Technology-Enabled Mobilization in the Emergence of a Value Co-Creating Ecosystem

Hsin-Hui Chou, National Cheng Kung University, Taiwan
Fu-Sheng Tsai, Center for Environmental Toxin and Emerging-Contaminant Research, Super Micro Mass Research and Technology Center, Cheng Shiu University (CSU), Taiwan*

ABSTRACT

Mobilization has been an important management issue in business interaction, but the role of technology in the mobilization process is little investigated, particularly with regard to the rising phenomena of platforms and ecosystems. This research attempts to explore the concept of technology-enabled mobilization by dealing with the question of how technology facilitates a mobilizing process that drives the emergence of a value co-creating ecosystem. This research question is investigated through a single case study that looked at an agricultural enterprise’s business development for almost three decades, in which key stakeholders were attracted to engage in collective collaborations, resulting in an interdependency and value co-creating system. The case findings permit us to develop implications, particularly the notions of service-based and technology-enabled mobilizations.

KEYWORDS

Case Study, Ecosystems, Frames, Mobilization, Service Dominant Logic, Technology

INTRODUCTION

Mobilization is a critical business interaction process within which cooperative ties with different stakeholders are formed to pursue strategic goals through collective efforts (Grodal & O’Mahony, 2017; Häkansson et al., 2009; Iacono & Kling, 2001). Mobilization aims at persuading and gathering people or organizations to contribute their resources to solve a problem (Bekkers et al., 2011; Mouzas & Naudé, 2007), which is commonly deemed important, such as the computerization movement (Elliott & Scacchi, 2008). Especially in the era of social media communities and platforms, how to attract followers and participants to forge a power of the crowd has become a pivotal managerial issue (McAfee & Brynjolfsson, 2017; Y. Q. Zhu & Hsiao, 2021). Thus, mobilization is concerned with the competitive advantage of firms, because it facilitates the shifting of resource control from one party to another (Etzioni, 1968), enabling either to reinforce the existing activity patterns or establish new ones in the business landscape (Lundgren, 1992). For example, the success of Taiwan Semiconductor Manufacturing Co. (TSMC) in maintaining its leading position of chip making depends on its capability of mobilizing key companies, including those who provide equipment, chemicals, and other important materials to form an ecosystem that has erected a high competition barrier against Intel and Samsung (Yu & Cheng, 2021).
Mobilization drives the development of the socially constructed world, in the sense that it allows political, societal, and business initiatives and movements to unfold towards a desired end (Bimber, 1998; Gerhards & Rucht, 1992; Iacono & Kling, 2001; Ritvala & Salmi, 2010). Within the domain of business and management, the concept of mobilization has been employed to investigate network change and evolution by highlighting the critical role of inter-organizational relationships that permit the combination of resources and the connection of activities (Chou & Zolkiewski, 2012; Halinen et al., 1999). Extant research also has indicated that innovation, including the free software movement (Elliott & Scacchi, 2008), technological change (Chou, 2016) and service innovation (Goduscheit & Faullant, 2018), can result from boundary-crossing resource mobilization, which is influenced and guided by the mobilizer’s problem-framing and agenda-setting (Möller, 2010; Snow et al., . Additionally, research on mobilization pays attention to organizational change (Canterino et al., 2020) and new ventures (La Rocca & Snehota, 2021).

More research efforts are required to expand the knowledge of mobilization, especially concerning the emergence of value co-creating ecosystems. Ecosystems have appeared as a new form of contemporary organizing (Adner, 2017; Jacobides et al., 2018), which redefines the firm’s sources of strategic advantages, and the consequent survival and prosperity (Iansiti & Levien, 2004). An ecosystem emphasizes collaborations across organizational boundaries, resulting in an interdependent and symbiotic structure that is formed by interactive relationships (Vargo & Lusch, 2011); and thus, is characterized by the co-creation of value (Vargo & Lush, 2017). The popularity of value co-creating ecosystems can be vividly illustrated by social media platforms such as Facebook and peer-to-peer digital platforms like Uber Eats (Belk, 2014; De Reuver et al., 2018), and Amazon Alexa's ecosystem (Hoffman & Novak, 2018). Despite the importance of value co-creation underpinning an ecosystem, mobilizing ecosystem participants to contribute their resources in aligned actions remains under-explored.

The formation of an ecosystem depends on the participation of actors capable of integrating resources (Vargo & Lusch, 2016), and their involvement in the labor of activities that could realize the value proposition of the ecosystem (Adner, 2017). However, what is less understood is the mobilization process that drives the emergence of ecosystems in which actors are attracted to solve a collective problem while pursuing self-interests (Jacobides, 2019). Additionally, technology plays a crucial role in structuring contemporary ecosystems (Basaure et al., 2020; Y. Chen, Pereira, & Patel, 2021; Ramaswamy & Ozcan, 2018), mainly because it enables the bridging of actors from different sectors or boundaries. However, the interrelationship between technology and mobilization in value co-creation contexts is limitedly reported in extant research. It also has been pointed out that the application of a technology, such as business analytics or AI, is an important means which a firm can utilize to enhance its performance (X. Chen & Siau, 2020), but the relationship between mobilization and technology remains blurred. As a result, this research aims to explore the notion of technology-enabled mobilization, and raises the research question, “How does technology facilitate a mobilizing process that drives the emergence of a value co-creating ecosystem?”

