and trade among each other (Freeman et al. 2010). The idea that firms are surrounded by many stakeholders has now become commonplace both in the management and practitioner literature (Van Marrewijk et al. 2004). However, different studies have explained similar concepts and terms such as stakeholder theory, stakeholder, and stakeholder management in very different ways (Pedrini & Ferri 2019; Freudenreich et al. 2019; Vershinina et al. 2019; Donaldson & Preston 1995). Stakeholder theory researchers have argued that all parties with legitimate interests interacting with a given organization participate in order to obtain specific benefits and there lies no priority of one set of benefits over the other (Clarkson 1995). Friedman and Miles (2002) highlight the lack of research in the area of stakeholder relations where the extent to which stakeholder engagement change over time and the rationale for such occurrence are not well documented in the literature.

Further, stakeholder theorists with an inclination towards the instrumental theory have posited that certain outcomes between firms and stakeholders will realize contingent on the behaviour of the stakeholder or the firm. In other words, if and only if certain behaviours take place, only then certain specific outcomes can be predicted. This type of lens does not require the researcher to assume that all parties behave in the motive of self-interest (opportunism). Similarly, Jones and Wicks (1999) explain how the descriptive stakeholder view suggests that managers' behaviour is contingent on the assumption that stakeholders are an important part of the organization because of their intrinsic claims to the firm. Thus, stakeholder theory remains a well discoursed theory in the literature and has been utilized extensively in different contexts across the management literature. Our research is aligned more



towards the instrumental stakeholder (Jones 1995) theory as outcomes are dependent on certain behaviour of the firm that wishes to implement BMI at the BoP market.

Many studies have used stakeholder theory to understand business model innovation (Miller et al. 2014; Padersen et al. 2018; Hullova et al. 2019). Although we did not find relevant literature at the interface of stakeholder theory and DBMI in particular, we strongly feel that stakeholder theory will give us the appropriate lens to not only understand the contingencies which affect the acceptance or rejection of DBMI but also clarify the rationale behind those underlying conditions. This is because multiple stakeholders may have competing objectives and there may be contextual conditions under which these objectives can be best fulfilled. It is therefore important to delve deeper and understand this phenomenon through the lens of stakeholder theory.

### **3.0 Methodology**

We adopt an in-depth single case study methodology to answer the research question. Along with the rationale for adopting this methodology, in this section, we explain the context, the reasons for opting for the case study methodology and in particular the sampling procedure. Further, we present a brief description of the case organization along with the data collection procedure.

#### *3.1 Empirical context*

With the rising population in India and sluggish growth of total cultivable land, the agricultural sector in India is facing a number of key challenges especially the farmers. First, the average farm size per farmer is less than two hectares (Mehta et al. 2014). As a result, large farm equipment is difficult to operate in small holdings leading to decreased farm productivity across the nation (FICCI 2015). Second, small farm equipment is expensive to own and the unwillingness of banks to finance farm equipment to marginalized farmers further deteriorate the social inclusion of marginalized population in rural India (Ferroni & Zhou 2012). Further,

recent literature has shown how farmers in the emerging and frontier markets face severe issues due to growing price uncertainty (Tang et al. 2016) and the need to design contracts to mitigate such issues (Aiello et al. 2015). As a result, firms have started integrating business model innovation with the help of digitization in the agricultural sector (Devalkar et al. 2018). This serves as a strong motivation to study the role of digitization and business models towards social sustainability in the BoP market and improved efficiency in the value chain.

### *3.2 Case study rationale and sampling*

We adopt an inductive case study approach (Eisenhardt & Graebner 2007; Yin 2003) primarily for two reasons. First, the case study approach is typically found to be appropriate in the initial stage of theory development (Eisenhardt 1989), where the overarching aim is to formulate new insights (Voss 2010). Since digitization in agriculture is in the early stages of adoption in India, it is important to investigate the subject in depth before formulating the hypotheses (Stuart et al. 2002). Case study approach helps us to triangulate opinions from different stakeholders in the supply chain, which is an important aspect to answer our research question (Maestrini et al. 2018).

Recognizing the paucity of in-depth field studies on digitization in agriculture, our strategy is to study one unique case in depth (Sarker et al. 2012). Our study is based on a qualitative design involving a single multi-stage case study with the objective to capture the conditional acceptance aspect of digitization in the business model at the BoP. The existence of the phenomenon can be properly explained through a single case study approach instead of multiple case studies (Siggelkow 2007). The single case allowed us to delve deeply into the organization and thus develop a richer understanding of the phenomena under consideration (Tripsas 2009). Also, our approach of inductive case study assumes importance as a single in-depth case study contribute more towards theory (Dyer & Wilkens 1991). Further, our study involves interactions across multiple actors i.e., focal organization, farmers, micro-

entrepreneurs which strengthens our conclusion and justification for conducting a single in-depth case study. Following suggestions from the methodologists (e.g., Patton 1990), we identified an organization that could potentially be a unique and exemplary source of insights on this topic.

We chose eKutir as the case organization. eKutir is a social enterprise providing the digitized solution to small landholding farmers. The digitized solution is offered through a decentralized network of stakeholders who are equipped with low cost digital mobile application to provide agricultural services such as soil analysis, input analysis, sustainable agricultural practice and key market connections. In our study, digitization in the agricultural supply chain at the BoP is the unit of analysis and we investigate the contingencies that led to acceptance or rejection of such models through interaction with different stakeholders in the agricultural supply chain with eKutir as the focal organization.

### *3.3 Digitization by eKutir at the BoP*

eKutir has done multiple digitization attempts in the field with mixed outcomes of acceptance and rejection. Our data focus on these experiences to answer the research question. eKutir has built a digital platform that connects three major players in the agricultural supply chain (farmers, buyers and suppliers). The marginalized farmers are severely challenged because of unfair prices, high demand variability, decreasing crop yield, lack of know-how in terms of standard operating procedures, poor seed quality and risk arising out of calamities and accidents. This was an opportunity for eKutir to address what they commonly refer to as “*Pain Points of Farmers*”. These pain points are addressed simultaneously by bringing in suppliers and buyers. For instance, the “smart farming” section of the platform offers five services to the farmers (i.e. *Agri-Score, Agri-Plan, Agri-Seed, Agri-Protect* and *Agri-Nurture*). Genuine “suppliers” of these services are identified and listed in the system after rigorous price and

quality evaluation to ensure that the farmers can afford high quality services. To sustain, eKutir charges a service fee on every transaction between the farmer and the supplier.

The next player is the buyer who procures the agricultural commodity from the farmers through “*Smart Trading*” section in the platform. To address the issues of unfair prices and uncertain demand, the platform offers different trading modes (such as *Future Market*, *Spot Market* and *Impact Market*) to ensure that the entire produce is getting sold at a reasonable price agreed by the involved players in the transaction. We present the digitized business model innovation framework as operated by eKutir in Figure 1 and digital platform screenshots of smart farming and smart trading in Figure 2 and Figure 3 respectively. Currently, 1032 farmers are divided into 68 FIG’s (Farmer Interest Groups) where each FIG typically has a target of 15-20 farmers as its members. Overall, 26 villages are getting benefited through this DBMI. Each FIG has a micro-entrepreneur who directly reports to the CEO of the cooperative (Farmer Producer Company), who is the de-facto employee of eKutir in the village.

<Insert Figure 1>

<Insert Figure 2>

<Insert Figure 3>

### *3.4 Data collection procedure*

After selecting eKutir for our study, we collect data primarily through semi structured interviews and support it with field observations, secondary sources, and documents from the organizations. The data collection is primarily divided into three parts. The first part is to understand the various stakeholders eKutir operates within its umbrella and also how the digitized mobile application functions at the grass-root level. Here, we interviewed all stakeholders of eKutir which includes employees of eKutir, farmers and micro-entrepreneurs.

The second part of data collection involve understanding the reasons for acceptance (or rejection) of such applications from the perspective of eKutir (also a key stakeholder enabling the functioning of this business model), who conceptualized and developed platforms for the agricultural sector. Here, we specifically capture the digital platform and how different stakeholders are attached to it. Further, we tried to understand the reasons for such stakeholders to enter the digital platform and the current difficulties faced by the platform in adding new members. This understanding was derived from the perspective of eKutir's employees.

The third part is intended to understand and triangulate the opinions of farmers and other stakeholders involved in the business model. A total of 18 key informants are interviewed distributed across the employees of eKutir, farmers using the digital platform of eKutir, and micro-entrepreneurs supporting the farmers to use the digital platform. For conducting the semi-structured interviews, we prepare an interview protocol, containing an outline of topics to be covered, with suggested questions (Yin 2003). We present the initial protocol to an expert panel of three academicians, who reviewed the protocol and suggested suitable modifications, which were further incorporated in to the interview protocol. We follow established guidelines by Rubin & Rubin (2011), while administering the interview protocol. Interviews were scheduled based on the date and time suggested by each participant. Prior to the start of the interview, we briefly introduce the research in terms of its objectives, expectations from participants and possible contributions (Rubin & Rubin 2011). A detailed information sheet is provided to each interviewee. Subsequently, an informed consent form is presented to each interview for their consent to be part of the interview process. Whenever possible, the interviews are recorded for further transcriptions and analysis. We provide the details of the interviewees in Table 1.

