

Transparency of the Strategic Platform Ecosystems: Maturity Level Assessment Approach

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Abstract--At the moment many industries, academy and policy makers are facing lots of open questions and uncertainties related to the utilization of digitalization and the ways to manage innovation environment to create growth through platform economy in the society. Internet of Things and Big Data are examples of new developments which create new opportunities but it is not clear how they should be implemented. The outcome of this study is an innovation ecosystem assessment model. The model produces information on the maturity level of the digitalization that has been implemented in a given ecosystems. In addition it produces information about the ecosystems transformation, when moving from traditional practice towards digitalization. Data is collected by interviews, observations, workshops, and document analysis in four ecosystems in Finland: construction industry, forest industry, healthcare industry, and ICT industry. In order to produce relevant information for strategic decision-making we identified three relevant research paradigms to tackle the challenging topic: innovation leadership, information management, and design thinking. This paper illustrates the tentative managerial implications of the above-mentioned approach.

I. INTRODUCTION

Platform strategy innovations and business ecosystems play increasingly important roles in competition [8] and research in this field is attracting more and more attention from both academia and practitioners. At the moment many industries, academy and policy makers [13] are facing lots of open questions and uncertainties related to the utilization of digitalization and the ways to manage innovation environment to create growth through platform economy. Internet of Things and big data are examples of new developments which create new opportunities but it is not clear how they should be made use of. Many Finnish firms have studied the new technologies quite extensively but the question of how to create new value from them is still mainly unanswered [17]. The challenges that accompany an innovation are often situated not only within a focal firm but also in the firm's ecosystem of upstream suppliers and downstream customers [2].

To understand the transformation and how digitalization challenges and enables new kinds of innovation ecosystems [9, 11] and business ecosystems we have to better understand the new platform economy dynamic, risks and possibilities. In order to make the right and relevant strategic decisions, we have to identify the correct decision-making criteria and increase the transparency of conditions in different ecosystem contexts. Finally, in order to make better policy and company decisions, in creation of different type of innovation

ecosystems in platform economy context, we need a new tool for the maturity measurement [20]. Our latest research findings emphasize that one of the main factors inhibiting ecosystem partners cooperation are the understanding and synchronization of interests. Despite increasing interest among practitioners and researchers in ecosystems, there has been little work and research in understanding the value of these partnership programs, and conditions under which they are most valuable to their participants. This is a significant gap in understanding [5].

II. THEORETICAL BACKGROUND

Ecosystem thinking combines various perspectives from open innovation, crowdsourcing, strategic management, economics, and structural theories to the biological and evolutionary analogies and metaphors. The fundamental hope behind ecosystems thinking is to expand the capabilities of one actor beyond its own boundaries and facilitate the exchange of knowledge between actors.

Strategy making in innovation ecosystem is iterative because there is so many pieces and players [1]. To create new value and make strategic decisions stakeholders need to be able to collect, manage, analyze and process great amounts of information among many parties, technologies and market. Many value creation attempts have failed because of inadequate understanding. The new situation and emerging digitalization platforms requires new ways to understand and collaborate with partners, managing information in new ways resulting in improved alignment between technology initiatives and business goals and manage the innovation environment. To make strategic decisions and to understand the maturity of the relevant decision making criteria, we have to make the risks and possibilities of the platform economy more transparent.

III. INNOVATION MANAGEMENT

Effective and efficient innovation management practices and processes are in the key role in providing stakeholders with practical means to respond systematically to emerging challenges. Innovation management is a field which concentrates on creating ideas and developing them into commercial platforms, products and services. It covers methods to support creativity and ideation, formal processes and systems and strategies to guide idea selection, development, implementation and commercialization, and

ways to create an environment where employees are motivated to contribute to innovation [15].

Business models are needed to transform promising inventions to commercially successful innovations. The economic value of a technology and new products remains latent until it is commercialized in some way via a business model [6].