To investigate the research question, this study adopts the literatures of mobilization, value co-creation, and ecosystems, to lay the theoretical foundation that guides the empirical investigation. Following the rule of theoretical sampling (Myers, 2019), this research selects Sweet Farm (SF), a disguised name for the largest-capacity agricultural enterprise in Taiwan focusing on the production and processing of sweet potatoes as the focal actor, and its ecosystem formed by different types of collaborative relationships as the case. A key to SF’s business success lies in its ability to mobilize contract farmers and farming groups, and subsequently attract international and domestic business customers, including FamilyMart, the second largest convenience retailing company in Taiwan. Moreover, SF has introduced information technology into its production process to improve efficiency, increase production output, and relieve the farmer’s workload.

This paper proceeds as follows. The paper first presents the theoretical foundation. Second, the methodological rationale of carrying out the empirical investigation is provided. The paper then
presents the findings elicited from the case study of SF’s ecosystem development. Prior to concluding the paper, the authors discuss theoretical implications as well as managerial suggestions.

THEORETICAL FOUNDATION

Mobilization in the Business Landscape

Mobilization is a central driving force for business development. As Lundgren (1992) points out, mobilization is a process of moving crowds, groups, and organizations that are tied through interactive relationships to work together for a collective purpose, such as to achieve innovation (Möller, 2010; Van Bockhaven & MatthysSENS, 2017) or manage a complex project (Lutz & Ellegaard, 2015). Firms and organizations can capitalize on mobilization to move actors to devote their resources, both tangible and intangible, to collective actions, striving for a strategic goal (Bekkers et al., 2011; Elliott & Scacchi, 2008; Grodal & O’Mahony, 2017). In other words, mobilization permits the flows of boundary-crossing resources for productive use in aligned activities. Especially in an entrepreneurship context, resource mobilization becomes a critical process that enables an entrepreneur to overcome resource constraints in the realization of a business initiative (Desa & Basu, 2013; Villanueva et al., 2012).

Mobilization can take place at different levels, namely, the macro, meso, and micro levels. Macro mobilization is concerned with the mobilization process that engenders mass-oriented movements (Bekkers et al., 2011), such as computerization movements (Elliott & Scacchi, 2008; Iacono & Kling, 2001). While meso mobilization refers to an organization’s mobilization efforts in calling for joint actions with others (e.g. a protest campaign) (Gerhards & Rucht, 1992), micro mobilization is related to attempts by individuals or small groups to influence and attract others for a certain purpose. Bekkers et al. (2011) have indicated that these three levels of mobilization could be intertwined and that micro mobilization is boosted when individuals or small groups are linked to an intermediary organization at the meso level, which utilizes a platform to facilitate communications and the pooling of resources. This is just as illustrated by the booming phenomenon of the sharing economy (Acquier et al., 2017).

To successfully mobilize a group of actors to conduct collective actions, it is necessary for the mobilizer to align the frames of these actors (Möller, 2010; Snow et al., 1986). The mobilization process is driven by a process of framing, within which particular issues are defined and re-defined (Bekkers et al., 2011) and the involved actors’ sense-making are influenced (Mouzas et al., 2008; Weick, 1995). This framing process is concerned with the generation and re-production of frames (or interpretive schemes) (Goffman, 1974), which facilitates the construction of a shared understanding of a problem and the possible solutions by reducing uncertainty and ambiguity. Subsequently, the issues can be promoted to a broader group of actors and be placed on an agenda that allows actions to unfold (Möller, 2010). As the work by Ritvala and Salmi (2010) demonstrates, the issue for a cleaner Baltic Sea and its agenda construction expanding to a broader public were achieved through a framing process.

Mobilization has been an important strategy for firms operating in a network-like environment. Based on a network perspective (Håkansson et al., 2009), mobilization is an attempt by a firm to influence other actors to favor its network position. Mouzas and Naudé (2007, p. 62) further indicate that network mobilization is “the outcome of utilizing their relationships to move other organizations such as customers, suppliers, agencies, partners or even competitors to work within their own plans.” They also note that managers being engaged in a mobilization process need to pay close attention to five challenges: developing network insight; introducing new business propositions; concluding the deal; developing the social contract; and achieving sustained mobilization. Mobilization is also regarded as an important type of networking capability (Möller & Rajala, 2007; Thornton et al., 2014). Drawing on a strategic net perspective (Möller & Rajala, 2007), successful mobilization enables a focal firm to form an interdependency and relational structure within which the firm is permitted to utilize the combined resources and connected activities across organizational boundaries to pursue
its strategic goal. Despite these insights into mobilization, the role of mobilization is less studied in value co-creation contexts, such as ecosystems.

ECOSYSTEMS AS VALUE CO-CREATING RELATIONAL STRUCTURES

The prevalence of ecosystems or platforms has gained escalated attention among academics and practitioners. Ecosystems have emerged along with a surging wave of value co-creation as a contemporary organizing form on which firms’ survival and prosperity are dependent (Iansiti & Levien, 2004; Jacobides, 2019; Vargo & Lusch, 2016). A service-dominant logic perspective sees an ecosystem as a relational structure resulting from a process of value co-creation, to which contributions are made through resource integration among connected actors whose interactive relationships are structured by institutions, namely, rules of the games in the ecosystem (Vargo & Lusch, 2011, 2017). This view of ecosystems is in accordance with what Moore (1993, p. 76) has proposed, which is that “a company be viewed not as a member of a single industry but as part of a business ecosystem that crosses a variety of industries” (italics in original), and that “A business ecosystem, like its biological counterpart, gradually moves from a random collection of elements to a more structured community.”