**<Insert Table 1>**

The average time of the interview is 40 minutes. The questionnaire has been provided in Table 2. The interview is conducted in three different languages wherever appropriate. For the farmers and micro-entrepreneurs, the interview was conducted in Oriya language. We always had a local representative from the company who translated the questions to Oriya. One of the co-authors conducting the interview could understand the regional language with reasonable proficiency. Another co-author, who was not part of direct interviewing but was well-versed with Oriya, English and Hindi language, carried the process of back-translation to ensure the accuracy of the translation (Temple & Young 2004). To triangulate and to confirm our inferences, we discuss the findings with the core management team, which satisfies the criteria of member check as suggested by qualitative methodologists (Miles et al. 2014). We also repeat the questions to different respondents both within and outside the same department in the case organization to triangulate our findings.

<Insert Table 2>

### ***3.5 Data analysis procedure***

Data analysis started while the data collection process was on going as the authors were discussing on the collected data and one of the authors writing his reflections on his data collection exercise in the form of memos (Yin 2011). After the interviews were done, they were transcribed. Finally, the interview transcripts, field notes, and other secondary data are compiled for further analysis (Yin 2011). Our overall analysis follows an established process of inductive theory building research (Eisenhardt 1989; Strauss & Corbin 1998), involving moving back and forth between the data and emerging theoretical categories (Locke 2001). In our analysis, we were looking for data related to the implementation of digitized business model for the organization. The analytical goal is to identify theoretical constructs and patterns in the case with respect to the research question. While iterative in nature, our analysis is conducted by the following two coding cycles (Miles et al. 2014), as explained below.

**First cycle coding:** In this cycle, the goal is to identify a set of primary-closer to observation-codes for further analysis (Miles et al. 2014). As we started comparing, categorizing the texts and assigning level to them, we arrive at the primary codes. We use the concept of meaning unit (Campbell et al. 2013; Garrison et al. 2006) to select a segment of data for coding. In this step, we code and recode the data based on our evolving understanding (Strauss & Corbin 1998). Thus, the coding process is iterative in nature, with each iteration leading to refinement of the coding system. One of the examples of the primary code is “*difficulty in accessing seeds and fertilizers for farming*”. Similarly, another primary code is “*challenges in selling farm produce*”.

**Second cycle coding:** In this stage, we follow the axial coding approach to integrate first-order codes and categories into more abstract theoretical sub-categories (Miles et al. 2014; Saldana 2012; Strauss & Corbin 1998). As this phase progressed, we sought for similarities and differences among the different categories identified in the previous stage, which resulted in a set of relevant categories, which are also the second order code. For instance, the primary codes “*difficulty in accessing seeds and fertilizers for farming*”, “*unavailability of knowledge support for farming*”, “*challenges in selling farm produce*” and “*difficulties in getting the right price for farm produce*”, all discussing about the challenges faced by the farmers leading to the introduction of the digitized platform, were categorized into the secondary code “*drivers of DBMP*”. The final objective in the data analysis is to understand the linkages between different dimensions (Langley et al. 2013).

## **4.0 Results and discussion**

### *4.1 Observations from the field*

Our data analysis following the established procedure of inductive theory building research resulted in the identification of three dimensions: drivers of DBMI, challenges in DBMI, and solution to the bottleneck. We discuss each of these dimensions below.

#### 4.1.1 Drivers of DBMI

As one of the co-founders mentioned, eKutir was started to help the poor farmers in their agri-process so that they can come out of financial constraints to lead a better life (Refer Quotation 1, Table 3). While eKutir tried to help the farmers, it faced multiple challenges from both the input and output side. On the input side, farmers had bottlenecks to access advance knowledge for farming, tools for soil testing, and inputs such as seeds, fertilizers, and others. On the output side, the major bottleneck was to sell their agricultural produce at the right price. This was validated by the CEO of one farmer produce company (Refer Quotation 2, Table 3).

Moreover, on the output side, the gap in supply-demand is attributed to two main reasons: a) farmers are unaware of the potential demand (both short-term and long-term) in the market due to information asymmetry, and b) farmers are unaware of the total supply approaching the “mandi<sup>4</sup>” or “hath” on a particular day. This has a severe impact on the final quantity that is left unsold and the equilibrium price of the sold quantity. The demand for a given day in a mandi is exogenous and is almost fixed before the final produce by the farmers are brought in. However, the equilibrium price varies depending on the volume and quality of supply brought in by the farmers. As a result, farmers not only stand to lose on the final quantity sold but also incur heavy loss on the selling price.

The challenges faced by eKutir, as discussed in the preceding section, led to the introduction of the DBMI. eKutir developed its digital platform with an intention to bring in suppliers, buyers and farmers within a single platform. However, the motivation for building the entire DBMI was to help the marginalized farmers. This was again validated by one of the



co-founders (Refer Quotation 3, Table 3). On the input side, the digital platform helped eKutir to provide farmers with specific inputs. For instance, one of the agri-entrepreneur validated that the digital platform had soil testing tools, that helped the farmers to get accurate soil testing reports at right time to make right decisions (Refer Quotation 4, Table 3).

On the output side, the dual problem of price and quantity can be addressed by the digital platform. To tackle this problem, eKutir's DBMI offered three different market transaction platforms - futures, spot and impact market. The futures market can ensure that one month prior to the harvest, the farmers can fix a price for a given quantity to be sold at a future date (typically just after the harvest date ends). The unsold quantity automatically goes to the spot market. The spot market opens 48 h before the harvest date. Buyers can buy the product and decide the price with the expected delivery (prior to?) a week from the day the spot market closes. Most of the farmers get their produce sold through either the futures market or spot market. However, if any proportion of the produce is unsold, it goes to the impact market where the platform is open on the day of the harvest. Typically, farmers now have the option of going directly to the local "mandi" or sell their produce at a discounted price to stop the produce from getting perishable. In this way, the platform ensures better price and improved sales volume which would not have been possible otherwise. One of the micro-entrepreneurs stated that the digital platform provides them with an assurance to sell all their produce at the right price (Refer Quotation 5, Table 3).

Another driver of the DBMI is the difficulty in disseminating knowledge to rural farmers. While eKutir had knowledge inputs to help the farmers in their farming process, it was difficult for the organization to pass on that knowledge to the rural farmers effectively. A digital platform helped eKutir in this as mentioned by one of the co-founders (Refer Quotation 6, Table 3).

#### 4.1.2 Challenges faced in DBMI

The integration through the digital platform introduced its own challenges. On one hand, *the inability to use a smartphone* and the *lack of trust* reduced the adoption of DBMI among the majority of farmers. On the other hand, the buyers who are registered in the digital platform are typically wholesalers and distributors. They require large agricultural produce and therefore it is the responsibility of eKutir to bring in as many farmers as possible. For the sustainability of the platform, eKutir had to ensure that the aggregate supply of farmers listed in the platform is at least equal to the aggregate demand of buyers listed in the platform. However, the DBMI adoption among the farmers is low because of the lack of familiarity in using digital platforms for agri-supply chain integration. This was evident from our interviews with micro-entrepreneurs (Refer Quotation 7, Table 3).

A low adoption of DBMI among the farmers would push the potential buyers away from the digital marketplace of eKutir and thereby hurting the interests of those farmers who have adopted the DBMI. This meant that eKutir not only stand to lose financially because of the low transaction rate but also risk to lose the trust of existing farmers on board. As other farmers were closely observing the farmers who had adopted the digital platform, it was of utmost importance to ensure that they clearly see a tangible benefit for those “registered farmers”. If the non-adopting farmers fail to see the benefit through the already adopting farmers, they will not be willing to join the DBMI platform anytime in the future and also end up stigmatizing the DBMI platform through negative word of mouth. eKutir cannot afford to wait till the adoption rate of farmers crosses the tipping point.

The other challenge faced in the process of DBMI implementation is the lack of trust at the village level. People in the village are reluctant to trust an organization which is from some other areas. This was evident from our interaction with one of the co-founders (Refer Quotation 8, Table 3). The same concern was highlighted by one of the micro-entrepreneurs

when he discussed the steps that need to be taken for enhancing the adoption of DBMI among the farmers (Refer Quotation 9, Table 3).

<Insert Table 3>

#### 4.1.3 Solution to the bottleneck: Carving a new stakeholder from BoP

eKutir addressed the *inability to use a smartphone* (**Conditional Factor:** Technology adoption) and the *lack of trust* (**Conditional Factor:** Trust) issues by devising a new stakeholder in the name of “Micro-entrepreneurs”. Micro-entrepreneurs were primarily farmers who were relatively well-educated and were the early adopters of DBMI platform. Each “Micro-entrepreneurs” had 15-20 farmers under their supervision and assisted them in adopting DBMI. Micro-entrepreneurs captured the data at the farmer level for eKutir. In return, eKutir introduced an incentive system for “Micro-entrepreneurs” who will receive a percentage of commission for the transactions.

After introducing the DBMI to micro-entrepreneurs, a different set of challenges pitched in. The challenge was on deciding the appropriate micro-entrepreneur who will be readily accepted by the farmers, buyers and suppliers. The straight-forward answer was to choose someone who knew the digital platform well. But it was interesting to observe that in addition to the knowledge of the digital platform, they have to be motivated by the financial incentive to take up the responsibility. Although all farmers need that “additional money in the form of commission”, they do not have the time to invest for guiding 15-20 farmers and at the same time ensure that their own daily produce is not affected. So, there was only a handful number of farmers from which the “Micro-entrepreneurs” were chosen.