Business Firms often fail to benefit from promising new technologies and products because they are not able to rethink and align their business models with them. Typically, firms evaluate the business potential of ideas only in relation to existing business models [14]. The more radical the innovation in question the more it is necessary to challenge existing business models and develop new alternative business models.

Many strategic choices related to issues such as target markets, customer needs satisfaction, value propositions, expected product price and product costs, are made at very early stages of an innovation project [6, 21]. This suggests that business model considerations should be a part of the innovation process straight from the beginning. However, many organizations have a “business model innovation leadership gap” and fail to cut loose from the conventional ways of creating and capturing value [7]. Companies may have significant investments and processes for developing new services, products and technologies, but they often have no common understanding of how a new business model is developed [6, 16]. Developing new business models is difficult because it requires rejecting the thinking that has led firms to success in their current businesses in the first place [20]

IV. MATURITY ASSESSMENT APPROACH

Maturity models are proposed to improve company's processes and process management. A number of models to measure the maturity of Business Process Management have been proposed [19]. The origin for these maturity models has been the Capability Maturity Model (CMM) which was originally developed to assess the maturity of software development processes and the maturity of software organizations. According to Judkev et al. [10] Maturity models are tools that are used to evaluate the development of organizational skills that want to be achieved, and also allow us to compare the current state against the desired. A maturity model consists of certain levels that represent the state of the assessment area in question. These assessment elements are typically practices or key processes and they must meet the maturity level that company has set. The notion of ‘maturity’ has also been proposed as a way to evaluate “the state of being complete, perfect, or ready” and the “fullness or perfection of growth or development” [18].

Product and service development in innovation ecosystems is becoming an increasingly significant competitive factor for companies. Consequently, the descriptions of strategic goals must serve the target-setting

and decision-making related to development activities as well as possible [3].

The innovation ecosystem maturity assessment model and the findings will be used to identify and direct innovation activities and to define intended to-be maturity. It enables organizations to focus on less mature areas that prevent collaboration and to develop a structured improvement plan for progressing to the determined to-be situation.

The model facilitates informed decisions about prioritizing areas for strategic management development and provides a framework for understanding the benefits of investing in proposed changes and the impacts of those changes on realization of the organization's strategic objectives. The model can be applied over time and supports the measurement of progress in Business and Innovation process management. The use of the model in a number of organizations allows benchmarking studies.

Desirable contribution and impacts of our research are better capabilities for assessing the risks and making strategic choices and decisions during the Business Ecosystem Life Cycle. We also want to increase the capabilities for seizing the opportunities emerging from platform economies. Better capabilities for choosing practical processes and practices developing new innovation ecosystems will increase the value for the users.

V. RESEARCH QUESTIONS AND THE CONTEXT OF THE RESEARCH

Our main research question is:

- How digitalization will transform the innovation ecosystems and what are the relevant objectives of the assessment?

In order to deep the understanding of the main research question we have three sub-research questions as follows:

- What kind of criteria and attributes we should use in order to understand the status of our innovation ecosystem risks and maturity level? How winning innovation strategy will be developed and how to ensure its competitiveness during the business life-cycle of the ecosystem?
- What kind of new competences, processes, offering, business models and practices need to be developed in order to create new value in a changing environment?
- What are the hoped for impacts and real impacts?

In our context, we study innovation management from expanded triple helix view point. We study what are the critical factors, how does the organizations collaborate and innovate with other stakeholders and how the maturity affects to strategic planning and management of activities.

To produce relevant information for strategic decision making and recognizing the most relevant assessment criteria we have identified three relevant research paradigms to tackle the challenging topic (Fig. 1 and Fig. 2): innovation management, design thinking, and information management.

Our approach is strongly multidisciplinary and integrates expertise on the utilization of digital technologies, and modern management approaches to a human-centric view which considers individual employees, customers, and partners.