The co-creation of value underpinning an ecosystem simply means that value is jointly created by multiple actors (Saarijärvi et al., 2013). However, the prefix “co-” does not mean that the interacting parties are automatically engaged in interaction to work together; rather, their joint creations needs to be built on effective communications or negotiations where a common understanding of a problem is reached (Bekkers et al., 2011; Möller, 2010). In the development of an ecosystem, “value proposition” plays this crucial role in communicating with, influencing, and attracting other participants for collective collaborations (Adner, 2017; Vargo & Lusch, 2016). Additionally, recruiting sufficient participants does not guarantee the successful creation of value in the ecosystem, unless the participants are capable of integrating resources to perform productive activities (Vargo & Lusch, 2017) and these activities are adequately aligned (Adner, 2017).

To understand what propels the development of ecosystems, attention is paid to the hub-firm or keystone actor’s efforts in orchestrating participants with regard to the alignment of activities and value creation as well as value capture (Jacobides, 2019; Feng & Marco, 2019). In other words, the keystone actor’s leadership becomes important since it affects the rise and the fall of an ecosystem (West & Wood, 2014). Additionally, an ecosystem will further thrive when the arrangement of activities across boundaries can be modularized (Jacobides et al., 2018). Particularly, the landscape of ecosystems is vividly colored by the active participation of “complementors” who contribute to a crucial part of the customer-facing solution (Brandenburger et al., 1996). Intriguingly, apart from human actors, the role of non-human actors (e.g. objects or technology) in value co-creation has gained increased interest (Hoffman & Novak, 2018; Ramaswamy & Ozcan, 2018; Storbacka et al., 2016). Up to the present, only limited efforts have been made to study value co-creation that is driven by the agency (the capacity for action) of non-human actors, particularly with regard to its influence on mobilizing stakeholders to participate in collective actions for a common goal.

METHODOLOGY

Departing from a naturalistic inquiry (Lincoln & Guba, 1985), the authors employed a case study method to conduct the empirical investigation because this qualitative approach was beneficial to looking at mobilization that took place in a process of business interaction (Halinen & Törnroos, 2005). Apart from dealing with a “how” question concerning technology-enabled mobilization (Yin, 2009), a single case study was considered appropriate as it allowed the authors to explore the complicated phenomenon of mobilization, within which the contextual factors and characteristics had to be examined, including the involved actors’ individual frames of surroundings and situations (Möller, 2010; Snow et al., 1986), in order to study who was mobilized by what means to address
what kinds of situational problems. This research design not only retained the depth of the case by providing rich descriptions (Dyer & Wilkins, 1991), but also permitted a holistic understanding (Myers, 2019). Additionally, this case study took a time perspective that allowed the dynamics created in the mobilization process to be observed (Chou & Zolkiewski, 2012), resulting in the emergence of an ecosystem.

To tackle the research question, the authors selected Sweet Farm (SF), a disguised name, as the focal actor, which was an agricultural enterprise and the largest sweet potato provider in Taiwan, and the case under investigation was SF’s development of its sweet potato business for almost three decades. The period covered by the investigation begins from SF’s establishment in 1991 and continues through 2019. Following a theoretical sampling (Myers, 2019), the reasons for selecting SF as the case included the fact that SF appears to have developed its business over three decades as a service platform, connecting the participants on the demand and supply sides (Van Alstyne et al., 2016; Jacobides et al., 2018), and the fact that SF’s business growth was contributed to by its collective collaborations with key stakeholders, including contract farmers, Japanese business customers, FamilyMart, and government organizations. These factors constitute a value co-creation system (Vargo & Lusch, 2011), and also present an excellent research context for the examination of how mobilization was practiced (Bekkers et al., 2011; Mouzas & Naudé, 2007). Moreover, thanks to media attention, SF was widely known throughout the nation as a model of smart farming, which the company achieved by adopting modern information and communication technologies to improve its farming process and increase the quantity and quality of products. Therefore, SF’s business development served as a suitable case for exploring technology-enabled mobilization.

The authors relied on data from numerous sources to construct the case that covered SF’s business development from 1991 to 2019; it included archival materials, in-depth interviews, on-site observations, workshops, agricultural production, and marketing meetings. In the first place, the authors consulted the archival materials available to the public, which could be accessed via both printed and electronic publications, company websites, public organizations, and social media. These sources provided market news regarding SF’s business interaction with others (e.g. FamilyMart), information about its achievements (e.g. application of ICT in farming and carbon footprint certification), and media interviews with the SF Chairman and the General Manager (the successor) (e.g. via YouTube). These materials enabled us to gain a general picture of SF’s business development, within which key events and stakeholders were identified for further investigation. Based on this initial understanding of the case, the authors developed semi-structured questions that were informed by business interaction, ecosystem and mobilization literatures, and by conducting in-depth interviews with SF management team members, contract farmers, a manager from the Institute of Information Industry (III), and the Director at the China Productivity Center (CPC), from mid-2017 to the end of 2019. See Table 1 for a list of interviewees. The attention of these interviews was concentrated on SF’s interaction with key customers (e.g. FamilyMart and Japanese customers), contract farmers, and partners (e.g. III and CPC). Some informants (e.g. SF’s General Manager) were interviewed more than once in order to gain details of business interactions and to enrich the understanding of the case.
Apart from in-depth interviews, one of the authors participated as an observer in SF’s agricultural production and marketing meetings with contract farmers on two occasions. At the meetings, the authors could observe how SF coordinated the farming work, including product quantity, and quality, and weather insurance for the next planting season with farmers from different geographic areas. Additionally, the co-author also conducted a farm field observation in Tainan City, a municipality in southern Taiwan. This observation permitted the authors to gain an understanding of how SF’s IT-system, an integration of RFID, QR code, and mobile App, facilitated the farming work and land management. This co-author also attended two workshops in which SF’s General Manager and Production Manager respectively shared their experiences in agricultural business management and smart farming. These workshops enhanced the authors’ understanding of SF’s development and how its collaboration with contract farmers was enabled by technology. During the above observation work, meetings, and workshops, the authors took research notes and photographs for analysis, and kept archival materials for the purpose of tracking. These multiple sources of data, including both primary and secondary data, allowed the authors to triangulate between these types of data to gain a more realistic and holistic understanding of the case (Miles & Huberman, 1994).