The next immediate challenge appeared from the social dimension. Farmers within the village are a closed community and they have clear social preferences on who should or should

not take charge and guide them in their farming practices (**Conditional Factor:** Stakeholder Stability). For instance, we found the following “friction points”:

- Young aged “Micro-entrepreneurs” are not taken well within the village community and many farmers are therefore not adopting DBMI just because they are senior and do not want to be supervised by someone younger (**Conditional Sub-Factor:** Age).
- “Micro-entrepreneurs” who are respected in the village created a huge positive impact on the adoption rate of DBMI. “*Respect*” (**Conditional Sub-Factor:** Respect) within the village either comes from the good deeds of the person that has been observed over the years or the person is accepted to have sufficient knowledge in agricultural practice that has delivered tangible benefits.
- An easy way to manage on-board farmers is to place “*people from power and authority*” as “Micro-entrepreneurs”. This was very well observed in the villages visited. Although the adoption rate was promising, there was a sense of reluctance/fear/scepticism about the utility of the platform and the people associated with it. This aspect can be considered as a positive development in terms of higher adoption rates of DBMI among villagers (**Conditional Sub-Factor:** Power and Authority).

In order to minimize the existing institutional or social issues at the ground level, eKutir cannot stop by just connecting farmers and buyers. To incentivize further, they are providing services such as the supply of high quality seeds, advisory on which fertilizer or pesticides should be used for a given crop, soil testing services to predict the fertility of the soil, insurance services to protect crops from calamities or accidents and the most important is the “package of practice” which provides the standard operating procedures on agricultural practice (**Conditional factor:** stakeholder incentives in the form of agri-score, agri-seed, agri-nurture,

agri-plan and agri-protect services). For each of these services, an external supplier is brought in through the digital platform. This would not have been possible if eKutir could not have brought relevant suppliers, buyers at an acceptable level in the digital platform.

#### *4.2 Inferences from the observation*

We introduce the 5A (Accessibility, Availability, Affordability, Awareness and Acceptability) framework (Conditional Sub-factors to Stakeholder Incentives), which is an extension of the well known 4A framework (Prahalad 2012), to infer the observations documented in the previous sub-section. Our intention to extend the existing 4A framework is to highlight that “awareness” is a necessary condition for “acceptability” but not a sufficient condition. Farmers may be made aware of DBMI but it may not lead to acceptance. Hence, the role of micro-entrepreneur is critical in ensuring acceptability. We treat farmers and micro-entrepreneurs as a single stakeholder for two reasons. First, every micro-entrepreneur is a farmer but not vice-versa and therefore both of them are eligible to be included in the farmer group. Second, the addition of micro-entrepreneurs as a separate stakeholder came up due to the access challenges (i.e. low technology adoption, technology illiteracy) faced by the farmers at the BoP. However, the main issues of the farmers, as discussed in earlier sections, are uncertainty in price and sales volume. As a result, the inference of DBMI using 5A framework in this section will focus on how these two primary issues are properly addressed.

While accessing the digital platform, farmers and micro-entrepreneurs could “access” a large number of buyers in the market who are willing to trade with the registered farming community. eKutir turns out to be the intermediary player, also commonly known as a “broker”, who ensures that buyers and farmers meet and transact directly. Here we observe that by ensuring “Accessibility” of the digital platform, eKutir ensured “Awareness” and

“Availability” of the market both for the buyer and the supplier. Both buyers and suppliers are taking advantage of the “Accessibility” and “Availability” through the same digital platform.

Contingent on the fact that the market can be accessed by all stakeholders (“Accessibility”, “Awareness” and “Availability”), the issues which remain unsolved are the equilibrium price between buyers and suppliers and getting them registered on the platform. One must note here, that buyers too have supply uncertainty and as a result are concerned to procure the right quantities at the right price. eKutir ensures that the price set by the buyer is “acceptable” to the farmers or in other words the contracted price charged by the farmer is “affordable” to the buyer. To ensure that this works, the marketplace component (i.e. Future Market, Spot Market and Impact Market) of DBMI turns out to be very effective. The *future market* ensures that at a future date and an agreed upon price and quantity, a contract between buyer and supplier has been sealed. The *spot market* option in a situation when farmers still have unsold quantity left 48 h before the harvest maturity date (which typically arises often). The buyer is not revealed with the information on which market (future or spot) the quantity is coming from and therefore he cannot further negotiate the price of the produce. Any unsold produce goes to the impact market where the balance left over gets sold at a discounted price. Thus, marginalized farmers can contract reasonable prices for their produce using the digital platform rather than travelling, anywhere between 5 miles to 10 miles to reach the mandi for selling the produce. The same is the case for a buyer who does not need to travel to different places to buy the supplies. This feature of the digital platform ensures “Affordability” and “Acceptability” for the farmers at the BoP. We summarize the application of 5A framework on DBMI at the BoP in Table 4.

<Insert Table 4>

#### 4.3 Framework for conditional acceptance of DBMI

Synthesizing the observations and inferences from the field visit, we triangulate the conditional factors responsible for the success or failure of DBMI at the BoP. At the start of the section, we observed that “*Technology Adoption*” and “*Lack of Trust*” was one of the prime motivations for bringing in an additional stakeholder, namely micro-entrepreneurs. Although technology adoption is a challenge to the BoP market, the success or failure lies in the firm’s ability to present the digital platform in a readily acceptable way. As a result, we introduce the term “*Technological Capability*” as one of the main conditional factors in our framework. Here, technological capability is nothing but the firm’s ability to present the digital solution in a way that fosters better adoption at the BoP. This also indicates that not only it needs to be user friendly, but also it needs to create an impact at the field level. This explains the reason for the failure of certain DBMIs at the BoP, which just considers digitization as a tool and fails to weave it into the core of the business model.

For the lack of trust, we observed that even when micro-entrepreneurs came as an intermediary stakeholder, trust issues remain. This slowly improved when farmers believed that the person that is handling the digital platform has sufficient knowledge about the product and the process. We, therefore, incorporate “*Technological Awareness Effort*” from eKutir to educate micro-entrepreneurs to the level that farmers can place their trust in them. However, trust is not sufficient to solve the problems at BoP. There are social and cultural contexts which can lead to instability in the network of farmers and micro-entrepreneurs. Hence, we include “*Stakeholder Stability*” as one of the key features in our framework which is contributed by sub-factors such as *Age, Respect, Power and Authority*.

The stakeholder stability feature cannot solve incentive related issues in DBMI. All stakeholders, especially the farmers need to be incentivized not only at the point of sale but also by building capabilities within themselves. We observed that incentives for all the stakeholders were achieved through the 5A framework and as a result, we incorporate

“Stakeholder Incentives” as one of the main conditional factors for the success or failure of DBMI. We present the framework for conditional acceptance of DBMI at BoP in Figure 4. We must also state that no one contingency is more or less important. The absence of any one of these factors will in the most probable scenario lead to the failure of DBMI, especially at the BoP.

<Insert Figure 4>

## **5.0 Conclusion**

In this research, we attempted to understand the reasons behind the success or failure of DBMI implementation in the BoP market. Through an inductive case study approach, we conducted field visits in one of the few agricultural companies in India that are using a digitized platform and at the same time working with marginalized farmers at the BoP. Through the lens of stakeholder theory, we conducted semi-structured interviews with each stakeholder of the case organization and analysed it along with different other secondary sources to triangulate our findings. It was interesting, although not surprising, to note that stakeholder stability and stakeholder incentives are key factors behind the successful implementation of DBMI at the BoP. We found that marginalized farmers in India operate cohesively in a network due to three differentiating factors. The first factor is the age of the individual with whom the farmer is interacting. The second factor is mutual respect between stakeholders in the BoP. It was observed that mutual respect took years to get built and was dependent on a person’s behaviour towards others and also their technical competence in the farming community. The third factor was power and authority. People assuming important administrative positions do have significant leverage at the BoP due to the weak institutions and the power distance between marginalized farmers and the person of authority. We also observed that stakeholder’s incentives were easily achieved through the 5A framework, although sufficient challenges still remain in ensuring larger outreach of DBMI in nearby villages. Overall, we believe that our



paper makes an important contribution to the business model literature, especially when it comes to understanding the implementation of DBMI at the BoP.

### *5.1 Research implications*

Our current study has many important research implications. First, this study brings a new perspective on how stakeholder theory can be utilized to understand issues related to the acceptance of DBMI in the BoP market. This is an important extension of past research which has used the perspectives of different stakeholders to conduct business model analysis and assess its innovation (Froud et al. 2009; Sengupta & Ray 2017). In particular, our paper contributes to both descriptive and instrumental stakeholder theory (De Gooyert et al. 2017; Frynas & Yamahaki 2016). For instance, although eKutir believed that stakeholders are an important part of the organization, the outcome of DBMI is contingent on the behavior of eKutir at the BoP. By behaviour, we refer to understanding the context and designing the incentive structure under the 5A framework (an extension to Prahalad (2012) model on 4A's framework). This basically means that a descriptive stakeholder approach is a necessary condition for the acceptance of DBMI. However, it is never the sufficient condition. On the other hand, an instrumental stakeholder theory approach ensures that stakeholder stability within BoP and stakeholder incentives across the supply chain are addressed making it an important parameter towards the success or failure of DBMI. Hence, we believe that our paper makes a meaningful contribution of utilizing both perspectives of stakeholder theory (necessary and sufficient conditions) towards the acceptance of DBMI at the BoP (Hahn et al. 2018).