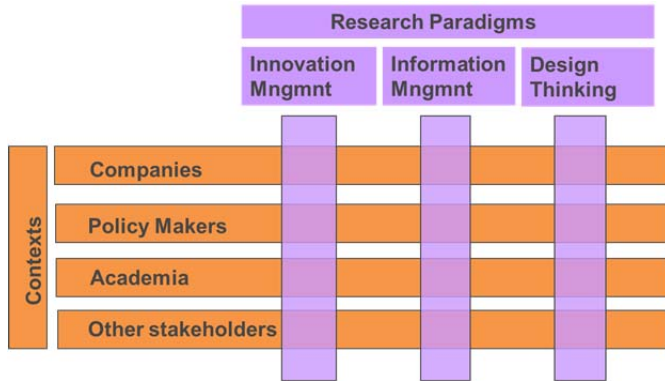


Figure 1. Context vs. research paradigms

VI. METHODOLOGY

Based on our conversations with leading Finnish firms we have identified the following focus areas for our study: linking new digital technologies with business value, the creation of new flexible innovation practices, and managing operations in platform ecosystems. The research starts with complementary literature research which complements the preliminary literature research done for the purpose of this research plan. As we continue, we follow case study design which is deemed appropriate when there is limited knowledge of the research topic. Data is collected from the participating firms and their ecosystems by interviews, observations, workshops, and document analysis.

Our aim is to form a comprehensive understanding of the useful maturity assessment criteria and the assessment process and its integration into strategic decision making. We also test new assessment model and methods with the chosen ecosystems to figure out how they may be used in different situations and integrated in to the stakeholder’s innovation process.

VII. TENTATIVE OBSERVATIONS AND RESULTS

The tentative empirical data of the study is collected from national top projects of four different ecosystems. Data is collected from all triple helix viewpoints (policy maker, company, and academy) through interviews and workshops by using the action research approach. We have had 1 workshop in each ecosystem and one interview dealing with each ecosystem triple helix stakeholder. Thus, we have in total collected data in four workshops and 12 interviews. Data is analyzed in using personal notes of two researchers.

Based on our pre study the research objectives are linked to the case ecosystems as shown in the Table 2.

Mapping the innovation ecosystem and recognizing and understanding the elements, players and risks is a way to estimate whether all stakeholders have set realistic performance expectations for the innovation strategy and business development (Fig.2).

As a result for the next step of this study we will develop an innovation ecosystem assessment method and model and produce new information about the assessment objectives and their use in strategic decision making from triple helix stakeholders viewpoint.

VIII. CONCLUSIONS AND DISCUSSION

We conclude that the maturity assessment model will facilitate informed decisions about prioritizing areas for strategic management development and will provide a framework for understanding the benefits of investing in proposed changes and the impacts of those changes on realization of the organization’s strategic objectives. The model can be applied over time and supports the measurement of progress in business and innovation process management in the ecosystem and including at the stakeholder levels. It offers better capabilities for assessing the risks and making strategic choices and decisions during the business ecosystem life cycle, for seizing the opportunities emerging from platform economies and for choosing practical processes and practices for developing new innovation ecosystems with increased value for the users.

TABLE 2. TENTATIVE RESULTS OF THE PRE STUDY.

Company	Needs to understand the Innovation ecosystem changes	Needs for deeper customer and partner understanding	Needs to utilize and manage the digital information in business contexts	Needs to understand the Business model innovation process, tools and practices
A (Construction industry)	xxx	xxx	x	xx
B (ICT-industry)	xxx	xx	xxx	xx
C (Healthcare sector)	xxx	x	x	xxx
D (Forest industry)	xxx	xxx	x	xxx