In the analysis of the empirical data, the authors adopted a central principle of “segmenting the data and reassembling them with the aim of transforming the data into findings” (Boeije, 2009, p. 94). The authors began their data analysis by organizing the raw data, including archival materials, research notes, and interview transcriptions, and then combing through the data and engaging in theoretical reflection in order to tackle the research question (Myers, 2019). In this phase of data analysis, the authors produced an initial case story that depicted SF’s business development from its establishment in 1991, in which important stakeholders, such as contract farmers and business customers were attracted to engage in collective collaborations, which resulted in a value co-creating system and, consequently, drove SF’s growth. Then, in the next phase, being familiar with the data and capable of marking ideas for coding (Braun & Clarke, 2006), the authors utilized theoretical concepts to interpret the case story and search for meanings by linking codes to themes (Miles & Huberman, 1994).

Table 1. A list of interviewees interviewed for this study

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>N. of Interviews</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF General Manager</td>
<td>3</td>
<td>Focused on SF’s historical development, servitization process, collaboration with farmers, and business interactions with FamilyMart and other customers.</td>
</tr>
<tr>
<td>SF Prod. Manager</td>
<td>3</td>
<td>To understand SF’s organizing of farming work, the development and application of IT system, collaboration with farmers, and sweet potato grading and processing.</td>
</tr>
<tr>
<td>SF QA Manager</td>
<td>2</td>
<td>To understand SF’s seedling breeding, quality control, field patrol inspection, and interaction with key customers.</td>
</tr>
<tr>
<td>Farmer A</td>
<td>1</td>
<td>A senior farmer co-working with SF for more 10 years; to gain his experience of interacting with SF.</td>
</tr>
<tr>
<td>Farmer B</td>
<td>1</td>
<td>A farmer in 40s; to gain his experience of interacting with SF, including why he joined SF.</td>
</tr>
<tr>
<td>Farmer C</td>
<td>1</td>
<td>A farmer in early 30s; to gain his experience of interacting with SF, including why he joined SF.</td>
</tr>
<tr>
<td>Director at CPC</td>
<td>1</td>
<td>CPC, a management consulting organization; focused on how CPC assisted SF to improve farming management work.</td>
</tr>
<tr>
<td>Manager at III</td>
<td>1</td>
<td>III, positioned as a digital transformation enabler; focused on how III assisted SF to develop its IT system.</td>
</tr>
</tbody>
</table>

Total 13
1994). For example, while examining the data, the authors paid attention to what technologies were adopted by SF to assist with farming work and to how these technologies affected key stakeholders’ perceptions of, and willingness to, collaborate with SF (Möller, 2010; Mouzas & Naudé, 2007; Y. Q. Zhu & Hsiao, 2021), and to how the activities performed by these stakeholders contributed to the formation of an interdependent and value co-creating structure (Adner, 2017; Vargo & Lusch, 2016). Following an analytical process characterized by abduction (Dubois & Gadde, 2002), the authors were able to generate their case findings.

**AN AGRICULTURAL ECOSYSTEM CENTERED ON SF EMERGES FROM CONTINUOUS MOBILIZATION**

Originally started as a sweet potato trading organization in 1991, Sweet Farm (SF) became an agricultural enterprise in 2004, following its successful acquisition of some business customers, including a Taiwanese fast-food chain restaurant that had both domestic and overseas operations. To further expand its scale, SF managed to recruit contract farmers to increase its production capacity, while it continued to attract more customers by offering quality sweet potatoes to meet diverse needs. This enabled SF to establish an exclusive cooperation with FamilyMart (FM), the second largest convenience store in Taiwan with more than 3700 stores. After its development for nearly three decades, SF has transformed itself into a service platform that aims at matching the supply of, and demand for, sweet potatoes and processed goods. As Figure 1 shows, the key of SF’s establishment of its service platform lies in its successful mobilization that has continuously attracted important stakeholders to participate in platform operation, in which the activities performed on the supply side reinforce those on the demand side, and vice versa.

**Figure 1. SF’s service platform**

![Figure 1. SF’s service platform](image-url)
Sought export orders to grow business

SF expanded its cultivation area of sweet potato production from 10 hectares in its initial period to approximately 100 hectares in early 2000. With the increased production capacity, SF began to look at overseas markets while developing domestic customers, in order to seek growth opportunities. Attention was quickly focused on the Japan market because the Japanese are health-conscious and regard sweet potatoes as an important daily staple as well as a healthy food. These factors resulted in considerable market demand. For SF, being able to enter into the Japanese market meant that its product could be recognized as high quality and could gain global exposure, further boosting its development.