Second, our paper attempts to enrich the emerging literature on “poor as suppliers” in the socially responsible business model (Lee & Tang 2017). Specifically, we show how marginalized community can be engaged in the business model by providing additional incentives so that they supply industry standard quality products. The interesting contribution of our paper to this literature is that in most cases the market exists for the financially poor to

supply a certain product in the value chain. For instance, the handicraft and handloom industry in India is specifically designed for this purpose. We show that the inefficiencies of the pre-existing business model impacting the marginalized community can be bridged by bringing the market right at the doorstep of the community through the help of a digitized platform.

Third, this paper contributes to both digitization literature at the BoP and business model innovation literature. The paper positions itself onto the factors leading to the conditional acceptance of DBMI by documenting key observations of the entire journey thus not only providing a different perspective in the way BMI was till now understood (Massa & Tucci 2013) but also enriching the existing knowledge base of sustainable development through innovation at the BoP (Caneque & Hart 2017).

### *5.2 Practice implications*

We demonstrate key practice implications for entrepreneurs and SME's to deploy DBMI in the BoP with specific reference to the agricultural sector. First, enterprises should carefully understand the context of the BoP in which it operates before implementing the DBMI. For instance, the dynamics of stakeholders at BoP inside India is different from other emerging countries such as the Philippines, Thailand etc. For instance, farmers can perceive DBMI providers negatively if not rightly oriented. This may be because of inertia towards change, lack of vision in evaluating the future benefits, and lack of trust between stakeholders residing at the BoP.

Second, one must note that incentives need to be carefully designed to minimize conflict of interests within stakeholders inside the BoP. For instance, if micro-entrepreneurs are not incentivized beyond a certain threshold and over and above what the marginalized farmers would receive, they would cease to exist and would switch to operate as separate farmers.

Third, “Acceptability”, “Affordability” and “Availability” needs to be incorporated within the framework. To do so, enterprises must ensure that the community can first access the DBMI at the field level. Once “Awareness” followed by “Accessibility” is taken care of, it is the effort of the enterprise to ensure that other 3A’s are incorporated in the business model for successful implementation of DBMI at BoP.

Summarizing the above three implications, we state that our proposed framework is sector agnostic and therefore, valuable to all enterprises planning to operate in the BoP context by offering products and/or services over a digital platform. The framework is contextually intelligent and embraces the needs of sustainability enhancing innovations in BoP context in developing nations. For instance, different case examples related to mobile networks, fuel efficient stoves, access to clean drinking water, and household electrification have stressed the importance of 4As for poverty alleviation at BoP and emphasized the need for designing the value chain with local business ecosystem for better integration (Khavul & Bruton, 2012). Our proposed 5A framework well integrates the important 4A characteristics along with local ecosystem in the form of micro-entrepreneurs and suppliers to deliver stakeholder incentives and achieve stakeholder stability. Our framework also explains how DBMI not only contribute to all the stakeholders in the process but also create new markets and help involve players (e.g. micro-entrepreneur, farmers) who would otherwise not be a part of the system due to inherent constraints and complexities at the BoP (Prahalad & Hart 2002; Prahalad 2012). This should form a key characteristic for any DBMI wishing to sustainably offer value at the BoP.

### *5.3 Social implications*

Our paper has important social implication for the BoP market. First, several of the enterprises operating at the BoP build their business models around digital platforms for achieving scaling benefits and to reduce transaction cost. These have mixed evidence with some of them

succeeding in their digitized business model innovations and the rest failing to crack it. The framework developed and contingencies identified will guide such enterprises and entrepreneurs (especially social and hybrid ones) to take the path of digitized business model innovation leading to success. Second, the impact of DBMI directly contributes to better income potential of the farmers both through higher selling prices and high sales volume, thus significantly contributing to the producer surplus (Adbi et al. 2018). Third, this research has demonstrated the idea of incentivizing the marginalized farmers in order to increase the adoption of digitized business model. Although literature has often documented the need to design effective contracts between two players in a supply chain (Letizia & Hendrikse 2016; Tang et al. 2016), our paper differs from the literature in the way incentives are operationalized at the field level in order to improve better participation and hence higher social inclusion towards the farming community. Fourth, it is extremely important to understand that replication of this DBMI would require important modifications based on contextual knowledge in the field. This holds true even for the studies in the agricultural sector but in different geographies. The success of the model and its social impact lies in the ability to not only incentivize stakeholders in the supply chain but also ensure that stakeholders who are operating at BoP are working as a network and have sufficient stability within them to carry out different activities (Halme & Laurilla 2009).

#### *5.4 Limitations & future research*

We believe that our study has certain limitations which present an opportunity for future research. First, the digital platform of eKutir is one of the first few mobile applications which connect multiple stakeholders through the same platform, each having its function and objectives. As we do not have a similar setting in India to compare, our study lacks generalizability in terms of replication of the model in the same sector. Second, we observed that the presence of eKutir employees could have restricted some of the respondent's especially

marginalized farmers to open up completely. Such behaviour at the BoP is however predictable due to the perceived hierarchy between farmers and the concerned employees.

## **Funding**

The field study of this research project was funded by Griffith Asia Institute (GAI)

## **Acknowledgments**

The authors thank Suvankar Mishra, Samik Ghosh, Sulipta Das and Pulak Dash of eKutir for assisting during the field study.

## **References**

- Adbi, A., Bhaskarabhatla, A. and Chatterjee, C., (2020). Stakeholder Orientation and Market Impact: Evidence from India. *Journal of Business Ethics*, 161(2), 479-496.
- Aiello, G., Enea, M. and Muriana, C., (2015). The expected value of the traceability information. *European Journal of Operational Research*, 244(1), 176-186.
- Amit, R., & Zott, C. (2012). Creating Value Through Business Model Innovation. *MIT Sloan Management Review*, 53(3), 36-44.
- Anderson, J. and Billou, N., (2007). Serving the world's poor: innovation at the base of the economic pyramid. *Journal of Business Strategy*.
- Basu, S., (2014). Explicating the mechanism of BOP ventures: An architectural innovation perspective. *South Asian Journal of Management*, 21(3), 113-139.
- Campbell, J. L., Quincy, C., Osseman, J., & Pedersen, O. K. (2013). Coding in-depth semistructured interviews: Problems of unitization and intercoder reliability and agreement. *Sociological Methods & Research*, 42(3), 294-320.
- Caneque, F.C. and Hart, S.L. eds., (2017). *Base of the pyramid 3.0: sustainable development through innovation and entrepreneurship*. Routledge.
- Casadesus-Masanell, R. and Zhu, F., (2013). Business model innovation and competitive imitation: The case of sponsor-based business models. *Strategic management journal*, 34(4), 464-482.
- Chesbrough, H., (2010). Business model innovation: opportunities and barriers. *Long range planning*, 43(2-3), 354-363.
- Clarkson, M.E., (1995). A stakeholder framework for analyzing and evaluating corporate social performance. *Academy of management review*, 20(1), 92-117.

- De Gooyert, V., Rouwette, E., Van Kranenburg, H. and Freeman, E., (2017). Reviewing the role of stakeholders in operational research: A stakeholder theory perspective. *European Journal of Operational Research*, 262(2), 402-410.
- Devalkar, S.K., Seshadri, S., Ghosh, C. and Mathias, A., (2018). Data science applications in Indian agriculture. *Production and Operations Management*, 27(9), 1701-1708.
- Donaldson, T. and Preston, L.E., (1995). The stakeholder theory of the corporation: Concepts, evidence, and implications. *Academy of Management Review*, 20(1), 65-91.
- Dyer Jr, W. G., & Wilkins, A. L. (1991). Better stories, not better constructs, to generate better theory: A rejoinder to Eisenhardt. *Academy of management review*, 16(3), 613-619.
- Eisenhardt, K.M., (1989). Building theories from case study research. *Academy of management review*, 14(4), 532-550.
- Eisenhardt, K.M. and Graebner, M.E., (2007). Theory building from cases: Opportunities and challenges. *Academy of management journal*, 50(1), 25-32.
- Ernkvist, M., (2015). The double knot of technology and business-model innovation in the era of ferment of digital exchanges: The case of OM, a pioneer in electronic options exchanges. *Technological Forecasting and Social Change*, 99, 285-299.
- Ferroni, M. and Zhou, Y., (2012). Achievements and challenges in agricultural extension in India. *Global Journal of Emerging Market Economies*, 4(3), 319-346.
- FICCI (2015). Transforming Agriculture Through Mechanisation.
- Freudenreich, B., Lüdeke-Freund, F., & Schaltegger, S. (2019). A stakeholder theory perspective on business models: Value creation for sustainability. *Journal of Business Ethics*, 1-16.
- Freeman, R.E., (1994). The politics of stakeholder theory: Some future directions. *Business ethics quarterly*, 409-421.
- Freeman, R.E., Harrison, J.S., Wicks, A.C., Parmar, B.L. and De Colle, S., (2010). *Stakeholder theory: The state of the art*. Cambridge University Press.
- Friedman, A.L. and Miles, S., (2002). Developing stakeholder theory. *Journal of management studies*, 39(1), 1-21.
- Froud, J., Johal, S., Leaver, A., Phillips, R., & Williams, K. (2009). Stressed by choice: A business model analysis of the BBC. *British Journal of Management*, 20(2), 252-264.
- Frynas, J.G. and Yamahaki, C., (2016). Corporate social responsibility: Review and roadmap of theoretical perspectives. *Business Ethics: A European Review*, 25(3), 258-285.
- Garrison, D. R., Cleveland-Innes, M., Koole, M., & Kappelman, J. (2006). Revisiting methodological issues in transcript analysis: Negotiated coding and reliability. *The Internet and Higher Education*, 9(1), 1-8.
- Halme, M., & Laurila, J. (2009). Philanthropy, integration or innovation? Exploring the financial and societal outcomes of different types of corporate responsibility. *Journal of business ethics*, 84(3), 325-339.
- Hahn, T., Figge, F., Pinkse, J. and Preuss, L., (2018). A paradox perspective on corporate sustainability: Descriptive, instrumental, and normative aspects. *Journal of Business Ethics*, 148(2), 235-248.
- Hullova, D., Laczko, P. and Frishammar, J., (2019). Independent distributors in servitization: An assessment of key internal and ecosystem-related problems. *long r*, 104, 422-437.
- Jones, T.M., (1995). Instrumental stakeholder theory: A synthesis of ethics and economics. *Academy of management review*, 20(2), 404-437.
- Jones, T.M. and Wicks, A.C., (1999). Convergent stakeholder theory. *Academy of management review*, 24(2), 206-221.
- Karimi, J. and Walter, Z., (2016). Corporate entrepreneurship, disruptive business model innovation adoption, and its performance: The case of the newspaper industry. *Long Range Planning*, 49(3), 342-360.