x	little important viewpoint
xx	important viewpoint
xxx	very important viewpoint

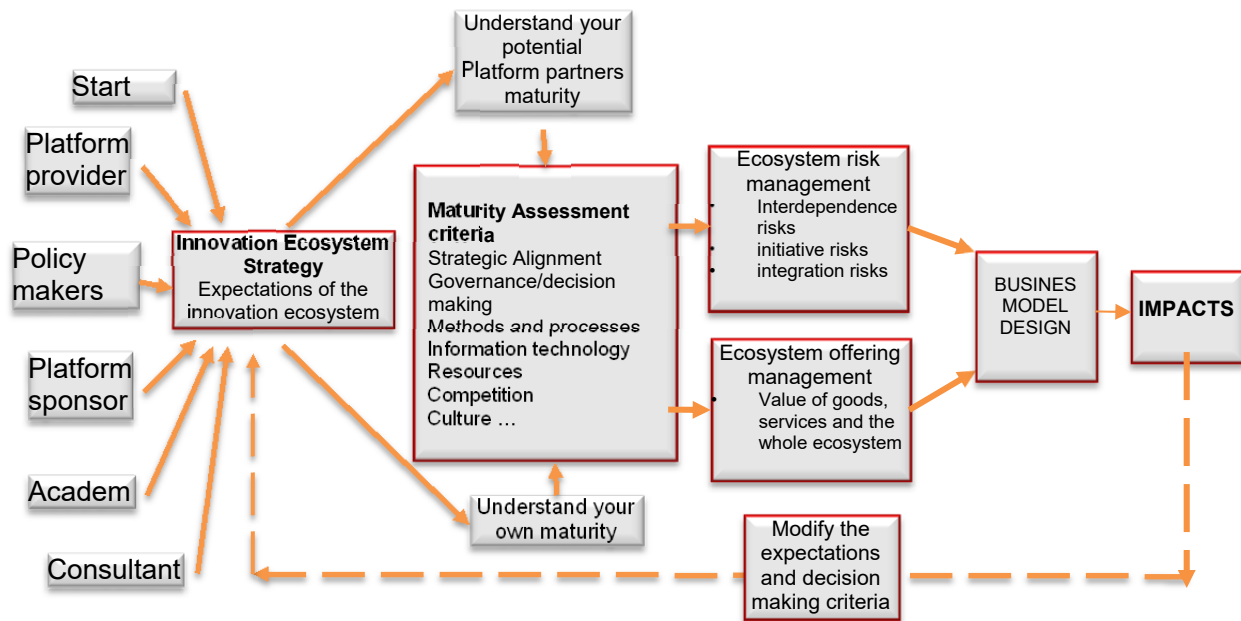


Figure 2. The linkage between maturity assessment and development of new business and innovation ecosystem strategy

Based on the tentative managerial implications in the four Finnish ecosystems we studied, we believe that our approach is relevant to test in a many more ecosystems including larger ones in the future. The following subjects should be taken into consideration in the use and further development of the approach:

1. The current situation and the nature of the each ecosystem should be taken into careful consideration in the applications of the model. The subjects described in the model are not suitable for all companies but the appropriate tools could be chosen for a single company.
2. The model should be defined for a practical tool for ecosystem mechanisms and managers. This assumes cultivating the model description into a concrete workbook. It should also be noted that the model is primarily a tool for internal assessment (evaluation) which is also clearly related to external audits of ecosystems.
3. The reliability of the data collected by the model should be considered critical. This is especially important when the data collected in internal assessment is also used as basic data for the external audits. Special consideration should be given to the sources of information used in the internal assessment: how much information is collected from external experts and from other objective data sources.
4. Special consideration should be given to impacts on the structures of the ecosystem. Networking in the ecosystems should be studied more. The impacts on the ecosystem could in the future be divided into the following main criteria:
 - clusterisation of the ecosystem, including changes at the interface and new cooperation parties,

- internal impacts on the ecosystem, such as profitability and export,
- networking and cooperation,
- organisatory changes inside organisations and
- business models as an engine between offerings and impacts.

The developed model is flexible and can also be applied extensively to other purposes than mentioned ecosystems. The model could be also applied in internal research, technology and development programmes of enterprises, research institutes and other organisations.

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