However, catering to Japanese customers was not easy. In a market survey, SF found that kiln-baked sweet potatoes are the most popular preference in Japan. Due to the difficulty of developing kiln-baking technology and related equipment, SF turned to focus on rapid-freezing technology through an industry-academic partnership. This technology enabled SF to simply bake sweet potatoes in advance, freeze them, and deliver them to the market after product packaging. Customers could easily enjoy hot baked sweet potatoes by using a microwave, but this innovative product was not appreciated by most consumers at that time because they were not used to microwaved sweet potatoes. At a later food exhibition in Japan, SF accidentally discovered that people favored the unique taste of sweet potatoes that are baked and frozen, but not microwaved (because people are just too busy to perform this procedure). This discovery prompted SF to launch its patented “frozen-baked” sweet potatoes by improving its baking process and freezing technology. Finally, this led SF successfully into the Japanese market.

Initial business orders were accompanied by some management hurdles. To maintain its cooperation with Japanese business customers, SF had to prove itself capable of stabilizing and increasing the supply of qualified sweet potatoes. This required SF to not only continue to recruit contract farmers to expand production capacity, but also to optimize its planting, grading, processing, packaging, and shipping operations. It also made it necessary for SF to step up efforts to ensure quality, including measures to minimize pesticide residues. To meet the needs of customers, SF sought advice and assistance from Taiwan’s Council of Agriculture, a government agency that guides, promotes, and supervises the development of the agricultural, forestry, fishery, and animal husbandry sectors, and launched an IT-based traceability system in 2007 that permitted SF to introduce traceable agricultural products (TAPs). The system documented the state of each piece of farming land during production, such as weather and soil conditions, and the usage of fertilizers and pesticides.

The IT-based traceability system was important to the maintenance of SF’s business relationships with Japanese customers because it enabled the latter to gain better knowledge of SF’s operations, including its sweet potato output and quality. This, in turn, allowed the customers to act in response to market demands dynamically, and thus, increased their dependence on SF. Cooperation with Japanese customers subsequently created word-of-mouth effects that assisted SF not only to penetrate the market in Japan, but also to attract other overseas customers in regions such as the Southeast Asian areas.

Solid boost from partnering with farmers

To pursue scale of economy in its sweet potato business, SF needed more contract farmers on its side. Towards the end of 2010, SF collaborated with nearly 130 farmers to add about 300 hectares of sweet potato fields in the central and southern parts of Taiwan. However, SF encountered some difficulties in forming partnerships with farmers. One difficulty lay in the incentives that could attract contract farmers. Farmers live at the mercy of the weather, which meant that unpredictable weather conditions often caused unstable income. Additionally, farming work is hard labor. As a result, young adults were reluctant to work on the land and the farmer population was aging. In addition, SF found it difficult to manage the geographically scattered pieces of land, which was planted by individual contract farmers. The scattered farm lands owned by different farmers meant that SF had
to pay careful attention to the timing of planting, land conditions (e.g. drainage, fertility, and pests and diseases), and the associated field patrols and quality inspections.

To reassure farmers and foster trust with them, an important measure taken by SF was to include a guaranteed acquisition price and a disaster subsidy in the agreements that it entered into with farmers. SF would review the acquisition price with contract farmers in two agricultural production and marketing meetings annually. In the meetings, the farmers shared their experiences and skills, and lectures or training workshops sometimes were held. Furthermore, to manage the contract lands in a more efficient and effective manner, SF established three different functional teams to assist with key farming work. One team focused on agricultural machinery, one on quality inspections, and one on harvests. A farmer had the option of hiring the agricultural machinery team or borrowing heavy machines from it, to perform the farming work (e.g. soil preparation, seedling planting, weeding, and pesticide spraying). SF charges a reasonable price for the services of the agricultural machinery team. Similarly, the farmers could utilize SF’s harvest team to do harvest work if they were in need of assistance. As for the quality inspection team, SF monitored the production process and controlled quality itself in order to make sure the output would meet market demands. These managerial arrangements helped relieve the contract partners of hard farming work.

To increase its attractiveness to farmers, particularly young adults, SF rolled out a “lazy-farmer” campaign, designed to lessen the burdens of farming. SF believed that if the contract farmers could do their jobs with less hardship but still earn profits, more farmers would join SF to co-create value to grow the sweet potato business, which was commonly viewed as toilsome and bleak. Having established its IT-based traceability system and three functional teams, SF sought further improvement around 2010, by integrating GPS technology into the system and assigning each piece of land a QR code for identification and documentation. While performing either farming or inspection work, the farmers or team members could easily and precisely locate fields and keep farming records using mobile devices. SF also took advantage of RFID technology to manage its production process. The farmers and team members could use an RFID reader to collect information in the field from tags that were planted in land or adhered to equipment.

Subsequently, SF developed a smart agricultural management platform (SAMP) by further integrating the existing IT system and technology. The SAMP development project was carried out in cooperation with the Institute of Information Industry (III), a government-funded organization that promotes the innovation and application of new information and communication technologies. The SAMP system enabled the farmers to easily keep farming records via user-friendly interfaces and also allowed SF to better manage farming conditions, including the usage of fertilizers and pesticides that could be sourced through central purchasing. In other words, the adoption of the SAMP system significantly enhanced production efficiency, lowered costs, and facilitated more precise marketing plans. Moreover, the SAMP system acted as a knowledge management system because it enabled digital recording of individual farmers’ knowledge and treatment of their fields. Analysis of information recorded in this manner could provide important clues regarding what a farm needed to be aware of before and during the farming season, such as if a certain piece of land had to be left fallow after heavy usage. In such a case, SF would offer work in other fields if the farmer were interested in taking the job.