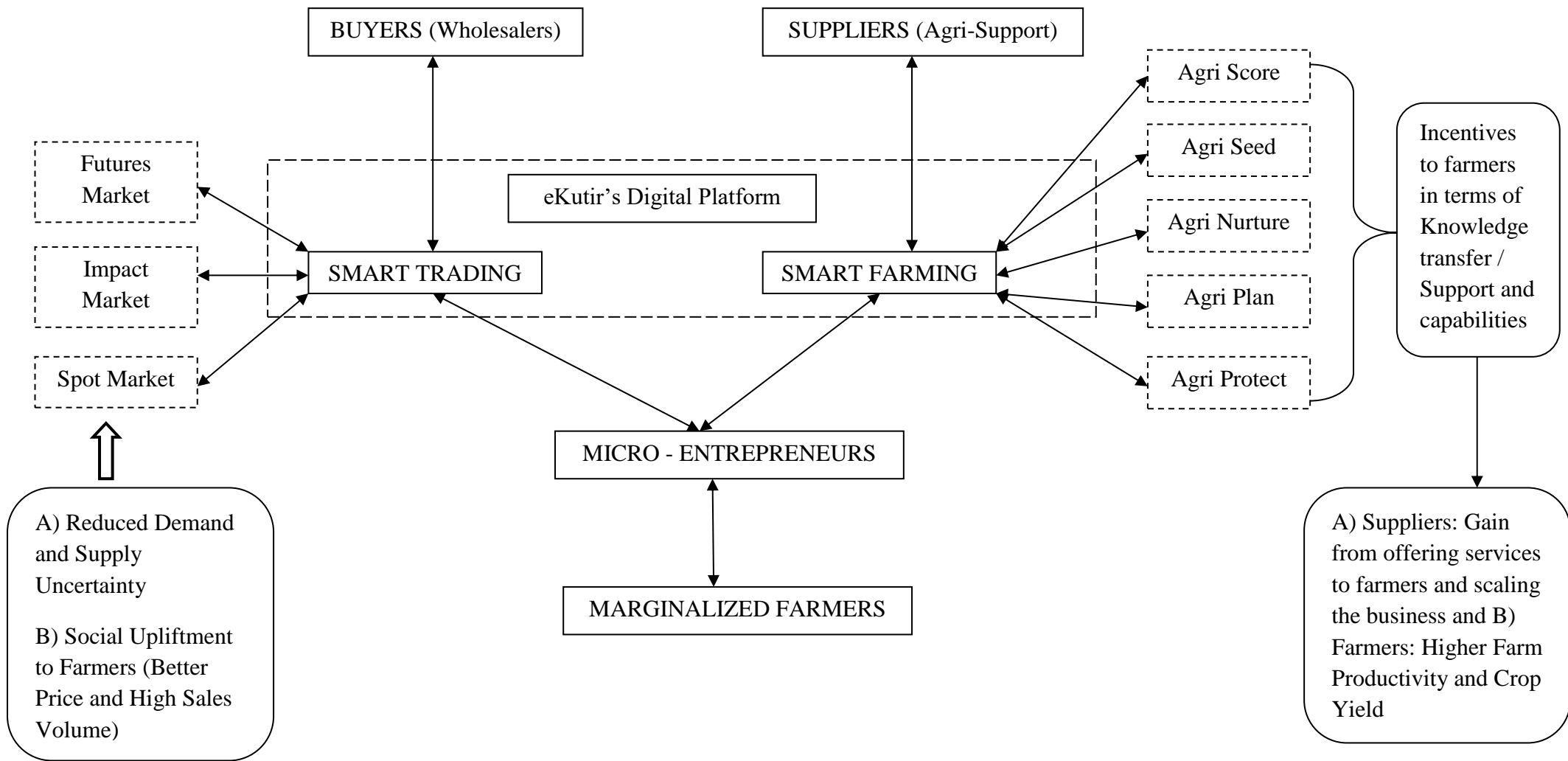
- Karlsson, N.P., Halila, F., Mattsson, M. and Hoveskog, M., (2017). Success factors for agricultural biogas production in Sweden: A case study of business model innovation. *Journal of Cleaner Production*, 142, 2925-2934.
- Karnani, A., (2007). The mirage of marketing to the bottom of the pyramid: How the private sector can help alleviate poverty. *California management review*, 49(4), 90-111.
- Khavul, S., & Bruton, G. D. (2013). Harnessing innovation for change: Sustainability and poverty in developing countries. *Journal of management studies*, 50(2), 285-306.
- Kuehnl, C., Fürst, A., Homburg, C. and Staritz, M., (2017). Toward a differentiated understanding of the value-creation chain. *British Journal of Management*, 28(3), 444-463.
- Langley, A. N. N., Smallman, C., Tsoukas, H., & Van de Ven, A. H. (2013). Process studies of change in organization and management: Unveiling temporality, activity, and flow. *Academy of Management Journal*, 56(1), 1-13.
- Lee, H.L. and Tang, C.S., (2018). Socially and environmentally responsible value chain innovations: New operations management research opportunities. *Management Science*, 64(3), 983-996.
- Letizia, P. and Hendrikse, G., (2016). Supply chain structure incentives for corporate social responsibility: An incomplete contracting analysis. *Production and Operations Management*, 25(11), 1919-1941.
- Linna, P. (2012). Base of the pyramid (BOP) as a source of innovation: Experiences of companies in the Kenyan mobile sector. *International Journal of Technology Management & Sustainable Development*, 11(2), 113-137.
- Love, J. H., Roper, S., & Bryson, J. R. (2011). Openness, knowledge, innovation and growth in UK business services. *Research Policy*, 40(10), 1438-1452.
- Maestrini, V., Luzzini, D., Caniato, F., Maccarrone, P., & Ronchi, S. (2018). Measuring supply chain performance: a lifecycle framework and a case study. *International Journal of Operations & Production Management*, 38(4), 934-956.
- Massa, L., & Tucci, C. L. (2013). Business model innovation. *The Oxford Handbook of Innovation Management*, Oxford University Press, Oxford, 420-441.
- Mehta, C. R., Chandel, N. S., & Senthilkumar, T. (2014). Status, challenges and strategies for farm mechanization in India. *Agricultural Mechanization in Asia Africa and Latin America*, 45(4), 43-50.
- Miles, M. B., Huberman, A. M., & Saldana, J. (2014). Fundamentals of qualitative data analysis. *Qualitative data analysis: A methods sourcebook*, 69-103.
- Miller, K., McAdam, M., & McAdam, R. (2014). The changing university business model: a stakeholder perspective. *R&D Management*, 44(3), 265-287.
- Naor, M., Druehl, C., & Bernardes, E. S. (2018). Servitized business model innovation for sustainable transportation: Case study of failure to bridge the design-implementation gap. *Journal of cleaner production*, 170, 1219-1230.
- Olofsson, S., Hoveskog, M., & Halila, F. (2018). Journey and impact of business model innovation: The case of a social enterprise in the Scandinavian electricity retail market. *Journal of Cleaner Production*, 175, 70-81.
- Patton, M. Q. (1990). *Qualitative evaluation and research methods*. SAGE Publications, inc.
- Pedersen, E. R. G., Gwozdz, W., & Hvass, K. K. (2018). Exploring the relationship between business model innovation, corporate sustainability, and organisational values within the fashion industry. *Journal of Business Ethics*, 149(2), 267-284.
- Pedrini, M., & Ferri, L. M. (2019). Stakeholder management: a systematic literature review. *Corporate Governance: The International Journal of Business in Society*, 19(1), 44-59.

- Pels, J., & Kidd, T. A. (2015). Business model innovation: Learning from a high-tech-low-fee medical healthcare model for the BOP. *International Journal of Pharmaceutical and Healthcare Marketing*, 9(3), 200-218.
- Pohle, G., & Chapman, M. (2006). IBM's global CEO report 2006: business model innovation matters. *Strategy & Leadership*, 34(5), 34-40.
- Prahalad, C. K. (2012). Bottom of the Pyramid as a Source of Breakthrough Innovations. *Journal of Product Innovation Management*, 29(1), 6-12.
- Prahalad, C. K. (2009). *The fortune at the bottom of the pyramid, revised and updated 5th anniversary edition: Eradicating poverty through profits*. FT Press.
- Prahalad, C. K., & Hart, S. L. (2002). The fortune at the bottom of the pyramid. *Strategy and business*, 54-54.
- Rubin, H. J., & Rubin, I. S. (2011). *Qualitative interviewing: The art of hearing data*. Sage.
- Saldana, J. (2012). *The coding manual for qualitative researchers*. (Sage Publications).
- Sarker, S., Sarker, S., Sahaym, A., & Bjørn-Andersen, N. 2012. Exploring value cocreation in relationships between an ERP vendor and its partners: a revelatory case study. *MIS quarterly*, 317-338.
- Sanchez, P., & Ricart, J. E. (2010). Business model innovation and sources of value creation in low-income markets. *European management review*, 7(3), 138-154.
- Schaefer, T., Moser, R., & Narayanamurthy, G. (2018). Access-based Services for the Base of the Pyramid. *Journal of Service Research*, 21(4), 421-437.
- Sengupta, A., & Ray, A. S. (2017). Choice of structure, business model and portfolio: Organizational models of knowledge transfer offices in British universities. *British Journal of Management*, 28(4), pp.687-710.
- Siggelkow, N. (2007). Persuasion with case studies. *Academy of management journal*, 50(1), 20-24.
- Sosna, M., Treviño-Rodríguez, R. N., & Velamuri, S. R. (2010). Business model innovation through trial-and-error learning: The Naturhouse case. *Long range planning*, 43(2-3), 383-407.
- Strauss, A., & Corbin, J. (1998). *Basics of qualitative research techniques*. Thousand Oaks, CA: Sage publications.
- Stuart, I., McCutcheon, D., Handfield, R., McLachlin, R., & Samson, D. (2002). Effective case research in operations management: a process perspective. *Journal of operations management*, 20(5), 419-433.
- Sund, K. J., Villarreal, J. A., & Bogers, M. (2014). Organizational aspects of business model innovation: the case of the European postal industry. In *Academy of management proceedings* (Vol. 2014, No. 1, p. 11099). Briarcliff Manor, NY 10510: Academy of Management.
- Tang, C. S., Sodhi, M. S., & Formentini, M. (2016). An analysis of partially-guaranteed-price contracts between farmers and agri-food companies. *European Journal of Operational Research*, 254(3), 1063-1073.
- Temple, B., & Young, A. (2004). Qualitative research and translation dilemmas. *Qualitative research*, 4(2), 161-178.
- Thorpe, R., Eden, C., Bessant, J., & Ellwood, P. (2011). Rigour, relevance and reward: introducing the knowledge translation value-chain. *British Journal of Management*, 22(3), 420-431.
- Tripsas, M. (2009). Technology, identity, and inertia through the lens of “The Digital Photography Company”. *Organization Science*, 20(2), 441-460.
- Van Marrewijk, M., Wuisman, I., De Cleyn, W., Timmers, J., Panapanaan, V., & Linnanen, L. (2004). A phase-wise development approach to business excellence: Towards an innovative,

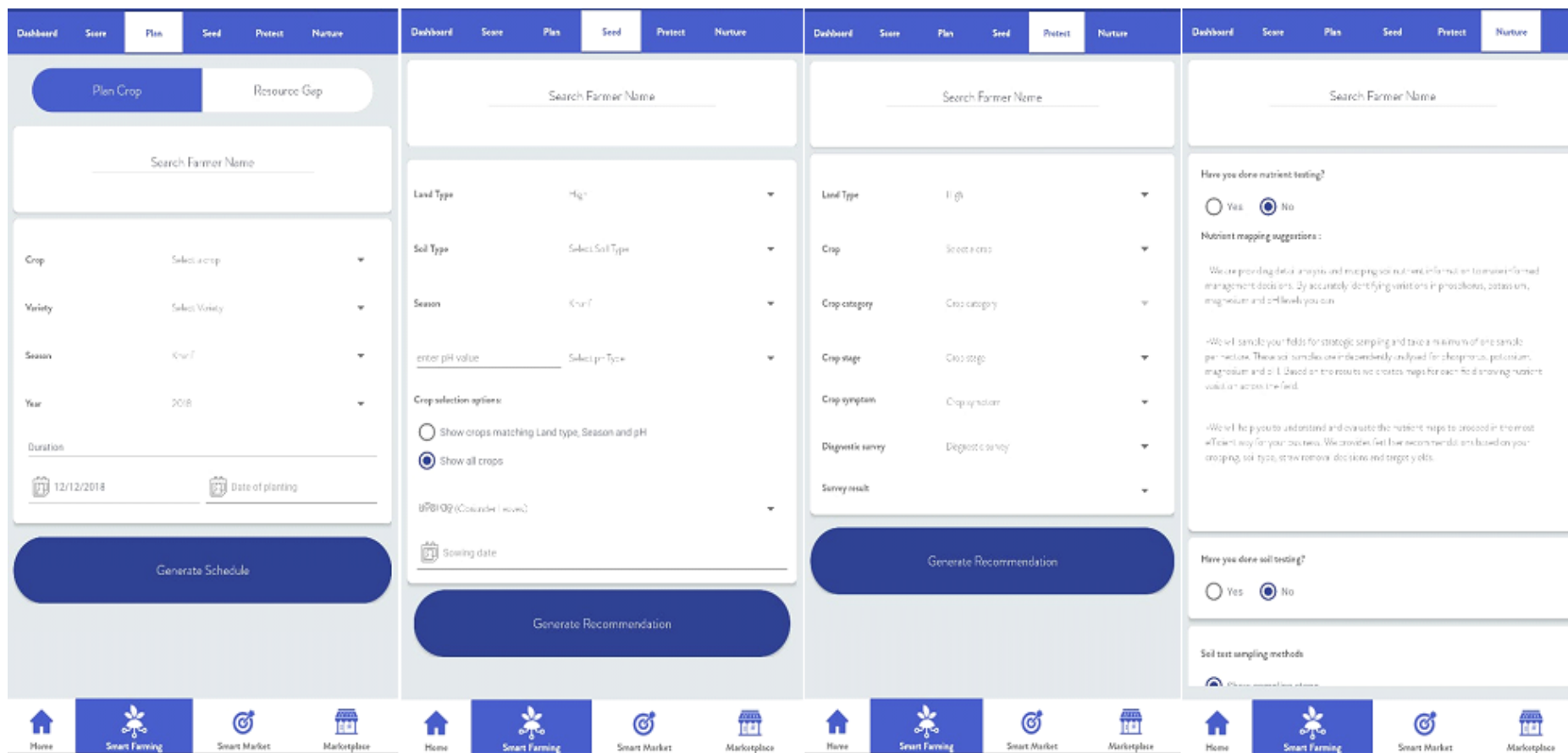


- stakeholder-oriented assessment tool for organizational excellence and CSR. *Journal of Business Ethics*, 55(2), 83-98.
- Vershinina, N., Rodgers, P., Tarba, S., Khan, Z., & Stokes, P. (2019). Gaining legitimacy through proactive stakeholder management: The Experiences of high-tech women entrepreneurs in Russia. *Journal of Business Research*.
- Voss, C. (2010). Case research in operations management. In *Researching operations management* (pp. 176-209). Routledge.
- Wells, P. (2018). Degrowth and techno-business model innovation: The case of Riversimple. *Journal of Cleaner Production*, 197, 1704-1710.
- Wiprächtiger, D., Narayanamurthy, G., Moser, R., & Sengupta, T. (2019). Access-based business model innovation in frontier markets: Case study of shared mobility in Timor-Leste. *Technological Forecasting and Social Change*, 143, 224-238
- Yin, R. K. (2003). Case study research design and methods third edition. *Applied social research methods series*, 5.
- Yoo, Y., Boland Jr, R. J., Lyytinen, K., & Majchrzak, A. (2012). Organizing for innovation in the digitized world. *Organization Science*, 23(5), 1398-1408.
- Yoo, Y., Boland, R. J., Lyytinen, K., & Majchrzak, A. (Eds.). (2009). Call for Papers—Special Issue: Organizing for Innovation in the Digitized World: Deadline: June 1, 2009. *Organization Science*, 20(1), 278-279.
- Yu, W., Jacobs, M. A., Chavez, R., & Feng, M. (2019). Data-Driven Supply Chain Orientation and Financial Performance: The Moderating Effect of Innovation-Focused Complementary Assets. *British Journal of Management*, 30(2), 299-314.
- Zhang, X., Hu, L., Salimath, M., & Kuo, C. C. (2019). Developing Evaluation Frameworks for Business Models in China's Rural Markets. *Sustainability*, 11(1), 118.