SF reaped several benefits from its lazy-farmer campaign. Firstly, SF’s functional teams made it easier for contract farmers to perform their farming work. Secondly, SF’s SAMP system not only facilitated the sharing and passing down of individual farmers’ knowledge and experience, but also further lowered the barrier to co-work with SF. This made SF’s agricultural business more attractive and encouraged young adults to engage in farm work. Some of the newcomers were encouraged and recommended by existing contract farmers. More significantly, the lazy-farmer campaign allowed the contract farmers to act not merely as hard-working farmers, but as “managers” who were able to manage their lands by utilizing SF’s resources. Additionally, as its contract farming areas gradually expanded, SF further adopted drone technology in 2018. Drones built in cooperation with III were used
to assist with field patrols, which made it possible to perform quality inspections in a more timely and efficient manner. The information, e.g. field images, were stored and checked by the SAMP system.

**ENROLLING MEMBERS TO BUILD A MORE FLOURISHING BUSINESS ECOLOGY**

Through leveraging its SAMP technology for agricultural production management, and through partnering with more than 100 contract farmers, SF transformed itself from a production-oriented enterprise, which concentrated on the development of the sweet potato supply chain, into a service provider. By repositioning as a service platform, SF actively performed its role as a facilitator in matching the supply of, and demand for, sweet potato products (both raw and processed). By taking this approach, SF attempted to solve problems facing both farmers and customers. SF believed that through building collaborative interactions with these multiple parties, this symbiotic and interdependent form of organizing would prosper its business. Apart from partnering with farmers, SF also adopted the important goal of developing business relationships with other stakeholders, particularly those from the demand side; one of these was FamilyMart (FM), the second largest convenience retail chain operating approximately 2600 stores in Taiwan in 2010.

FM launched the sale of industry-leading baked sweet potatoes in its chain stores from 2007, using products sourced from several large-capacity farmers. Later, they encountered a major problem—unstable supply of qualified sweet potatoes—because climate factors, plant disease, and unstandardized agricultural production made it difficult for them to control the output, consequently resulting in the failure to maintain a dependable daily supply in their convenience stores. FM then turned to SF to seek a solution. SF, on the one hand, was delighted with this great chance to cooperate with FM because it would enhance SF’s reputation, and presented an opportunity for business expansion. On the other hand, SF had a major concern about whether it was capable of meeting FM’s rigorous requirements in terms of product specifications (e.g. sweet potato size and quality) and delivery. This issue was especially worrisome because SF would have to produce weather-dependent agricultural products, rather than industrial products that could rely on precise production control.

Despite having built an IT-enabled traceability system, SF thought that it needed do something more to satisfy FM’s demands. The key lay in the source control and management of the farming. Thus, by cooperating with a district agricultural research organization under the Council of Agriculture, SF further invested in sweet potato seedling cultivation and production, with a belief that this would permit a more standardized farming process, better quality control, and a more predictable output in the collaboration with different contract farmers. These efforts won FM’s trust in, and reliance on, SF, and enabled FM to launch a marketing campaign that touted sweet potatoes as a healthy, light, and trendy meal. The partnership with SF and the successful campaign differentiated FM from its major competitor, 7-11, and made it difficult for this rival to follow suit. As a result, SF became FM’s exclusive sweet potato provider from the end of 2011, and it further expanded the farming area from 800 hectares in 2014 to nearly 1000 hectares in 2018.

SF’s seedling breeding not only contributed to its cooperation with FM, but also increased its attractiveness to farmers because using the single source of healthy seedlings enabled both SF and farmers to manage the farming conditions more easily and efficiently. Pesticides, for example, could be acquired through central procurement. Additionally, the seedling breeding approach, in combination with the IT-enabled SAMP system, made SF’s farming process more standardized and transparent, allowing SF to obtain carbon footprint certification because the greenhouse gas emissions of the farming process could be recorded and traced. Due to this carbon footprint certification, SF’s production process and products could be labeled as low-carbon and environmentally friendly. As a result, Eva Airlines and China Airlines, which were also working to reduce carbon emissions, were attracted to introduce SF’s baked sweet potatoes in their lounges. SF also had their production and products Halal certified, enabling its sales to be expanded to Islamic regions. As its brand exposure
increased, SF utilized social media, including Facebook and Line, to interact with its consumers and promote its business. A platform ecosystem, which centered on SF and which connected different types of stakeholders from both supply and demand sides, gradually emerged.

DISCUSSION AND IMPLICATIONS
This study’s attempt to tackle the research question of how technology facilitates a mobilizing process that drives the emergence of a value co-creating ecosystem. In the empirical investigation, the authors found that the emergence of an ecosystem results from a continuous process of mobilizing stakeholders to take part in aligned activities that allow value to be co-created. A key that transformed SF’s business operation from a supply chain enterprise into a service platform hinged on its ability to mobilize actors, including contract farmers, the Institute of Information Industry, and the Council of Agriculture, to co-produce solutions to meet different needs from the demand side, such as Japanese business customers, FamilyMart, Eva Airlines, and consumers. The findings reveal that mobilization is an important networking capability (Möller, 2010; Van Bockhaven & MatthysSENS, 2017), and the mobilizer needs to develop network-wide insight (Mouzas et al., 2008; Ritvala & Salmi, 2010) so as to form connections between actors from the supply and demand sides. Thus, mobilization is a central mechanism driving the evolution of an ecosystem.