**Figure 1: Digitized Business Model Innovation of eKutir**

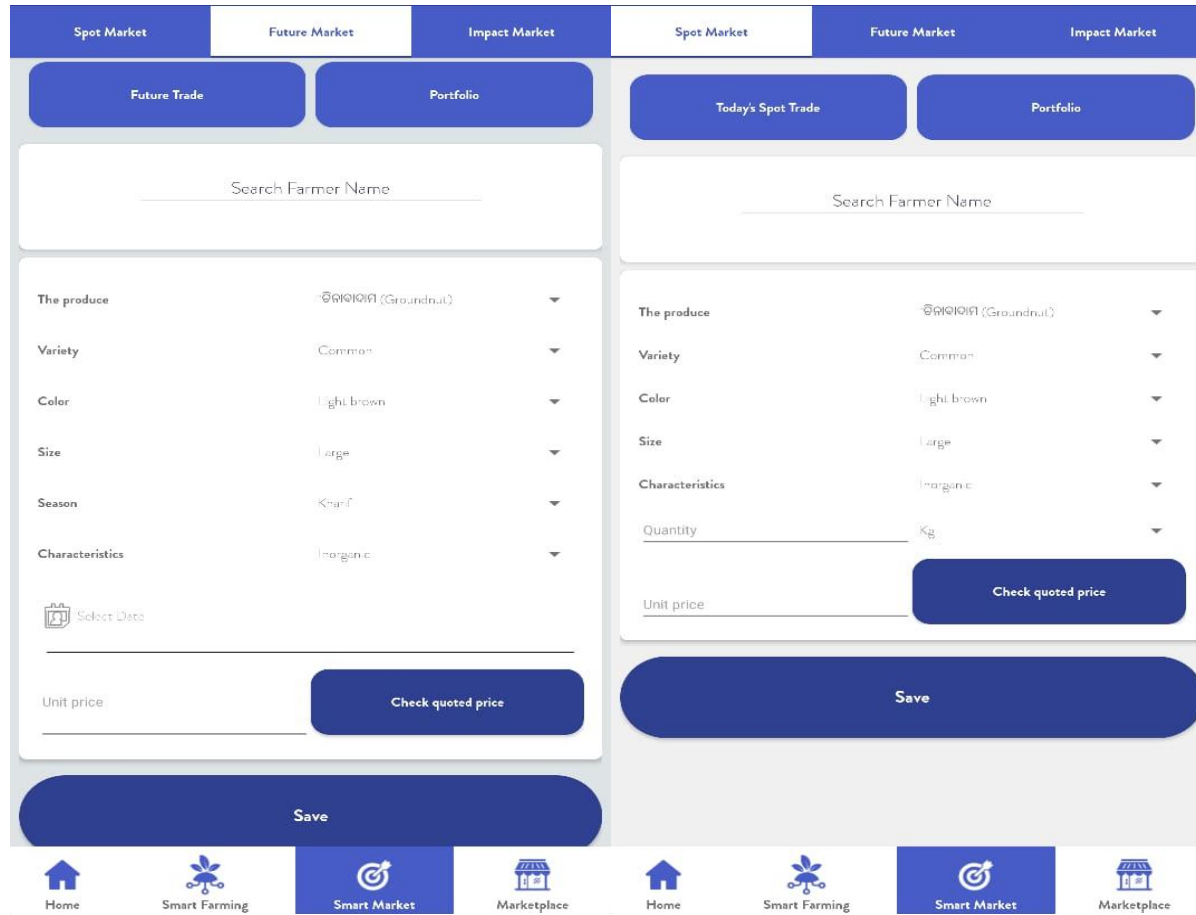


**Figure 2: Smart Farming Digital Platform**



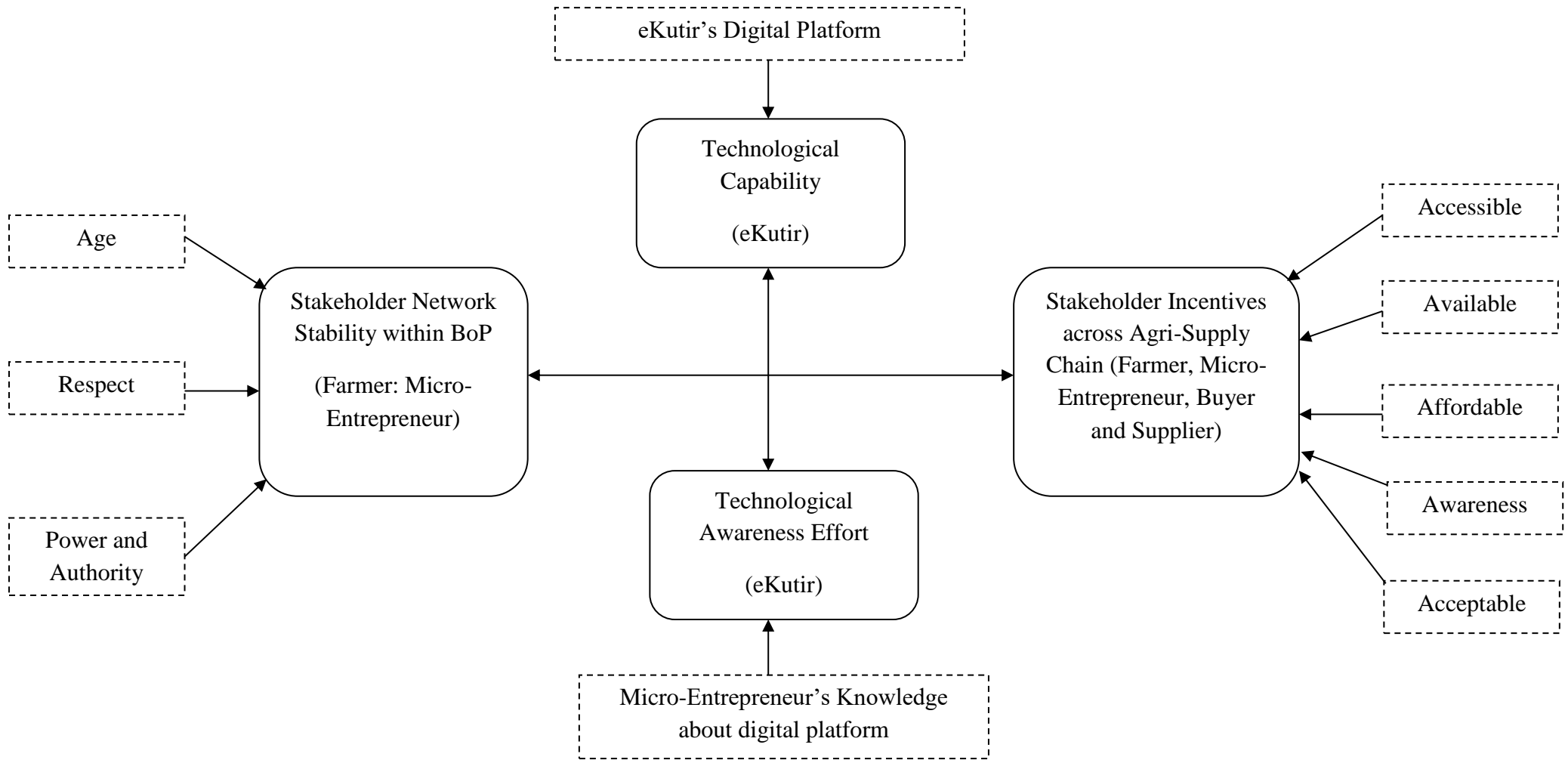
**Note:** The above figures (from left to right) represent Agri-Plan, Agri-Seed, Agri-Protect and Agri-Nurture respectively

**Figure 3: Smart Trading Digital Platform**



**Note:** The figure on the left represents the dashboard for Future Market and the figure on the right represents the Spot Market

**Figure 4:** Conditional Acceptance Framework for DBMI at BoP – A Stakeholder’s Perspective



**Table 1: Semi-Structured Interview Details**

<b>Name</b>	<b>Designation/Stakeholder Category/Role</b>
Respondent 1	CEO, MASCO, A Farmer Producer Organization
Respondent 2	Micro-Entrepreneur
Respondent 3	Farmer
Respondent 4	Farmer
Respondent 5	Micro-Entrepreneur
Respondent 6	Farmer
Respondent 7	Micro-Entrepreneur
Respondent 8	Micro-Entrepreneur
Respondent 9	CRM Executive, eKutir
Respondent 10	Sourcing (Supplier Side), eKutir
Respondent 11	CRM Executive, eKutir
Respondent 12	Technology, eKutir (Focused Group Discussion)
Respondent 13	
Respondent 14	
Respondent 15	Product & Engineering, eKutir
Respondent 16	Product & Engineering, eKutir
Respondent 17	Senior Employee, eKutir
Respondent 18	Founder, eKutir

**Table 2: Semi-Structured Interview Questions**

<b>Stakeholder One: eKutir Employees &amp; Executives</b>	
<b>Description</b>	<b>Questions</b>
<i>Identifying and confirming the stakeholders of digital business model</i>	1. Who are the key stakeholders other than farmers, micro-entrepreneurs and eKutir?
<i>About farmers (stakeholder two) from eKutir's perspective</i>	2. What are the difficulties faced in involving farmers into eKutir?
<i>About micro-entrepreneurs (stakeholder three) from eKutir's perspective</i>	3. Who are micro-entrepreneurs? Are they part of the farmer community? How are they created? What is the incentive for them to get involved in this business model?
	4. Are there any difficulties in involving micro-entrepreneurs into eKutir business model? Why can't eKutir operate without the micro-entrepreneurs? Is there any specific advantage of involving them other than creating employment in the rural sector?
<i>eKutir's experience in digitized business model innovation (DBMI)</i>	5. How many DBMI have you implemented so far? Have all of them been successful?
	6. If not, why do you think only certain digital platform succeeds?
	7. What difficulties will you face in scaling up operations of DBMI other than cost and human capital?
	8. What do you think are the limitations in DBMI that is impeding the involvement of more farmers?
	9. Explain the role of customer support and service providers in the DBMI.
<b>Stakeholder Two: Farmers</b>	
<b>Description</b>	<b>Questions</b>
<i>Establishing the link between eKutir and Farmer</i>	1. How many DBMI's of eKutir are you involved in?
<i>Acceptance/Rejection factors of DBMI</i>	2. Have you rejected or felt less efficient in using any of the eKutir's DBMIs? a. If yes, could you please provide the list of relevant factors based on which the rejection decision was made? b. If no, could you please provide the list of relevant factors that made you accept eKutir's DBMI?
<i>Rationale for intermediary stakeholder</i>	3. Why do you need micro-entrepreneurs?
<i>Utility of intermediary stakeholder</i>	4. What recommendations are being currently provided by micro-entrepreneurs?