The empirical result is in accord with Bekkers et al. (2011) who argue that mobilization can occur at the micro, meso, or macro levels, which are usually intertwined with one another. In this case, meso-level and micro-level mobilization affected one another. For example, the continuous enrollment of contract farmers facilitated mobilization of FamilyMart and other overseas business customers and, in turn, attracted new farmers, especially young adults, to engage in joint actions. Based on this finding, the authors argue that sustained mobilization (Mouzas & Naudé, 2007) can be understood in terms of the intertwined levels of mobilization, which could create mutually reinforcing effects among connected actors, thus contributing to the formation of the interdependence structure underpinning an ecosystem (Adner, 2017; Jacobides et al., 2018; Vargo & Lusch, 2011). Fundamentally, a successful exercise of mobilization, no matter at which level, is facilitated by employing service logic, which focuses on helping others (e.g. customers) become better by solving their situational problems (Vargo & Lusch, 2016), as evidenced by SF’s lazy-farmer campaign. This further allows the authors to propose a notion of “service-based mobilization” in which the mobilizer’s service logic facilitates aligning the frames of those being mobilized (Ritvala & Salmi, 2010; Snow et al., 1986), and enables the creation of interdependence between the involved parties.

Concerning the practice of mobilization, “technology” plays a critical role. The authors have found in their case that technology can be utilized to develop unique products to attract new customers, as evidenced by SF’s launch of frozen-baked sweet potatoes based on its rapid freezing technology that enabled its entrance into the Japanese market. The case also indicates that technology would improve the activity process efficiently and effectively so that not only human burdens can be lessened but productivity can also be raised. SF’s development of an IT-enabled SAMP system for the management of the farming process and seedling breeding technology for source and quality control, and its adoption of drone technology for field patrols, illustrate the benefits technology can generate by increasing the willingness of farmers to join SF, and by empowering both SF and farmers to better perform their jobs. Additionally, the case shows that the employment of web and social media technologies, in line with Bekkers et al. (2011), facilitates the mobilizer’s efforts to develop interaction with the public, and to convey key information and messages that exert positive influences on important stakeholders, such as consumers. The findings also add the knowledge of managing in the modern economy that is featured by operations of platforms and social communities (Jacobides, 2019; McAfee & Brynjolfsson, 2017; Y. Q. Zhu & Hsiao, 2021) by highlighting the importance of service-based and technology-enabled mobilization.
To elaborate on the notion of technology-enabled mobilization, regarding the aspect of technology, the authors have found that the technologies facilitating the mobilization can be classified as product technologies, process technologies, and marketing technology, as suggested from an interaction and networks perspective (Chou, 2016; Håkansson et al., 2009) in which these three types of technology are applied to achieve different purposes, such as developing new products, improving a process, or marketing an initiative. An implication here is that the mobilizer who strives to develop a coherent solution through engaging in collaborative cooperation with others (Adner, 2017) can utilize or develop certain types of technology to influence key stakeholders to form interactive relationships. In addition, the enabling function of technology in mobilization means that the technology needs to facilitate the value creation of its adopters or users based on a mechanism of resource integration (Vargo & Lusch, 2016). Thus, technology-enabled mobilization aims not only to increase the willingness of others to participate in collective actions, but also to empower the participants in their actions, both of which are built on reciprocity and interdependence.

THEORETICAL CONTRIBUTION

This research makes a contribution to the existing body of knowledge in the following aspects. In the first place, this research enriches the knowledge domain of platforms and ecosystems (Adner, 2017; Jacobides et al., 2018), which are characterized by value co-creation among participants (Ramaswamy & Ozcan, 2018; Vargo & Lusch, 2017) by investigating the process of mobilization in such contexts. While ecosystems have gained considerable attention in both research and business practice, this study provides a depth of understanding of how different stakeholders from the demand and supply sides are influenced and attracted to form interactive relationships, rendering the emergence of a value co-creation ecosystem. Secondly, the authors further the research stream of mobilization (Chou, 2016; Ritvala & Salmi, 2010; Van Bockhaven & Matthyssens, 2017) by explicitly examining the role of technology. Past research on mobilization tends to deal with the alignment of frames between the involved parties (Möller, 2010; Mouzas & Naudé, 2007; Snow et al., 1986) while leaving the facilitating role of technology in mobilization under-investigated. To address this situation, the authors developed the notion of technology-enabled mobilization by taking the interaction and networks perspective on technology (Håkansson et al., 2009) and linking it to the fundamental features of ecosystems (Adner, 2017). In addition, the research result permits the authors to propose the idea of service-based mobilization, in which service, an altruistic way of thinking, is beneficial to win the approval of others involved in the mobilization process.