<i>Conditions in absence of intermediary stakeholder</i>	5. What could be the conditions when you wouldn't need the role of micro-entrepreneurs? Can such conditions be created within the mobile application such that you can take decisions independently?
<i>Establishing the utility of the information being provided through DBMI</i>	6. Why do you need farm related information and market related information? Can you explain the need in terms of farm yield benefits, price point benefits and potential income benefits?
<i>Highlighting the current problem which eKutir has addressed</i>	7. What is the current issue you are facing in the agricultural sector, which eKutir platform has addressed?
<i>Understanding the areas of improvement in the DBMI process</i>	8. What additional information do you need in the mobile application for better decision making?
<i>Capturing the acceptability factor in terms of additional feature in DBMI</i>	9. Is there any feature that can be added in the current mobile application to ensure more acceptability of the platform in the farmer community?
Understanding the degree of engagement between eKutir and farmers	10. How do you think eKutir can better engage you through the mobile application for ensuring farmers welfare and improved farm yield?
<i>Capturing the potential drawbacks in DBMI</i>	11. What are the drawbacks (if any) in the offered DBMI?
<b>Stakeholder Three: Micro-Entrepreneurs</b>	
<b>Description</b>	<b>Questions</b>
Confirming the function of Micro-entrepreneurs	1. What is your role in connection with eKutir?
Understanding the reason for the inclusion in the network?	2. What is the incentive for being part of eKutir?
Capturing the service offering to farmers	3. How do you help farmers make decisions?
Understanding the role and business model issues from the perspective of Micro-Entrepreneurs	4. Why do you think you are needed to assist farmers? Explain the issues of internet connectivity, absence of readiness to technology adoption, infrastructural voids within the farmer community? How do you fit and fill the voids?
Forming an opinion about eKutir's DBMI from the perspective of Micro-Entrepreneurs	5. Why do you think a DBMI (mobile applications), as provided by eKutir, is important and necessary to fill the voids as discussed above? Is there any other alternative you may suggest to fill the void other than digitized platform?
Understanding the voids in the business model from the perspective of Micro-Entrepreneurs	6. What additional steps do you feel is needed to bring in more farmers?
Understanding the drawbacks in the digital platform from the perspective of Micro-Entrepreneurs	7. Is the information contained in the platform self-sufficient? Do you feel that farmers would need



	more information and/or knowledge to be a part of the eKutir community?
Capturing the acceptance/rejection of DBMI	8. What could be the reason that certain farmers are opting for the eKutir's DBMI and the other fraction of farmers are not incentivized on similar lines?
Capturing the acceptance/rejection of DBMI	9. What features of the DBMI from your side or from eKutir ensure that it is beneficial to some and not so beneficial to others? If it exists, what do you think are the reasons for such dichotomy? What is the feature that needs to be incorporated in the process flow or in the DBMI such that more farmers are incentivized?

**Table 3: Quotations from Semi-Structured Interviews**

No.	Quotations
1	<i>“our main objective was to provide the farmers tools and knowledge to reduce their operating cost that they incur in their farming practices and also provide them access to markets...the ultimate aim was to make their lives better”</i>
2	<i>“There are certain challenges to the marginalized farmers. These include unsold agricultural produce, low yield in crops, pest issues, low prices in mandis etc. Some of the challenges are addressed by our input suppliers who provide good quality seeds, fertilizers etc which they do not get from local market”</i>
3	<i>“we created a digital platform, which had a mobile interface at the front end and could be used by any ... screened individual in that community and provide that information to the farmers. So, in the beginning we started with this intermediary, the human interface that would be using the mobile app to give the farmers services they require the most”</i>
4	<i>“Earlier no one use to do soil testing to check the nutrient quality of the soil. However, with the growing concern of yield issues, we have been able to convince farmers to avail our services (eKutir SMART FARMING) so that they can rectify the damage done on the soil to boost their yield levels. This has been one of the successes for acceptance in the farming community. They cannot see things in future. They want their problems to be addressed now. This is where eKutir comes into play and immediately addresses the issues of the poor farmers and provides them assurance that they will get the right price and all their produce will get sold”</i>
5	<i>“using human resources at the field level to engage with the smallholder farmer was very difficult at that point of time... for that we created a digital platform, which had a mobile interface at the front end and could be used by any ... screened individual in that community and provide that information to the farmers”</i>
6	<i>“The adoption of ICT in agriculture is time consuming and one has to give some time to mature. Sudden adoptions will not happen as they are unsure about the benefit of the product and the person handling the platform. That is more the reason that micro entrepreneurs are necessary to make them understand at a daily level on the advantages of the digital platform”</i>
7	<i>“trust is one of the major factors when it comes to engaging rural poor farmers. It becomes extremely difficult for them to trust us if we approach them directly...they might think why should I use the solutions provided by these people. this was one of the biggest difficulties that we had to deal with”</i>
8	<i>“The key is to build trust among farmers. This will take time. But if one farmer develops trust, the other farmer tends to place the trust. And this is how the adoption is happening.”</i>
9	<i>“We go the rural village and identify a person from the village to act as a micro-entrepreneur for eKutir and deliver our products and services to the farmers...they are our channels to reach the farmers...since they are local people trusts are prebuilt and it becomes easy for us to operate”</i>

**Table 4:** A “5A” framework application towards stakeholder participation in DBMI

<b>5A Framework Parameter</b>	<b>Key Lessons Learned from the Case Study</b>
Availability	<ol style="list-style-type: none"> <li>1. “What?” <i>The Marketplace</i></li> <li>2. “How?” <i>Ensuring Buyers, Farmers and Suppliers are Registered</i></li> <li>3. “Where?” <i>Digital Platform</i></li> </ol>
Accessibility	<ol style="list-style-type: none"> <li>1. “What?” <i>Digital Platform</i></li> <li>2. “How?” <i>Introduction of Micro-Entrepreneurs as a Stakeholder</i></li> <li>3. “Where?” <i>BoP Community – Villages</i></li> </ol>
Affordability	<ol style="list-style-type: none"> <li>1. “What?” <i>Support Services offered by eKutir</i></li> <li>2. “How?” <i>Smart Farming - Agri-Seed, Agri-Score, Agri-Protect, Agri-Nurture etc.</i></li> <li>3. “Where?” <i>BoP Community – Villages</i></li> </ol>
Awareness	<ol style="list-style-type: none"> <li>1. “What?” <i>Digital Platform</i></li> <li>2. “How?” <i>Introduction of Micro-Entrepreneurs as a Stakeholder</i></li> <li>3. “Where?” <i>BoP Community – Villages</i></li> </ol>
Acceptability	<ol style="list-style-type: none"> <li>1. “What?” <i>Business Model Innovation (Better Price + Higher Sales)</i></li> <li>2. “How?” <i>Smart Trading - Futures Market, Spot Market, Impact Market</i></li> <li>3. “Where?” <i>BoP Community – Villages</i></li> </ol>

## Author's Biography

**Tuhin Sengupta** is an Assistant Professor in the Department of Information Technology and Operations Management at Goa Institute of Management, India. He has published articles in international journals such as Production Planning and Control, Technological Forecasting & Social Change, Computers in Industry, Journal of Cleaner Production among others.

**Gopalakrishnan Narayanamurthy** is a Senior Lecturer in the Department of Supply Chain and Operations at University of Liverpool Management School, UK. He is also an External Research Partner at the India Competence Centre in University of St. Gallen, Switzerland and a visiting faculty at LM Thapar School of Management, India. He has published in international journals of repute such as International Journal of Operation and Production Management, Journal of Services Research, Journal of Business Ethics, Production Planning and Control, International Journal of Production Economics, and Technological Forecasting & Social Change among others.

**Pradeep Kumar Hota** is a post-doctoral research scholar at Australian National University School of Business and Economics, Australia. His research interests lie in the domain of Social Entrepreneurship. He has published articles of repute in journals such as Journal of Business Ethics, Management and Organization Review, Computers in Industry among others.

**Tapan Sarker** is an Associate Professor at the Department of Business Strategy and Innovation, Griffith Business School, Griffith University, Australia. His research expertise lies in the domain of Business Strategy for Sustainability, Sustainable Finance, and Political Economy of Sustainable Development, among others. He has led several projects worth over \$2.5 million funded by both Government and industry.

**Subhendu Dey** is a Professor and Program Director at Indus Business Academy, Bangalore, India. His area of interests includes Supply Chain Management with specific focus towards agricultural fresh produce. He has over the years specialized in managing academic affairs in multi locational setups, setting up research cells among others.