MANAGERIAL IMPLICATIONS

Firms rely on business interactions to relate their resources and activities with others in the pursuit of strategic advantage and prosperity (Håkansson et al., 2009), which is particularly important in the coming era of platforms and ecosystems (Jacobides et al., 2018), where mobilizing others to engage in collective actions becomes imperative. The authors provide the following implications for practitioners who attempt to achieve successful mobilization. For one implication, the authors suggest that service logic, which concentrates on assisting those being mobilized to create their own value (Vargo & Lusch, 2016), is essential for the mobilizer to initiate a movement. A starting point for the mobilizer to exercise service logic is to look closely at the counterpart’s pain points in performing the related job, and then to find a solution to ease the pain points. Similarly, in the face of the ecosystem economy, creating value for the participants is a central task for the orchestrator or hub firm to prosper the ecosystem (Jacobides, 2019). In addition, the authors suggest that the mobilizer can attract and enroll participants by means of technology, in terms of product, process, or marketing technologies, to assist the mobilized to better perform their jobs or fulfill their duties in collective collaborations (e.g. in an ecosystem). By empowering the participants, the mobilizer can not only enjoy a better
outcome from the cooperation, but also create more dependence of these participants, and to some extent, to lock them in; just as FamilyMart’s dependence on SF was locked in.

CONCLUSION

This research deals with mobilization across organizational boundaries in an important but less investigated area, namely, platforms and ecosystems. Mobilization is an important business process in the sense that it is deemed a prerequisite for cooperative relationships to be established, because it allows the resources from the involved parties to combined for the creation of value. This research focused attention on the facilitating role of technology in mobilization that drives the evolution of an ecosystem. Through a case study on an agricultural enterprise’s sweet potato business development, the authors have developed the notions of service-based mobilization and technology-enabled mobilization. This research makes a contribution to knowledge not only by drawing a theoretical linkage between mobilization and ecosystem development, but also by expanding the understanding of mobilization that is enabled by technology.

Despite the fact that the authors have advanced theoretical development, this research confronts some limitations. One limitation is concerned with the empirical investigation. Because the findings are gained only from the study of a single context, the way a mobilizer exercises influence and attracts others to act collectively may differ in another context. Thus, future research can study mobilization and its association with the emergence of ecosystems in different contexts, such as an IoT ecosystem context. Another limitation is related to the period of investigation in the case study. Although this case covered a time span of more than 15 years, the case (SF’s ecosystem) keeps evolving, which means there will be dynamics in the mobilization process. As a result, a promising area for future research would be to continue following the case development. Apart from the limitations, the authors have attained an intriguing observation that a mobilizer may not necessarily be a human actor; rather, a non-human actor (e.g. technology) can play an active role in business interaction, such as the fact that SF’s SAMP system provided valuable information that guided SF and its contract farmers to perform farming work efficiently and effectively. Due to the potential capacity for action of a non-human actor (Hoffman & Novak, 2018), it is beneficial to place more attention on the investigation of non-human mobilizers in the future research. Nevertheless, mobilization in the business landscape deserves more attention.

ACKNOWLEDGMENT

The authors would like to thank the editor for his support during the review process and two anonymous reviewers for their valuable comments on purifying the quality of this paper and would also acknowledge the Ministry of Science and Technology in Taiwan for supporting the empirical investigation (MOST 106-2410-H-006-089-MY2) and (MOST 106-2410-H-230-002).
REFERENCES


Myers, M. D. (2019). Qualitative research in business and management. Sage (*Atlanta, Ga.*).


Hsin-Hui Chou (Ph.D. University of Manchester, UK) is an Associate professor at National Cheng Kung University (NCKU), Taiwan. He is also currently the director of Case Study and Development Center under the College of Management, NCKU. His research interests are focused on B2B marketing, value co-creation, platforms, and ecosystems. His publications appear in Journal of Business Research, Industrial Marketing Management, Journal of Business & Industrial Marketing, and Information Technology and People.

Fu-Sheng Tsai (Ph.D., I-Shou University, An AACSB accredited university) is Professor in the Department of Business Administration, Cheng Shiu University, Taiwan. He is a distinguished adjunct professor of North China University of Water Resources and Electric Power, China. He is an adjunct professor of I-Shou University and serves as advisor for international MBA and doctoral students. He serves editorial positions in several SSCI/SCI journals, including the Frontiers in Psychology (Associate Editor and Guest AE), Journal of Organizational and End User Computing (Editorial Board), International Food and Agribusiness Management Review (Regional managing editor), Sustainability (Guest editor), International Journal of Environmental Research and Public Health (Guest editor), Frontiers in Public Health (Guest Editor), among others. He is ad hoc reviewer for: Group & Organization Management, Human Relations, Journal of Business Research, Journal of Business Venturing, Journal of Organizational Change Management, Research Policy, and other international journals. His research interest is on strategic management and innovation as knowledge and networks governance in entrepreneurial contexts, Sustainability, Food safety, E-commerce. Working with international colleagues happily, he has published in Administration & Society, Asia Pacific Journal of Management, Asia-Pacific Management Review, Industrial Marketing Management, International Journal of Cross-Cultural Management, International Journal of Intercultural Relations, International Small Business Journal, Journal of Organizational Change Management, Management Decision, Technovation, Technological Forecasting & Social Change, Service Industries Journal, Knowledge Management Research & Practice, Handbook of 21st Century Management (Sage), Biographical Dictionary of New Chinese Entrepreneurs and Business Leaders (EE) and leading Chinese journals. Dr. Tsai regularly presents at major academic conferences such as AOM, AIB, AAoM, BAM, EGOS, IACMR. Fu-Sheng Tsai teaches in full-English doctoral and MBA programs, International MBA, and Doctoral programs in I-Shou University and Cheng Shiu University for over ten years. He is an advisor for doctoral and MBA students. Practically, Fu-Sheng Tsai is also a consultant for several enterprises, leading public-private partnership and industry-academic collaboration projects.